Polar Interrogatives in Catalan Sign Language (LSC)

A Comprehensive Grammatical Analysis

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A mi familia y amigos,
y a todos aquellos que también creyeron en mí.

Hoggle: *Who are you?*
Sarah: *Sarah.*
Hoggle: *That's what I thought. 59!*
Sarah: *Do you know where the door to the labyrinth is?*
Hoggle: *Maybe.*
Sarah: *Well, where is it?*
Hoggle: *Oh, you little… 60!*
Sarah: *I said where is it?*
Hoggle: *Where is what?*
Sarah: *The door!*
Hoggle: *What door?*
Sarah: *It's hopeless asking you anything.*
Hoggle: *Not if you ask the right questions.*
Sarah: *How do I get into the labyrinth?*
Hoggle: *Ah! Now,* that's *more like it. You gets in there…*

Excerpt from Labyrinth Script
Laura Phillips & Terry Jones, 1986

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Abstract

This thesis provides a morphosyntactic description of polar questions and a pragmatic analysis of biased questions in Catalan Sign Language (LSC). Polar questions in LSC are obligatorily marked with a specific combination of non-manual marking features and optionally marked with a question particle. Given that, at least, the most prominent feature, eyebrow position, does not remain constant, LSC displays different combinations of non-manuals to mark this structure. Empirical evidence supports an analysis in which each combination of non-manuals conveys a different bias and a novel feature-based description system explains and predicts those. Therefore, each combination of non-manuals, as well as the appearance of the question particle, is shown to not only mark sentence type but also to encode specific pragmatic meanings.

Resum

Aquesta tesi ofereix una descripció morfosintàctica de les preguntes polars i una anàlisi pragmàtica de les preguntes esbiaixades en llengua de signes catalana (LSC). Les preguntes polars en LSC es marquen obligatòriament amb una combinació específica de trets no manuals i, opcionalment, amb una partícula interrogativa. Atès que, si més no, el tret més destacat, la posició de les celles, no roman constant, l'LSC mostra diferents combinacions de no manuals per marcar aquesta estructura. L'evidència científica dona suport a una anàlisi en què cadascuna de les combinacions de no manuals codifica un biaix diferent; un nou sistema de descripció basat en trets explica i prediu aquest comportament. Per tant, cada combinació de

no manuals, així com l'aparició de la partícula interrogativa, es realitza no només per marcar el tipus d'oració, sinó també per codificar significats pragmàtics.

Resumen

Esta tesis proporciona una descripción morfosintáctica de las preguntas polares y un análisis pragmático de las preguntas sesgadas en lengua de signos catalana (LSC). Las preguntas polares se marcan obligatoriamente con una combinación específica de rasgos no manuales y opcionalmente con una partícula interrogativa. Dado que, al menos, el rasgo más destacado, la posición de las cejas, no permanece constante, la LSC muestra diferentes combinaciones de no manuales para marcar esta estructura. La evidencia empírica sostiene un análisis en el que cada combinación de no manuales transmite un sesgo diferente; un novedoso sistema de descripción basado en rasgos explica y predice esta conducta. Por ende, cada combinación de no manuales, así como la aparición de la partícula interrogativa, se realiza no sólo para marcar el tipo de oración, sino también para codificar significados pragmáticos.

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List of acronyms and other abbreviations

Abbreviations of sign languages:

ASL	American Sign Language
AUSLAN	Australian Sign Language
BSL	British Sign Language
DGS	*Deutsche Gebärdensprache*, German Sign Language
FinSL	*Suomalainen viittomakieli*, Finnish Sign Language
HKSL	Hong Kong Sign Language
HZJ	*Hrvatski znakovni jezik*, Croatian Sign Language
ISL	*Śfàt ha-simaním ha-iśraelít*, Israeli Sign Language
Libras	*Língua brasileira de sinais*, Brazilian Sign Language
LIS	*Lingua dei segni italiana*, Italian Sign Language
LSC	*Llengua de signes catalana*, Catalan Sign Language
LSE	*Lengua de signos española*, Spanish Sign Language
LSF	*Langue des signes française*, French Sign Language
NGT	*Nederlandse Gebarentaal*, Dutch Sign Language
NS	*Nihon Shuwa*, Japanese Sign Language
NZSL	*Te Reo Turi*, New Zealand Sign Language
ÖGS	*Österreichische Gebärdensprache*, Austrian Sign Language
TİD	*Türk İşaret Dili*, Turkish Sign Language
TSL	Thai Sign Language
VGT	*Vlaamse Gebarentaal*, Flemish Sign Language

General abbreviations:

INPQ	Inner negation polar question	PQ	Polar question
ONPQ	Outer negation polar question	SL	Sign Language
NMM	Non-manual marking	SpL	Spoken Language
NMMs	Non-manual markers	SOV	Subject-Object-Verb
PI	Polar interrogative	SVO	Subject-Verb-Object

Notational conventions

There is no currently accepted, widely used writing system for any sign language, therefore a system needs to be adopted in order to represent signed utterances and, for this thesis, it will be glossing. When a sign is glossed, one should take into consideration that the word is referring to the most common meaning of the sign and not to the word of the spoken language anymore. These are the conventions used in the glossing:

General annotation:

HOLIDAY	Lexical sign
PERSON+++	Reduplication of sign
S-A-R-A	Fingerspelled word
DO-NOT-KNOW	Multiple glosses needed to denote a precise meaning
IX$_1$	First person pronoun
IX$_2$	Second person pronoun
IX$_3$	Third person pronoun
X$_i$	Coreferential index
1-GIVE-2	Agreement verb inflected for first and second person

Non-manual marking annotation:

br	brow raise
bf	brow furrowing
fb	forward body lean
bb	backward body lean
hf	head forward position
hn	head nod
hs	headshake
sq	squinted eyes
pol-q	polar question
wh-q	wh-question
+	Two or more NMMs appear together

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INTRODUCTION

Introduction

> "But the boundaries between culture and language are never precise. Perfect mastery of a language is not really possible without extensive knowledge of the culture in which it is embedded, and, conversely, a culture cannot be fully understood without knowledge of the language in which it is carried on."
>
> Sadock & Zwicky (1985:193)

Questioning is considered to be a universal property of natural languages; everyone is able to make a request in their own language, regardless of its modality. Moreover, questions represent a good example of an interface phenomenon. Linguists have studied questions from the perspective of syntax, semantics, prosody and pragmatics. This thesis addresses a specific type of questions in Catalan Sign Language (LSC), providing the reader with a morphosyntactic description and a pragmatic analysis of the structure under study, the polar question. Polar questions have already received some attention in sign languages (SLs)[1] and there are even cross-linguistic studies that show a broad picture of this phenomenon

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[1]Neidle et al. (1996), Sutton-Spence & Woll (1999), Wilbur & Patschke (1999), Meir (2004), Zeshan (2004), Fischer (2006), McKee (2006), Morgan (2006), Quadros (2006), Šarac & Wilbur (2006), Savolainen (2006), Tang (2006), Van Herreweghe & Vermeerbergen (2006), Zeshan (2006), Johnston & Schembri (2007), Šarac et al. (2007), Herrero (2009), and Valli & Lucas (2011).

in SLs[2]. However, an in-depth analysis of this structure has never been carried out in LSC or in another SL, for that matter. Moreover, the role and function of non-manual markers (NMMs), a modality-specific device to mark the structure under study, have neither been addressed with the attention they merit. Although it has been reported that NMMs can fulfill different functions in distinct linguistic domains[3], when it comes to polar questions, it turns out that NMMs have not been properly analysed in any other but in the syntactic domain.

The goal of this thesis is, therefore, two-fold. The first goal is to provide a formal morphosyntactic description of polar interrogatives (PIs). The data collected shows which the main characteristics of LSC PIs are: the non-manual marking (NMM) features and their scope have been mapped out, as well as the appearance of a question particle, the YES-NO Q-sign. However, this first description brings to the fore more questions than answers. Why is it that different NMM combinations can be articulated with PIs in LSC? Or why the considered most salient NMM feature for this sentence type in SLs, namely eyebrow raising, is not constant for PIs in LSC? And why the YES-NO Q-sign cannot appear in every LSC PI? The second goal of the thesis is to account for this data and provide an analysis that will explain and predict the NMM behavior. Empirically based generalizations from the data let me claim that NMMs are actually playing a prosodic role in PIs, apart from a syntactic one, and their function can be paralleled to that of intonation: they not only define sentence type, but also guide the signers to pragmatically interpret the sentences. NMMs are, therefore, analysed from a novel perspective; Sudo's (2013) feature-based theory of biases serves as a basis to demonstrate that different forms of PIs are displayed from distinct NMMs combinations, which encode

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[2]Zeshan (2004) and Cecchetto (2012).
[3]Pfau & Quer (2010) and Herrmann & Steinbach (2013).

various flavours of biases (evidential and epistemic). This proposal attains interesting results and contributes to the study of both PIs and NMM in SLs in a way that has never been undertaken before. Moreover, these results may prove that intonation may also have an essential role when it comes to interpret a PI in spoken languages, adding pragmatic meaning and bias to the original construction. This certainly contributes to the debate on the role of prosody in grammar and opens the door to new research regarding the prosody and pragmatics interface.

This thesis is organized in five parts. "INTRODUCTION" provides the reader with the basics of SLs, presenting them as natural languages. The notion of iconicity is addressed, as well as why signs are not gestures. Although it may not seem worth mentioning, the misconception still exists that signers from around the world use the same SL. That is why I devote some pages to talk about this issue, showing that there are as many SLs as there are deaf communities in the world. I also talk about the importance of doing research in SLs. A following section focuses on the language of study, Catalan Sign Language (LSC), where a formal description of this language is presented. The final lines explain how the examples that I provide in this thesis are annotated.

"PART I: DEFINITION" puts the reader in context, offering a wide description of questions within different linguistic domains: pragmatics, semantics and syntax. Accordingly, it contains three chapters, each of which focuses on a linguistic domain. Chapter 1 introduces the speech act theory to the reader and defines the function of questions within this framework. Moreover, the felicity conditions of the speech act of questioning are defined. A first basic classification of types of questions is offered, taking into account the type of information requested. Therefore, polar questions, alternative questions and content questions are presented. Finally, the basic

and the derived pragmatic function of questions are addressed. Chapter 2 focuses on the meaning of questions, presenting them as semantics objects. After devoting a section to the type of answers, the most influential theories about the semantics of questions are explained. Chapter 3 focuses on the structure of questions, identifying them as interrogatives, its sentence type. The rest of the chapter approach the different strategies that SpLs have to mark questions in their grammars.

"PART II: DESCRIPTION" focuses on PIs in SLs. Since one of the goals of this thesis is to present a description of PIs in LSC, chapter 5 provides a broad picture of how PIs are coded in the grammar of gestural-visual languages. The strategies that these languages apply to mark the structure are laid out, paying special attention to a modality specific device: non-manual markers (NMMs), which seem to be essential. Chapter 6 offers a morphosyntactic description of PIs in LSC, focusing on the non-manual strategies of this SL to signal the structure. However, the non-manual markers that LSC displays when marking a PI are variable and unpredictable: this poses a puzzle that needs to be solved.

"PART III: ANALYSIS"'s ultimate goal is to propose an analysis that can explain why LSC exhibits different combinations of NMMs and a question particle to mark PIs and to predict when each device is used. With this aim, NMMs are paralleled to intonation (§10) , which is demonstrated to play a fundamental role in the interpretation of question biases (§8). Therefore, Sudo's (2013) feature-based theory of biases is explicated (§9) to finally apply it as an innovative analysis that treats the different devices as potential strategies for LSC to convey different kinds of biases (§11). The results in last chapter show that, indeed, that is a feasible explanation.

"FINAL REMARKS" reviews the contributions of this thesis and includes the final remarks of this research.

Sign Languages and Linguistics

Sign languages (SLs) are the natural languages that emerge within and are used by the deaf communities around the world. This characterization is a commonly well-accepted fact, although only a few SLs have been studied comprehensively by the linguistic community.

Any linguistic signal in SLs, unlike in spoken languages (SpLs), consists of hand movements, facial expressions, and head and body postures, and is perceived by the eyes. Therefore, the production of these signs is in a three-dimensional format. This is where the biggest difference between SLs and SpLs lies: their modality. While SpLs are in vocal-auditory modality, SLs are in visual-gestural modality. Often, not to say almost always, SLs share territory with SpLs; therefore, from a sociolinguistic point of view, the former ones are considered to be the minority languages which are in constant contact with the dominant spoken languages used by hearing people.

On the nature of sign languages

That SLs are natural languages and not mere pantomime, and that they are actually endowed with grammatical structure, was first proven by William C. Stokoe, who developed a descriptive method that allowed him to discover linguistic structures in that code. He published his findings in 1960, in a monograph titled "Sign Language Structure"; this is considered to be the beginning of SL linguistics research. It was Klima & Bellugi, however, who incorporated in a definite way SLs into the linguistic studies by publishing "The Signs of Language" in 1979. Once the first studies devoted to the linguistic description of SLs (primarily ASL) appeared, more and more theoretical linguists, typologists, sociolinguists and psycholinguists

initiated studies on an increasing number of SLs. This initiated a field of research that today is known as the "linguistics of sign languages", a field that has already been cultivated in some countries in the world. Research in SLs has undoubtedly advanced and, nowadays, it has definitely reached levels of linguistic description and analysis that were thought inconceivable for the deaf communities a few years ago.

It is surprising to say that one can talk about phonology in a typology of visual-gestural modality languages. If one strictly sticks to the definition of phonology —a discipline of linguistics that studies the sublexical units that do not contain meaning by themselves, but whose combinatory make up morphemes—, one can establish a phonological equivalence between SLs and SpLs. A sign in SL can be broken down into a series of components that are meaningless by themselves and which are comparable to the phonological features of SpLs. These components can be manual or non-manual:

- HANDSHAPE. Form that the hand takes. Each SL has its own repertoire; some forms are common in many SLs and are, therefore, considered unmarked.

- PLACE OF ARTICULATION. Point or area in space where the sign is produced. It can occur in the upper part of the signer's body or in a point of the space in front of the signer's torso (signing space).

- MOVEMENT. Typically, path movement that marks the beginning and end of a sign. A sign can also contain the movement of fingers or wrists, with or without displacement of the hand.

- ORIENTATION. Plane towards which the palm of the hand is oriented.

- NON-MANUAL COMPONENT. Marks not made with the upper extremities of the body. The following are considered to be non-manual components: mouthing component, spoken component, position of the eyebrows and forehead, gaze direction, position of the body and head, and the overall facial expression.

Just as minimal pairs can be identified in SpLs, they can also be found in SLs (Fig. 1). A variation in a single phonological component can vary the meaning of a sign.

Figure 1: Minimal pairs in LSC: SADNESS and LOVE (Pfau & Quer 2010)

Moreover, only the existence of these phonological particles could explain production errors of signers. These errors, called *slips of the hand* (Newkirk et al., 1980), are produced when one value of one component is substituted for another. Quer (2004:192) points out that this substitution is conditioned by the components of the adjacent sign, which have propagated into the sign, causing a production error. He also states that there is syllable structure in SLs: the constitutive features of a sign are associated with two types of segments comparable to the consonant and vowel segments of the oral language: the positions or locations and the movements. Since

the perception of movements is more prominent than that of the positions, the former are considered the syllabic nuclei Quer (2004:193). Signs are equivalent to the words in SpLs. Supalla & Newport (1978) point out that there are pairs of nouns and verbs that are clearly identified from a derivative process: the characteristics of the movement of the verb tend to be more variable than those of the noun, which is normally produced in a reduced space and implies a repetitive and more restricted, but more tensed, movement (Fig. 2).

Figure 2: Characteristics of the movement of the noun
CHAIR and the verb TO–SIT in ASL (Meir 2012)

There is one category of morphemes which is almost unique and specific to SLs: the classifiers (Fig. 3). A classifier construction involves a set of hand configurations that identify certain physical properties of its referent. In SLs, one can find semantic classifiers (they replace a previous element with a particular handshape for a semantic class of referents), descriptive classifiers (they describe the visual characteristics of the referent), and instrumental classifiers (they indicate the way in which an object is manipulated).

There is currently sufficient evidence to affirm that SLs can be subjected to the same syntactical structure analysis that is applied to SpLs

Figure 3: Example of semantic classifiers (person and vehicle) from DGS (Schwager & Zeshan 2008)

(Quer 2004:196). One can identify a basic order for each SL and, by altering it, any type of structure can be obtained. Quer (2004), for example, explains that in order to obtain a topicalization in LSC it is enough to move the argument to the left periphery of the proposition and mark it with non-manual components. Likewise, many other complex structures in SL have been studied. Polar and content interrogatives have also been studied, and both constructions are marked with specific non-manual marking features, but this will be discussed further on.

Sign languages, gestures and iconicity

When one studies a SpL, it is easy to see the division between the linguistic system and its accompanying gestures. However, distinguishing signs and gestures in SLs is quite more complicated since both are produced in the same medium (Zeshan 2004). Nevertheless, McNeill (2005) states that although the performance of gestures involves the use of hands, head or facial expression, these can be distinguished from purely linguistic signs. Zeshan (2004:11) determines that there is often an historical relationship between some signs and gestures, since many of the gestures used in a

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community, over time, tend to be incorporated into the SL of the region (McNeill 2005). Rathmann & Mathur (2007) define this phenomenon as linguistic innovation, a type of lexicalization.

In this way, gesture, a paralinguistic element with expressive and affective properties, is differentiated from the linguistic sign, an element with properties that are subject to the linguistic structure of the SL in which it is found. All gestures can be incorporated into this language type, whether iconic or not. Iconicity is believed to arise naturally in all languages, although, due to their visual-gestural modality, sign languages have a greater potential here (Zeshan 2004). There are many signs that iconically pick up on a characteristic of their referent. For examples, the sign HOUSE in LSC looks like the typically angular shape of a roof. This kind of iconicity would be the equivalent of onomatopoeia in spoken language. Iconicity can also be abstract, that is to say, repeating movements can express plurals or continuous actions. In some spoken languages reduplication is used to the same end. Finally, iconicity may imply being metaphorical: any sign related to "cognition" is articulated on or near the head. Zeshan (2004:12) concludes that "iconicity is irrelevant for communication between users of sign languages [...], you don't need to be aware of a sign's iconicity to use it".

More than one SL in the world

There are many misunderstandings concerning SLs and the reason for this is that it is relatively recent that linguists have begun to study, and therefore to know, this typology of languages. The preconceived idea that all deaf signers express themselves in a single SL is false. Just as it is not imposed on hearing people to acquire English or Esperanto as their mother tongue, it would not be moral to impose a single SL on deaf people

(Quer, 2005:77). SLs arise spontaneously when there is a deaf community with a considerable number of members interacting with each other over a sustained period of time. These communities emerged in any part of the world and, consequently, a different SL is born in each one of them. It is true that the World Federation of the Deaf developed International Sign (IS) as a means of intercommunication between all deaf people. IS is an artificially created pidgin that has a limited number of lexical units, but not a grammar. Normally IS users employ the grammars of their languages with the signs of IS to produce an intelligible message.

As previously mentioned, there are a multitude of SLs in the world because in every deaf community one will born which will become their own. A very common misunderstanding is that SLs derive from the SpLs of the environment and that they are their signed representation; but, in fact, their linguistic structures are very different from those of the SpLs with which they coexist. Proof of this is that the deaf communities in Great Britain and the United States, which belong to English-speaking countries, use two very different SLs, historically unrelated and unintelligible to each other (Quer, 2004:190). One must bear in mind that the borders of the SL will not always correspond to those of the SpL. For example, there are two SLs in Spain: LSC, which occurs in Catalonia, and LSE, which is used in the rest of the country; but neither in the Basque Country is there a Basque SL, nor the deaf community in the Valencian Country uses LSC, although Catalan is also spoken there. It is true that most signers, due to their need to be integrated into a society that is mostly hearing, are bilingual. Obviously this has an impact on SLs. For example, the manual alphabet (called dactylological), as described by Quer (2004:190), "is nothing more than a way of visually translating the oral language through its written representation" and has influenced the creation of many linguistic signs.

Quer (2004) proposes, as an example, the sign of HISTORY in LSC. This is done on the sign EXPLAIN, which incorporates the configuration of the letter "h" of the LSC hand alphabet. This phenomenon is called initialization, since it incorporates the fingerspelled first letter of the word in their SpL written form. Another phenomenon which is characteristic of the contact of a SL with an SpL is the creation of a linguistic variety of pidgin type called sign supported oral language. This consists of "literally translating into signs the sequence of words in the oral discourse" (Quer, 2004:190). Let's not get confused: deaf people do not sign using the sign supported variety, but their own SL, although we should be aware of its existence.
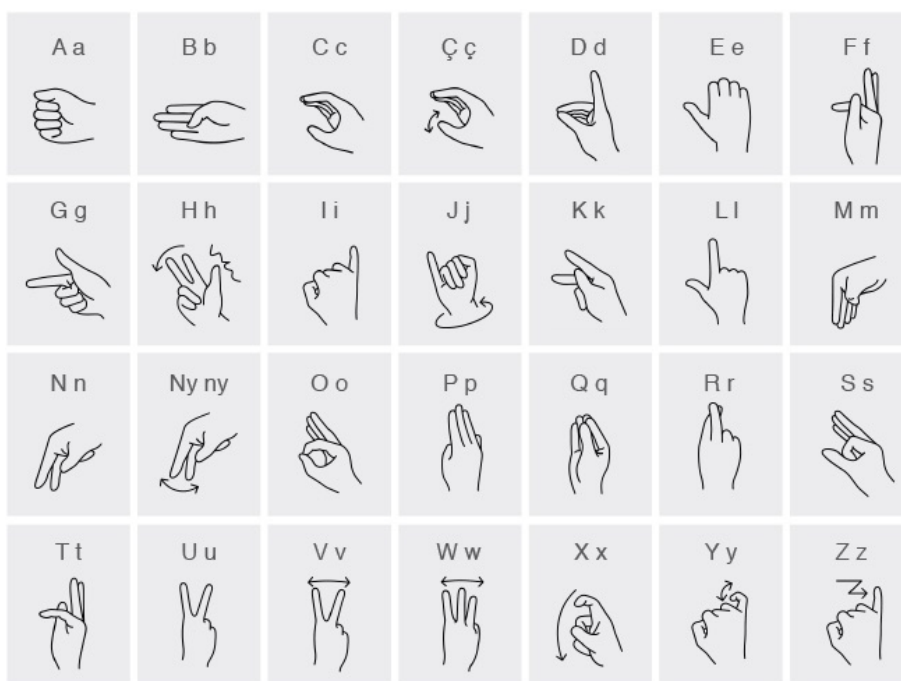
Figure 4: LSC manual alphabet (Jarque et. al 2017)

Sign languages families

For the time being, the Ethnologue list (2020)[4] includes 144 SLs from all over the world. Regarding their classification into sign language families, Zeshan (2004) points out that, in the same way as with SpLs, "relationships between SLs can be of two types: genetic and contact-induced". One of the tentative classifications is that of Wittmann (1991), who began the study from a sample of 69 SLs collected by the Etnhologue list in 1988. He grouped the SLs as follows:

- LSF FAMILY. This is the largest family of SLs. It includes the following SLs: Langue des Signes Française (LSF), Lingua dei Segni Italiana (LIS), Langue des Signes Québécoise (LSQ), American Sign Language (ASL), Irish Sign Language (IRSL), Russian LS (RSL), Nederlandse Gebarentaal (NGT), Lengua de Signos Española (LSE), Mexican LS (LSM), Língua Brasileira de Sinais (LIBRAS), Llengua de Signes Catalana (LSC) and Austrian LS (ÖGS). All the SLs largely influenced by ASL are also considered to be included within this family.

- BANZSL FAMILY. It includes the following SLs: British Sign Language (BSL), Australian Sign Language (Auslan) and New Zealand SL (NZSL). The Northern Ireland SL (NIRSL), the Maritime SL and the South African SL are also part of this SL family.

- DGS FAMILY. It includes the following SLs: Deutsche Gebärdensprache (DGS), Polish SL (PJM) and Israeli SL (ISL), although the latter could be derived from the ÖGS and therefore be from the LSF family.

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[4]The current listing is available at the following website: http://www.ethnologue.com/

- JSL FAMILY. It includes the following SLs: Japanese SL (JSL), Taiwanese SL (TSL) and Korean SL (KSL).

- LSG FAMILY. It includes the following SLs: Lyon LS (LSL) and Belgian LS (VGT).

- ISOLATED SLs. There are some SLs considered to be isolated languages, such as: Nicaraguan LS (ISN), Kata Kolok, Adamorobe LS (AdaSL), Al-Sayyid Bedouin LS (ABSL) and Providence LS.

The importance of studying SLs

Studying SLs is as important as studying SpLs. We, as linguists, would like to delve into the basics of language, to further discover more about the language faculty of humans, as well as the language and cognition interface. From a theoretical point of view, it is important to study SLs to discard, provide support to or modify those theories of language that exist before SLs were considered full-fledged languages. The more languages we describe and analyse, the more knowledge we have to show the functioning of language.

Moreover, new data from SLs can help us to develop language theories. All in all, this leads us to a reliable typological research that takes account of the linguistic richness across languages, allowing us to work on generalizations that also include SLs. Cross-linguistic studies will be able to be carried out and favour comparisons with languages of different modalities. Moreover, the fact that SLs operate in another modality is what let us face linguistics from another perspective. We should look into languages with an open and creative mind, thinking out of the limits that were established for vocal-auditory languages and proposing innovative analyse like the one presented in this thesis.

Introduction to Catalan Sign Language

Catalan Sign Language (LSC, *llengua de signes catalana*)[5] is the natural language of gestural-visual modality used by the population of deaf and deaf-blind signing people in Catalonia (the autonomous community on the northeastern corner of Spain). LSC is the language in which signers usually interact with people in their immediate family and social environment. The Catalan Federation of Deaf People (FESOCA)[6] estimates that LSC is used by 25.000 signers, 12.000 of whom are deaf, and 9.000 are native signers.

Contrary to the situation of bilingualism that hearing people live in the Catalan territory, between spoken Catalan and Spanish, the community of signers of Catalonia only uses LSC (apart from spoken Catalan and Spanish). There is no coexistence, indeed, of sign languages in Catalonia. LSC, however, does share its legal status with another sign language in the country: Spanish Sign Language (LSE, *lengua de signos española*). Both LSC and LSE are the sign languages recognized in Spain by the law *Ley27/2007 de 23 de Octubre*, that was approved in 2007 in the Spanish Parliament, and recognizes Spanish sign languages and regulates the means of support for spoken communication for deaf, hearing-impaired and deaf-blind people. The important aspect of this law is that LSC was recognized at the state level. On 30 June 1994, the Catalan Parliament already approved the "Nonbinding resolution on the promotion and dissemination of sign language knowledge" (*Proposició no de Llei sobre la promoció i la difusió del coneixement del llenguatge de signes*) and the

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[5]This term was coined in the late 1980s. Other denominations such as *mimics*, *hands* or *signs* were used before (Frigola 2010:89).

[6]The non-governmental organization *Federació Catalana de Persones Sordes* (FESOCA), founded in 1979, represents the Catalan deaf community and its affiliated associations. It defends the right of deaf associations and individuals to achieve their full participation and integration in today's society.

Catalan Autonomy Law of 2006 (*Estatut d'Autonomia de Catalunya de 2006*) already includes the right to use LSC. This latter step was probably the most decisive one to lay the conceptual foundations for achieving the legal and institutional recognition of the LSC in Catalonia, which happened when the law *Llei17/2010 del 3 de juny*[7] was passed unanimously by the Catalan Parliament. After the law was approved, *Institut d'Estudis Catalans* (IEC), became the normative authority of LSC. IEC is also the institution that promotes its research and should set its standard variety.

LSC is classified within the French Sign Language family (Wittmann 1991), but its transmission to Catalonia could have happened very fast and been very early, so its current relationship with French Sign Language (LSF) is not evident and is not easy to demonstrate. LSC is so significantly differentiated from LSE that mutual intelligibility becomes somewhat difficult. According to the study carried out by Parkhurst & Parkhurst (2007), LSC and LSE can be considered two separate languages. This conclusion is reached based on three different criteria: intelligibility, lexical similarity and linguistic attitudes. Other factors, such as the history of the deaf community, patterns of contact, demographics, national politics and geography, point to this very same conclusion. In 1985, what we can consider to be the very first lexicon of LSC, entitled *Lenguaje de signos manuales* (Language of Manual Signs; Perelló & Frigola 1985) was published. It was not until 2005 that the first LSC Grammar appeared: *Gramàtica bàsica de la llengua de signes catalana*; and the literature on its scientific research became more extensive.

Basic word order in LSC is SOV, even though there can be instances of SVO utterances which may be in part due to the influence of other languages. Like all living languages, LSC does not remain isolated and

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[7]Also known as *Llei de la llengua de signes catalana* (Law of the Catalan Sign Language).

interacts with other sign languages, as well as the spoken languages (SpLs) of the area (Catalan and Spanish). Therefore, it evolves constantly and incorporates new concepts and signs in accordance with today's knowledge society and communication.

LSC has been consolidating a communicative linguistic structure closely related to its geographical, historical and cultural environment. As any other sign language, it fulfills all the possible communicative functions and, as a natural language, possesses some characteristics that make it unique and distinguish it from other languages.

Notation

Some of the examples presented in this research were videotaped and some of them appeared and were discussed during the conversations with the informants. Important information about LSC polar interrogatives was identified and the most relevant data was transcribed using the annotation glossing system. Thus, word order, among other characteristics, is reflected. It is important to mention that glosses are approximate transcriptions, since the meanings of signs do not fully overlap with those of the words used in glossing. Nonmanual marking is also reflected by a line over one or more of the signs of a structure: the length of the line represents its scope.

PART I: DEFINITION

What is a question?

Language is our universal means of communication. We humans, social animals by nature, seek for interaction with other individuals, and language allows us to do so. Whenever we communicate, it is with a purpose, our words are uttered with an intent, a message we would like our interlocutor to understand. Language can be used for innumerable purposes, to explicitly bring any of our countless intentions into life: we can give information, report information, ask for information, get someone to do something, we can give permission, offer something to someone, express amazement or disappointment, make suggestions and promises. And this is just a glimpse at the myriad of communicative functions that language can fulfill. There is no surprise that our languages have, therefore, developed unique forms to communicate those specific intentions, an effective way to make our messages clearer and easier for our interlocutor to interpret.

Asking questions constitutes one of the core functions that any language is capable of serving. It is no wonder, then, why questions have their dedicated form in languages. But, what exactly is a question? Is it just a mere string of words realizing a specific construction? How would one define its meaning? Luckily, I am not the first one who questions herself about questions. The following chapters try to answer the question that gives this chapter its title by looking at the previous linguistic work that has been carried out from different linguistic perspectives.

1. The function of questions

Questions can be pragmatically defined by the function they have in languages. The basic function of a question is the one of requesting information. Questions, therefore, expect an answer from the addressee as their felicity condition. That is exactly why asking is considered to be a directive speech act in Searle's (1969, 1975) speech act theory: by asking a question we are trying to make the addressee to do something, i.e. provide an answer to it. If we do not get that answer, the speech act of questioning has not been fulfilled. Depending on what kind of information is sought, we can distinguish different types of questions: content questions, polarity questions and alternative questions. The speech act of questioning can actually be performed without uttering a question; languages offer other possibilities to elicit information from the addressee, for example, through a command. Likewise, questions may have other functions in language, in addition to the conventional one of requesting information.

The following sections define questions within the pragmatic domain. Section 1.1 explicates the basic function of questions from the point of view of speech act theory. The different types of questions are classified and defined in section 1.2, considering the particular piece of information the speaker is lacking and expecting as an answer. In section 1.3, other pragmatic functions that questions may have are discussed.

1.1 Questions as speech acts

Whenever we engage in a communicative situation, any time we pronounce an utterance, we are actually performing an act. Austin already stated that in *How to do things with words* (1962), where he coined the contemporary use of the terms *locutionary*, *illocutionary* and *perlocutionary act*:

- LOCUTIONARY ACT. The actual utterance one pronounces and its apparent meaning. It encompasses all the acts intrinsic to the process of uttering: phonetics, phonology, morphology, syntax and truth-conditional semantics.

- ILLOCUTIONARY ACT. The intended meaning of the utterance that one pronounces, the key act of intentional communication.

- PERLOCUTIONARY ACT. The consequence(s) or resulting effect(s) of the locutionary and illocutionary acts.

Searle (1969), who once was Austin's student, reasonably declares that these three kinds of acts are performed simultaneously whenever we make an utterance. Together, they constitute the act of "saying something" (Fig. 1.1). The performance of a locutionary act involves an illocutionary act of a conventional force (*illocutionary force*) and the achieved effect of the latter is the perlocutionary act. By pronouncing an utterance, we are, therefore, engaging in a *speech act*. A speech act serves an specific function in a communicative situation once it is performed. Thence the question that arises is quite complex: in how many speech acts can one engage by "saying something"? Or, in other words, how many ways of using language are there? In an attempt of answering these questions, Austin (1962) concentrates on the force of illocutionary acts to provide a classification of the basic categories of speech acts. Illocutionary acts have

ACT (A) OR LOCUTION
He said to me 'Kiss her!' meaning by 'kiss' *kiss*
and referring by 'her' to *her*.

ACT (B) OR ILLOCUTION
He urged (or advised, ordered, &c.) me to kiss her.

ACT (C. *a*) OR PERLOCUTION
He persuaded me to kiss her.

ACT (C. *b*) OR PERLOCUTION
He got me to (or made me, &c.) shoot her.

Figure 1.1: Example of the act of "saying something" (Austin 1962:101)

the effect of "bringing about the understanding of the meaning and of the force of the locution" (Austin 1962:116) and if this effect is not achieved, if the audience do not understand the message in the sense it is said, the illocutionary act is not successfully performed and, consequently, there is no conventionalized response to that effect. That means, no perlocutionary act can be carried out. Austin (1962) presents a five-way taxonomy of illocutionary acts, classified according to their illocutionary force:

- VERDICTIVES. They provide a verdict, an exercise of judgment. Examples of this class are: grading, rating, assessing, estimating, diagnosing, analyzing.

- EXERCITIVES. They exercise powers, rights or influence. Examples of this class are: appointing, voting, ordering, urging, advising, warning.

- COMMISSIVES. They commit the speaker to doing something. Examples of this class are: promising, declaring, agreeing, planning, consenting, opposing.

- BEHABITIVES. They adopt an attitude, most related to social behavior. Examples of this class are: apologizing, congratulating, commending, condoling, cursing, challenging.

- EXPOSITIVES. They clarify reasons, arguments and communications. Examples of this class are: asking, replying, arguing, illustrating, assuming, postulating.

Although Austin (1962) already advances that this classification is not definitive, but rather tentative, as it could serve as a basis for discussion, it drew criticism. Strawson (1964) considers that most of the acts that Austin describes in his taxonomy mostly occur in highly formalized communicative contexts. Common speech acts of everyday communicative situations can, in fact, be better explained through Gricean means: we rely on the ability of our addressee to understand our intention to, this way, achieve the communicative goal. Searle (1969), following Austin (1962), considers that it is actually possible to provide a classification for speech acts according to their conventional illocutionary force, which he suggests is the basic unit of human linguistic communication: "illocutions are part of languages as opposed to particular languages" (Searle 1975:345). But there are no unlimited uses in language; this is a false notion created from the fact that there is no clear criterion to delimit those uses. His taxonomy of the fundamental classes of illocutionary acts is related to Austin's one, but Searle assesses its inadequacies. He suggests that differences in illocutionary verbs can only serve as a good guide to differentiate illocutionary acts: two non-synonymous verbs do not necessarily correspond to two

distinct illocutionary acts. Therefore, differentiating between illocutionary acts cannot be based on a merely lexicographic dimension. Moreover, he considers that speech acts categories should be mutually exclusive, and that the distinct dimensions that Austin uses to create the categories in his proposal are unclear in this respect. He also pays attention to the fact that semantic differences are likely to have syntactical consequences. Searle (1975), then, proposes a categorization of speech acts which is based on clear distinction principles. The classification is substantiated by, according to him, the three most important linguistically significant dimensions of variation between illocutionary acts: the illocutionary point (i.e. the point or purpose of the type of act), the direction of fit (i.e. the way the propositional content of the illocution is related to the world) and the expressed psychological state (i.e. the attitude a speaker expresses to the propositional content of any illocutionary act). Searle's taxonomy provides five basic categories of speech acts, directives being the one that includes the activity of asking:

- REPRESENTATIVES (or ASSERTIVES). They convey the belief that the expressed proposition is true. Different kinds of representatives are: suggesting, insisting, swearing, boasting, complaining, concluding.

- DIRECTIVES. They are attempts by the speaker to get the addressee to do something as a response. Different kinds of directives are: asking, ordering, requesting, praying, inviting, advising, begging.

- COMMISSIVES. They commit the speaker to some future course of action. Different kinds of commissives are: promising, planning, vowing, betting, opposing.

- EXPRESSIVES. They express the psychological state of the speaker

about a situation. Different kinds of expressives are: thanking, congratulating, welcoming, apologizing, condoling, deploring.

- DECLARATIONS. They change the state of the world in an immediate way. Different kinds of declarations are: declaring, appointing, nominating, marrying, baptizing.

Through Searle's (1975), more refined, classification, one is able to account for the numerous functions of language, which are now delimited to five simple notions: telling people how things are, getting people to do something, committing ourselves to doing something, expressing our feelings and attitudes, and bringing about changes with our utterances. Language, however, allows us to actually do more than one of these things "at once in the same utterance" (Searle 1975:369). From all the language functions that we have seen so far, traditionally, three basic functions have been distinguished that seem to be universal to all known languages (one of them being the speech act in which we are interested at): to pass on information, to glean information and to issue commands. The following example (1.1) is based on the one proposed by Searle (1969:22), when thinking about expressions and meanings that language can serve, and it easily illustrates how we perform speech acts with language.

(1.1) a. Marina laughs frequently.
       b. Does Marina laugh frequently?
       c. Marina, laugh frequently!
       d. Would that Marina laughed frequently.

It is clear for any reader who is competent in English language that the intention of the speaker (illocution) in (1.1), expecting a specific response from her addressee (perlocution), is different in each example (1.1a-1.1d).

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Therefore, the speech act that the speaker is performing in each example is distinct. According to Searle's taxonomy (1969, 1975), the speaker is making an assertion in (1.1a), a representative illocutionary act; asking a question in (1.1b) and giving an order in (1.1c), both directive illocutionary acts; and expressing a wish or desire in (1.1d), an expressive illocutionary act. Accordingly, that leads the speaker to utter sequences of words with distinct characteristics, since we will all agree that the *propositional content* expressed in (1.1a-1.1d) is the same, and only the formal characteristics of the sentences are distinct. Examples (1.1a-1.1c) correspond to the core functions of languages, which have developed specific syntactical constructions to particularly encode those meanings: the declarative, interrogative and imperative sentences (see §3.1). Therefore, the words of a grammatical sentence convey a specific content, determined by the literal meaning of the words, which is usually distinguished from other aspects of meaning that can be expressed by that sentence (illocutionary force). If a mom asks her child to take out the trash and the child response is "It is raining", the message the child is expressing is that "I am not going to do it because it is raining", although the child just literally said that *it is raining*; and that is exactly the propositional content of the sentence, expressed by the *proposition*. A proposition by itself will be considered as communicatively unproductive if being presented without an illocutionary force, it does not represent a move within the language-game[1]. Questions, with the exception of polar questions, however, are believed to represent not propositions but *propositional functions*, since a piece of information is lacking to complete the proposition (indeed, the one

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[1]Philosophical concept coined and developed by Ludwig Wittgenstein in *Philosophical Investigations* (1953), understood as the resulting meaning of language determined by its use. A word or even a sentence will acquire its meaning according to the result of the "rule" of the "game" being played, the language-game.

which is being asked), and, therefore, the speaker cannot express the entire proposition. Searle (1969, 1975) supposes the distinction between the illocutionary force component and the propositional content component of an utterance to provide his classification of speech acts. He analyzes speech acts has having the form *F(p)*, where "the variable 'F' takes illocutionary force indicating devices as values and 'p' takes expressions for propositions" (Searle 1969:31). The illocutionary force, then, shows how the proposition is to be taken. What he classifies in his previously stated taxonomy is the force component 'F' of speech acts. The three basic speech acts (asserting, questioning and ordering) are symbolized by Searle (1969:31) in the following forms:

⊢(p) for assertions, ?(p) for questions and !(p) for orders.

He later redefined these formulations (Searle 1975:354)

⊢↓B(p) for representatives and !↑W(H does A) for directives,

since he distinguishes between classes of illocutionary acts: assertions belong to representatives and questions and orders to directives. Representatives commit the speaker to the truth of the proposition, so they can be assessed within truth values. Its direction of fit is world-to-words and they express beliefs (B that p). A representative illocutionary act is true if and only if its propositional content corresponds to a state of affairs that independently exists in the world. Therefore, an assertion is satisfied under the conditions in which its propositional content represents the world exactly the way it is. The sentence "It is raining" is true as long as the proposition *that it is raining*, is true. The truth conditions of their propositional content. By comparison, the condition of satisfaction of a question is the condition under which it gets an answer. Answerhood is, then, the condition of

satisfaction for questions, just as it is truth for assertions. Directives have, therefore, a direction of fit of word-to-worlds and they express a wish W from the speaker S for the hearer H to do something (H does A). A directive illocutionary act is satisfied if and only if the speaker or hearer makes its propositional content true. These two basic illocutionary acts are then satisfied only under the conditions in which their propositional content corresponds to the actual world.

Consequently, the felicity conditions of the speech act of questioning can be defined as follows (Searle 1969 and Dayal 2016):

SPEECH ACT OF QUESTIONING
Counts as an attempt to elicit information from H.

Speaker questions Hearer about any proposition p iff:
  – S does not know the truth about p
      (or, in the case of a propositional function, S does not
      know the information needed to complete it truthfully).
  – S wants to know the truth about p
      (or, in the case of a propositional function, S wants to
      know the piece of information which is lacking).
  – S believes H knows the truth about p
      (or, in the case of a propositional function, S believes H
      knows the piece of information which is lacking to com-
      plete the proposition truthfully).

Figure 1.2: Felicity conditions of the speech act of questioning

After a question, the addressee is expected to satisfy the request by giving a response, preferably an answer to that question. A response does not necessarily have to be an answer, it can be anything that follows and

relates to what another person has said, that utterance being a question or any other speech act. Questions, therefore, request an answer. Moreover, questions must allow for more than one possible answer; otherwise, the speaker will be aware of the true state of affairs and asking a question would be pointless. Hence, the speaker must not know the answer to the question, must want to know it and must believe that the addressee can, in fact, provide it. Whenever the speaker utters a question under these conditions, it would qualify as a bona fide question.

1.2 Types of questions

Requesting information is, therefore, a basic activity of human communication and questions are prototypically used with the aim to obtain such information. However, depending on the kind of information we are lacking and wanting to elicit from our addressee, we can perform distinct types of questions. Three different types of questions have been commonly distinguished across world's languages: *polar questions*, *alternative questions* and *content questions*.

1.2.1 Polar questions

Polar questions (1.2) are the most basic type of questions and the most widely distributed ones (Sadock & Zwicky 1985). The information requested by this type of question is a confirmation or disconfirmation of the truth of the proposition expressed by the interrogative sentence (see §3.2.1 and §5 to know more about interrogative constructions that languages have to compute polar questions). So it basically seeks a comment on the degree of truth of the questioned proposition (Sadock & Zwicky 1985). The expected answer is typically either *yes* or *no*, although other alternatives or

responses, namely intermediate answers, may be permitted, such as *I don't know*, *maybe*, *perhaps* (Velupillai 2012). This type of question constitutes the topic of the present thesis.

(1.2)   Is it raining?

1.2.2   Alternative questions

Alternative questions (1.3) request information in order to close an open proposition (Krifka 2011). This type of questions provide the addressee with an explicit list of all the possible completions of the open proposition and from which the addressee is supposed to pick one as the correct answer (Haspelmath et al. 2001). The alternatives are considered to be mutually exclusive, so a list consisting only of a proposition and its negation is possible (Sadock & Zwicky 1985). Alternative questions are syntactically considered a subtype of polar interrogative (see §3.2.2), analyzed as a list of coordinated polar interrogatives. However, their meaning is quite similar to the one expressed by constituent questions, since they cannot be answered by *yes* or *no*, but by one of the alternatives given (Haspelmath et al. 2001 and Krifka 2011).

(1.3)   Is it raining or is it sunny?

1.2.3   Content questions

Content questions (1.4) are a nearly universal form of question (Sadock and Zwicky 1985). This type of question creates an open proposition that does not specify all the parts of its description (Krifka 2011). As opposed to alternative questions that specify all the alternatives in an exhaustive way, content questions introduce the alternatives in an open-ended way

(Sadock and Zwicky 1985). So, if we are in need to get more elaborated information than simply a *yes* or *no*, we ask a content question.

(1.4) What is the weather like?

We have seen so far that distinct types of questions can be distinguished depending on what kind of information is requested. Essentially, three distinct types of questions can be identified: polar questions, which are used to ask whether a proposition or its negation is true; alternative questions, which are used to query which element of a set of alternatives is true; and constituent questions, which are used to inquiry which values instantiate the variables of an open proposition (Haspelmath et al. 2001). How we find these questions shaped in grammar is a topic that will be addressed later on (see §3.2.1 for SpLs and §5 for SLs).

1.3 Question basic and derived pragmatic functions

The basic pragmatic function of questions is expressing a lack of information of a specific type, in order to get the answer from the addressee. According to Krifka (2011) all the other uses a question can comprise can be derived from that core meaning, which is its most conventional use.

Searle (1969) already made a distinction between *real questions* and, what he called, *exam-questions* when stating the felicity conditions of the speech act of questioning. He claimed that *exam-questions* (1.5) cannot fall under the same conditions as *real questions*, since the speaker does not want to know the answer, but to find out if the addressee knows the answer.

(1.5) What is the name of our galaxy?

Our knowledge of the world makes us assume that the speaker, in this case the examiner, already knows the answer to the question because he knows more than the examinee, and it would automatically be odd to ask a question if one already knows its answer. This question, therefore, cannot be treated as a request of information, but as a request for the addressee to display some knowledge. Similarly, *guess questions* (1.6) also fail to fit the conditions of the standard speech act (Fig. 1.2). As in *exam questions*, the speaker already knows the answer; however, unlike *exam questions*, the addressee does not. The only thing the addressee can do is making a guess.

(1.6) Which is my favorite constellation of all universe?

Wilson & Sperber (1988) also call attention to two other uses that questions may have that do not meet the conditions of such speech act. *Expository questions* (1.7), which direct the attention of the addressee to the answer that the speaker is going to give herself, or *speculative questions* (1.8), which are considered not to have an answer for the time being, are examples of questions that do also take on a special character.

(1.7) How many planets does the Solar System have?
       (To an audience, to arouse their interest before actually exposing the names of the planets while counting them).

(1.8) What is the best way to get to Mars?

Expository questions can be easily treated as offers of information, rather than requests for it. *Speculative questions*, for their part, should not be treated as requests for information either: the speaker does not know the answer, neither does the addressee, and the speaker is probably very aware of that. In fact, the speaker probably knows that no one is actually able to provide an accurate answer to the question. I have already

stated that there is no point in asking a question if we are not getting an answer. Hence, the conditions of the speech act of questioning are not met. Likewise, *rhetorical questions* (1.9) do not oblige the addressee to provide an answer.

(1.9)   Will we someday be able to know what lies beyond the universe?

Rhetorical questions can be treated as expressions of the speaker's interest towards a peculiar issue. *Surprise questions* (1.10) are also treated as an expression of the speaker's, in this case, incredulity towards a previous statement.

(1.10)   A: George became an astronaut.
           B: George became WHAT? I thought he was afraid of flying.

Surprise questions, which make explicit that what one just heard was surprising, are therefore triggered by that previous statement. That is also the case of *echo questions* (1.11), triggered by a previous statement too, which function as requests for repetition, since the speaker has been unable to hear or understand a part of that previous statement (indicated in (1.11) with small caps).

(1.11)   A: George became an ASTRONAUT.
           B: George became WHAT? I could not hear you.

Be aware of the difference between examples (1.10) and (1.11). Whereas in (1.10) the speaker is expressing a contradiction between the new information and her previous knowledge, in (1.11) she is just expressing a petition for the addressee to repeat what she was unable to hear. Krifka (2011) also emphasizes other questions whose function cannot be treated as the standard of the speech act of questioning. *Deliberative questions*

(1.12), for their part, do not seek a fact as their favored answer, but rather a directive, since they are inquiries of what one should do.

(1.12)   A: Where should I go to better see the meteor shower?
         B: Go to the beach! There is no light pollution there.

There are other questions that are just asked to confirm the information posed in the proposition (1.13). The information is already known by the speaker, which is just seeking for the confirmation of its truthfulness. Questions tags are usually used for this purpose.

(1.13)   Saturn has 82 moons, right?

Self-addressed questions (1.14) do not fit in either with the speech act felicity conditions. What is the point of asking a question to yourself? One can only do that in case she simultaneously possesses and lacks the information to answer it. *Self-addressed questions* can therefore be treated as reminders.

(1.14)   Which were the planets in the solar system that had rings? I used to know that!

Some questions can function as commands (1.15), since they expect an action from the addressee as their favored answer.

(1.15)   Could you look through the telescope now? You are missing the lunar eclipse!

Neither of the questions presented above meet the conditions stated for the speech act of questioning. This show us that there seems to be a conventional meaning use for those sentences, but they can be used in other contexts supplying the functions that are conventionalized by other

speech acts. Be that as it may, questions can cover a wide range of uses in language and pragmatics deals with these functions that questions serve in communication.

1.4   Summary

In this chapter, questions have been defined within the pragmatic domain. The basic functions of questions have been explained from the perspective of speech act theory. Later, a first classification of questions has been presented and defined according to the kind of information the speaker is lacking and wanting to elicit from the addressee. Next, polar questions, alternative questions and content questions were described. The last section focused on other pragmatic functions that questions may fulfill, rather than expressing a lack of information. Next chapter defines questions within the semantic domain.

2. The meaning of questions

The meaning of a question was once identified with its illocutionary force. The speech-act semantic program theorized force as a semantic category: to know the potential speech acts a sentence form (§3.1) can perform means to know its meaning. However, as I have shown in a previous section (§1.3), a specific sentence can serve more than one conventional function in language; and, therefore, identifying the meaning of a sentence by its illocutionary force potential should no longer be a valid option. Illocutionary force seems to be more accurately described as a pragmatic category. On account of that, how can the question meaning be semantically characterized? Questions request answers and, as we will see, the linguistic form in which those answers are presented constrains the range of sentence-radicals in which questions can occur. The meaning of interrogative sentence-radicals can be represented within the truth-conditional semantics framework. Semantics are therefore responsible for providing an explanation for the systematic relation between the interrogative form and the previously presented speech act of questioning. The following sections deal with the different representations linguists have been up to capture this relation.

2.1 Questions as semantic objects

Searle's (1969, 1975) theory contends that speech acts comprise two distinct components: the force (how what is said is expressed) and the content (what is said). The fact that the force of a speech act does not determine its content and vice versa, argues in favor of distinguishing these concepts. One cannot infer the force of the utterance "She will write a thesis" just by reading it, just as one cannot deduce what someone has promised to do just by having the information that that someone has made a promise. A very similar distinction was already formulated by Stenius (1967), who contrasts two concepts that can be certainly compared to the previously mentioned ones: *modal element* and *sentence-radical*.

While the concept of sentence-radical is easily connected to the one introduced as propositional content, since it "signifies the descriptive content of the sentence" (Stenius 1967:254), the modal element is not precisely equivalent to the concept of illocutionary force. This latter one is defined as the *mood* of the sentence, which concerns those aspects of meaning that contribute as a conventional indicator of force. This mood concept must be differentiated, for instance, from that regarding a traditional morphosyntactic category. Stenius (1967) cleverly uses the terms sentence-radical and modal element as an analogy to chemistry. In this area of knowledge, a radical denotes a group of atoms that need to act together as a unit, since they are not capable of surviving independently. The modal element is akin to a functional group, a compound of those atoms that now owns especial properties. Just as a chemist is able to isolate radicals common to various functional groups, linguists can isolate sentence-radicals common to various modal elements. Stenius (1967:254) illustrates this analogy with an example in his work. I am reproducing the intention of his example with my previous example (1.1), now reproduced

in (2.1) only with the three considered basic speech acts.

(2.1)   a.   Marina laughs frequently.

   b.   Does Marina laugh frequently?

   c.   Marina, laugh frequently!

   a'.   It is the case that Marina laughs frequently.

   b'.   Is it the case that Marina laughs frequently?

   c'.   Let it be the case that Marina laughs frequently.

The sentence-radical is common among the three examples (2.1a-2.1c) and is represented by the *that*-clause in (2.1a'-2.1c'). The modal element, the element that provides specific properties to the "atoms" that conform the functional group, is signified by what stands in front of the *that*-clause. Stenius (1967:254) symbolically renders the examples in (2.1) as follows:

(2.2)   a.   I(p)

   b.   ?(p)

   c.   O(p)

The symbol p, also used for Searle (1969) in his notation, represents for Stenius (1967) the sentence-radical, that denotes a *semantic object*, which corresponds to a proposition, in these examples, "Marina laughs frequently". The sign I symbolizes for Stenius the modal element of the indicative mood, ? symbolizes the modal element of the interrogative mood, and O the modal element of the imperative mood. As one can see, the sentence-radical, its meaning, remains the same in the three examples, regardless of the mood in which it is presented. In order to characterize the meaning of a question, Stenius (1967) starts from Wittgenstein's idea "Don't ask for the meaning, ask for the use" (1953:138). From his point of view, linguists should establish semantic rules that record the current

usage of language. However, he is aware that "language possesses no rules but only occasional temporary uses" (1967:258). In spite of this, he brings awareness of the fact that communication without rules would be virtually impossible. Stenius considers, then, that every linguistic element has its own rules, which enable to make a correct usage of it. The meaning of a linguistic element is, therefore, indicated by its rules. In view of this, he posits different semantic rules which define the conditions under which the modal element of each mood gets its meaning and corresponds to a correct move within the language-game. Stenius (1967) is aware that there exist different kinds of questions (§1.2), but he only considers polar questions in his theory. The mood ? describes "a feeling of uncertainty or curiosity in the speaker as to whether a certain state of affairs obtains or not" (Stenius 1967:255). This is the semantic rule he formulates for questions:

 (2.3)   Answer the question by "yes" or "no", according as its sentence-radical is true or false.

However, this semantic rule does not happen to work for the multiple pragmatic functions a question may have (§1.3) and this poses a serious problem for the speech-act semantic account. What happens when a sentence form does not meet the use conventionally assigned to it? Moods are later described as "semantically primitive" (Wilson & Sperber 1988) as they are rules considered to only provide a pragmatic interpretation.

Let us focus now on the concept of sentence-radical. Although one can assume from example (2.1) that (p) remains the same regardless of the mood in which it is presented, Stenius (1967:267) has his doubts: "It may perhaps be objected that [...] the content of the sentence-radical is not quite the same, irrespective of the modal sign". Moreover, I have to assume that he only took into account polar questions. Searle (1969:31) assumes that questions, with the exception of polar questions, denote

propositional functions and not complete propositions as they lack some kind of information (compare the examples in 2.4).

(2.4) a. He did it. = (He did it)

b. Did he do it? = ? (He did it)

c. Why did he do it? = ? (He did it because X)

Sentence-radical of polar questions may, therefore, match with the one of assertions; however, it does not correspond to that of content questions. And what about alternative questions? Do the questions in (2.5) share the same sentence-radical?

(2.5) a. Does Marina laugh frequently?

b. Does Marina laugh or cry frequently?

c. What does Marina frequently do?

Asking a question is considered to be triggered by an information gap. I already classified questions depending on the information sought (§1.2), so different information gaps are represented by different types of questions. Determining the semantic meaning of questions will, therefore, rely on the knowledge we have of their respective acceptable answers. The sentence-radicals in which the acceptable answers to the respective questions occur, in fact, constrain the range of sentence-radicals in which questions can be presented. The relation between these sentence-radicals has been explained through the truth-conditional semantics framework.

2.2 Types of answers

It was established in section 1.2 that there are two basic types of questions, that is, polar questions and content questions. The information gap of the

former corresponds to the truth-value of the proposition, whereas in the latter, it corresponds to some piece of information. There is yet another type of question, alternative questions, the information gap of which is between the two previously explained. Any theory of questions should pay attention to these established relations between questions and answers. Answers are assertions and both, interrogatives and assertions, are based on sentence-radicals. Questions need those assertions as their answers. Hence, what is the relation between the sentence-radicals in which answers and questions may occur?

The sentence-radical of an assertion represents an appropriate answer to the question if it gives completion to the propositional function denoted by the question. So, the sentence-radical of an assertion provides the lacking pieces of the information gap. Establishing this relation is an appealing strategy to study the semantics of questions, since there are already well-developed semantic theories for assertions.

Krifka (2011:1750) figures out that the answers in which we should be interested to provide a theory for the semantics of questions are those defined as "congruent" answers. Let us make it clearer with example (2.6).

(2.6)   Who is a worker in which restaurant?

     a. Irene is a part-time cook in La Trattoria from Barcelona.

     b. Irene is a worker in La Trattoria.

     c. Irene is a worker in the franchise La Trattoria.

     d. Irene is a worker in a restaurant.

Answers (2.6b) and (2.6c) are congruent answers to the question (2.6). Answer (2.6a) gives more information than requested, since it specifies the kind of work the person does and where the restaurant is, whereas (2.6d) provides less information than is required. However, there are different

types of answers that can be accepted as congruent. At least there are three relevant distinctions for the appropriateness of answers: *direct* vs. *indirect* answers, *short* vs. *full* answers and *partial* vs. *complete* answers (Dayal 2016:14).

2.2.1   Direct vs. indirect answers

Direct answers (2.7a or 2.8a) are those which are included in the denotation of the question. An indirect answer (2.7b or 2.8b) counts as a congruent answer if one can actually infer the direct answer from it.

(2.7)   Have you seen the apron?
   a. Yes, I have seen it.
   b. Dad is cooking.

(2.8)   Where is mom?
   a. Mom is in the garden.
   b. Mom is watering the plants.

Both the indirect and direct answer are acceptable in examples (2.7–2.8) and a theory of questions must account for this. Dayal (2016) considers that a good way to approach this issue, in principle problematic, is to define the question meaning in terms of its relation with the direct answer; the relation of the question with the indirect answer will be defined by pragmatic means (contextual knowledge and conversational background). Therefore, questions (2.7) and (2.8) denote the propositional content of their respective direct answers (2.7a) and (2.8a). Whereas (2.7b) and (2.8b), given the previous knowledge of those involved in the conversation and the actual conversational context, provide the hearer with the possibility of reasonably infer the direct answers to the questions.

2.2.2 Short vs. full answers

Short answers (2.9a) only specify the open parameter of the sentence-radical of the question. Full answers (2.9b), for their part, represent the whole propositional content of the question denotation.

(2.9)   What is Irene making?

    a.   A cake.

    b.   She is making a cake.

Again, both answers are acceptable to answer the question (2.9). For a theory of questions, this represents making a semantic decision: is the question denoting the whole propositional content of the full answer or, on the contrary, only the unspecified variable of its propositional function? Dayal (2016) proves that treating the short answers as elliptical is a better strategy. Having short answers as denotations would mean to have different types of denotations for polar and content questions or for questions with multiple wh-words (as 2.6 in this section), for example. And according to Dayal (2016) there is no evidence in grammar that would prove that these distinctions are actually existent. Moreover, a theory of questions that treat them as denoting their full answers "is theoretically appealing because it provides a uniform treatment for the various question types in both direct and embedded contexts" (Dayal 2016:15).

2.2.3 Partial vs. complete answers

A partial answer (2.10a) still leaves the question denotation unspecified, whereas a complete answer (2.10b) resolves the information gap entirely.

(2.10)   Who is having dinner with us?

a. Well, Marina is having dinner with us... I don't
    know about Irene.

b. Marina is having dinner with us, (but not Irene).

Answers (2.10a) and (2.10b) are both direct answers, however answer (2.10a) is considered a partial answer, since it does not give completion to the question denotation. It certainly provides relevant information, but not a complete answer. (2.10a) can be compared to (2.10b), which, the second part of the sentence being implicit or explicit, conveys a complete answer. According to Dayal (2016), partial questions should also be taken into account for the semantics of questions.

From this perspective, the semantics of questions is, therefore, developed regarding the possible congruent answers, which are the ones that specify explicit or implicitly the open variables of the sentence-radical of questions. The different types of answers that have been exposed here should be considered in any theory of questions.

2.3   Questions as truth-conditional objects

The meaning of interrogative sentence-radicals has been represented within the truth-conditional semantics framework. In truth-conditional semantics, in order to know the meaning of a sentence, one must know the conditions under which that sentence is true:

(2.11)   SENTENCE MEANING
          = to know the conditions under which that sentence is true.

I already stated that in previous sections: the sentence "It is raining" is true as long as the proposition *that it is raining*, is true.

(2.12)   It is raining.

      a.   Is true iff it is raining,

      b.   and false otherwise.

An assertion, posed in a declarative sentence-radical, is satisfied under the conditions in which its propositional content represents the world exactly the way it is. So it can be judged as true or false. However, questions are not assertions and they do not adjust to truth values: a question cannot be judged as true or false.

(2.13)   Is it raining?

Question in (2.13) is neither true nor false. This presents a problem: how can then the meaning of a question be represented within the truth-conditional framework? Searle (1975) already assessed the meanings of questions within the speech act theory and considered that answerhood was their condition of satisfaction. Answers are, therefore, the solution. The most well-accepted proposal for questions within truth-conditional semantics is that knowing the meaning of a question equals knowing the conditions under which it gets an answer:

(2.14)   QUESTION MEANING
      = to know the conditions under which that question is answered.

And the most important thing: answers are assertions, posed in declarative sentence-radicals, and they can be judged as true or false. Linguists have tried to propose an accurate meaning for questions, logical, intuitive and appealing enough to work within the widely accepted truth-conditional semantics framework. Therefore, three representation frameworks or theories for question meanings have been put forth: the embedding approaches, the propositional approaches and the categorial approaches.

2.3.1 Embedding approaches

These approaches play an important role in the development of the successive approaches. Embedded questions can be treated as constituents of declarative sentences (see §3.1), which present assertions, which, in turn, can be assigned a true or false value. The general idea of this approach is that questions are always embedded and it is the whole expression that gets assigned a truth-value.

2.3.1.1 Performative embedding approach (Lewis 1970)

Lewis (1970) took the performative predicates as his starting point. He considered that questions are embedded under a performative predicate, such as I-ASK, which is covert (2.15).

(2.15)   Where is Marina?
         I-ASK [where is Marina]
         'I ask where is Marina' is true iff I ask where is Marina.

However, this idea poses some problems. First of all, this approach does not provide a meaning for the embedded part, which is in fact the actual question in which we are interested at. Moreover, this approach considers that simply by the fact of being uttered, the question is automatically assessed as true; whenever one performs the act of questioning, the question is judged true. However, to approach an assertion (2.16) in the same way, leads to a problem.

(2.16)   Marina is here.
         I-SAY [Marina is here]
         'I say Marina is here' is true iff I say that Marina is here.

As one may infer, the fact that the assertion is judged true just for being uttered creates a major problem. As much as I say that 'Marina is here', it is not automatically true that Marina is here. The assertion would come out as trivially true only for the fact of performing an act of assertion, and that does not justify its truth-value.

2.3.1.2 Imperative-epistemic embedding approach (Hintikka 1974, 1976, 1978)

Based on the idea that questions may arise as direct or root questions (*Is Irene cooking? What kind of cookies did she make?*) or as indirect or embedded questions (*whether she is cooking*, *what kind of cookies she made*), and that any theory of questions should relate the meaning of both types of questions, Hintikka's game-theoretical analysis tries to assimilate the meaning of direct questions to the one of indirect questions. His technique, therefore, reduces the meaning of questions to the meaning of assertions by means of paraphrasing:

(2.17)   Is Irene cooking?
              = I ask you (to tell me) whether Irene is cooking.

(2.18)   What kind of cookies did she make?
              = I ask you (to tell me) what kind of cookies she made.

The direct question is semantically equivalent to an assertion that contains the corresponding indirect question. He interprets questions as requests of information or knowledge. Therefore, questions may be paraphrased as expressions which consist of the operator BRING-IT-ABOUT (imperative operator) and the *desideratum* of the question, presented under the operator I-KNOW (epistemic operator).

(2.19)　Is Irene cooking?
　　　　BRING-IT-ABOUT
　　　　if Irene is actually cooking　　　I-KNOW [Irene is cooking]
　　　　and
　　　　if Irene is not actually cooking　I-KNOW [Irene is not cooking]

If it is the case that Irene is cooking, the meaning of the question in (2.20) equals (2.20a), and if it is the case that Irene is not cooking, the meaning of the question in (2.20) equals (2.20b).

(2.20)　Is Irene cooking?
　　　　a.　BRING-IT-ABOUT [I-KNOW [Irene is cooking]]
　　　　b.　BRING-IT-ABOUT [I-KNOW [Irene is not cooking]]

Hintikka's approach is appealing for several reasons. First of all, questions are described as denoting (embedded) propositions, which are a familiar semantic object. Moreover, the analysis entails that the meaning of a question under epistemic verbs is the same as the meaning of an assertion with an epistemic verb that syntactically combines with a *that*-clause.

(2.21)　You know who is cooking.
　　　　= Any person is such that if she is cooking, then you know her
　　　　is cooking.
　　　　$\forall x$ [x is cooking] [you know that x is cooking]
　　　　or (depending on pragmatics)
　　　　$\exists x$ [x is cooking] [you know that x is cooking]

However, this aspect, initially seen as an attractive feature of the theory, also involves the major weakness of the analysis. There are verbs which do not embed propositions, so it is not clear how a question embedded under those verbs is to be analyzed according to this proposal.

(2.22)   I wonder/ask/investigate whether Irene is cooking.
         # If Irene is cooking then I wonder/ask/investigate that she is cooking.

It is true that sentences involving a question embedded under a verb that do only embed this kind of structure, can also be paraphrased to fit Hintikka's paradigm. So verbs like *wonder*, *ask* or *investigate* might be replaced by their meanings "wish to know", "ask someone to tell" or "attempt to find out". Therefore, sentences in (2.23) are supposedly equivalent to sentences in (2.24).

(2.23)   a.   I wonder whether Irene is cooking.
         b.   I asked what kind of cookies did she made.
         c.   I investigated who had been cooking.

(2.24)   a.   If Irene is cooking then I wish to know that Irene is cooking and if Irene is not cooking then I wish to know that Irene is not cooking.
         b.   Any kind of cookies is such that if she made them then I asked someone to tell me that she made them.
         c.   Any person is such that if s/he had been cooking I attempted to find out that s/he had been cooking.

But this necessary decomposition of the meanings of those verbs requires to have a very long and complex covert structure, which contradicts the first attractiveness of the analysis. Moreover, this lexical decomposition does not successfully work for verbs such as *depend on* or *be related to*. It is neither clear how the analysis would deal with sentences that feature two indirect questions, one of them being in the subject position, and only one verb (2.25).

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(2.25)   What kind of cookies are prepared depends on who is cooking.

This approach is, moreover, treating questions in terms of imperatives, which are also difficult to characterize within truth-conditional semantics.

2.3.2   Propositional approaches

The general idea of these approaches is that a question maps to the set of propositions in the question set that correspond to its answer(s). This approach models the meaning of questions by taking the full propositional answers as basic. Hamblin (1958) postulates that an answer to a question is a statement, therefore, knowing what counts as an answer to a particular question equals knowing the meaning of the question itself. The idea is that questions characterize the conditions under which they are answered.

2.3.2.1   The original proposal (Hamblin 1958, 1975)

Hamblin (1958, 1973) considers that a question denotes a set of statements that count as possible answers to that specific question, i.e. the *Answer-Set*. Statements are considered to be possible answers to that question regardless of whether they are true or false; they count as long as they are addressing the question.

In Hamblin's propositional approach, polar questions are expressed as a combination of a proposition and its negation (2.26).

(2.26)   Is Irene cooking a cake? = whether Irene is cooking a cake
        {Irene is cooking a cake, Irene is not cooking a cake}
        = $\{\lambda x[\text{cook}_x(\text{a cake})(\text{Irene})], \lambda x \neg[\text{cook}_x(\text{a cake})(\text{Irene})]\}$

However, what made Hamblin's proposal influential was his idea of *wh*-words denotation. Consider first the derivation of the truth-conditions

of a declarative sentence (2.27). A proper name like *Marina* denote an individual (2.27a) and one-place predicates like *slept* denote functions from individuals to truth-values (2.27b). If both are composed (by function application and lambda conversion), we arrive at the truth-value: true iff Marina slept and false otherwise.

(2.27) Marina slept

      a. $[\![$Marina$]\!] = m$

      b. $[\![$slept$]\!] = \lambda x[\text{slept'}(x)]$

      c. $[\![$Marina slept$]\!] = [\![$slept$]\!]([\![$Marina$]\!])$

$$= \lambda x[\text{slept'}(x)](m)$$
$$= \text{slept'}(m)$$

Coming back to interrogatives, the main idea is that *wh*-words denote a set of propositions: *who*, for example, denote a set of individuals. Now, this poses a problem, how will it be possible to compose *who* with a one-place predicate like *slept*? *Who* is not an individual, but rather a set of individuals; so it is not of the right type. To solve this issue, Hamblin proposes a new compositional rule that does not take *who* as the input, but all the individuals contained in its denotation. This derives a set of propositions, each member of the set being the result of a function application of one of the individuals contained in the set of the *wh*-word and the predicate. This set of propositions would be expressed by the congruent answers of the question.

(2.28) Who slept?

      a. $[\![$who$]\!] = \{x : \text{person'}(x)\}$ (e.g. {Irene, Marina, Sara})

      b. $[\![$slept$]\!] = \lambda x[\text{slept'}(x)]$

      c. $[\![$Who slept?$]\!] = [\![$slept$]\!]([\![$who$]\!])$

$$= \lambda x[\text{slept'}(x)] (\{x : \text{person'}(x)\})$$

$$= \lambda x[\text{slept'}(x)] \; (\{\text{i, m, s}\})$$
$$= \lambda x[\text{slept'}(x)](\text{i}), \lambda x[\text{slept'}(x)](\text{m}),$$
$$\lambda x[\text{slept'}(x)](\text{s})$$
$$= \text{slept'}(\text{i}), \text{slept'}(\text{m}), \text{slept'}(\text{s})$$

Hamblin (1958) proposes to consider declarative denotations as sets of propositions too, but containing only a single element. Therefore, questions are the "plural" propositions, whereas assertions are the "singular" ones. Hamblin's approach is certainly important, since he first determines that answerhood options construe the denotation of questions. However, this proposal is not unproblematic. According to Krifka (2011:1758), "the treatment of non-elliptical, full answers is straightforward". However, the propositions included in the Answer-Set do not always parallel the real response options. Polar questions, for instance, accept responses as *possibly*, *it's unlikely*, *I don't know*, which are not elements included in the Answer-Set. Moreover, the simple answers *yes* and *no* cannot be captured neither. This makes the proposal inadequate.

2.3.2.2   True answers (Karttunen 1977)

Karttunen's (1977) proposal also considers that a question denotes a set of statements, but the set only includes those that count as true answers to the question. While questions for Hamblin (1958) indicate which the options for responding are, Karttunen (1977) analyzes questions' resolvedness conditions. Questions are therefore identified with a property of propositions, which is the property of being the exhaustive answer. This already gives raise to an issue, since this analysis implies that questions might have more than one resolving answer which should not be the case. The proposal considers that the statements contained in the set are partial true answers to the question and the conjunction of all the statements is what provides

the complete true answer. Karttunen (1977) also adopts an embedding approach to deal with root questions (2.29-2.30)[1].

(2.29) Is Marina coming home? = whether Marina is coming home.

    a. {Marina is coming home}

    b. $\lambda p[^\vee p \wedge [p = $ Marina is coming home $\vee p = $ Marina is not coming home]

    c. $\lambda p[p = $ Marina is coming home]

(2.30) Who is coming home? = who is coming home.

    a. {Marina is coming home, Sara is coming home}

    b. $\{p : {}^\vee p \wedge p = x$ is coming home $\mid x \in$ person'$\}$

    c. $\lambda p \exists x[$person'$(x) \wedge p : {}^\vee p \wedge p = x$ is coming home]

Therefore, a verb that embeds a question is selecting a set of true propositions, which equal the sets of possible worlds such that each set contains the actual world (2.31-2.32).

(2.31) Irene found out whether Marina is coming home.
    = Irene found out that Marina is coming home.

(2.32) Irene found out who is coming home.
    = Irene found out that Marina and Sara are coming home.

The decision of only considering the propositions that count as true answers to the question is due to the fact that, according to Karttunen (1977), some verbs only select that true answer (2.33).

(2.33) Who wins depend on who has accumulated more points.

_____

[1]In the notation, $^\vee p = p(w_0)$ iff $p(w_0) = $ true, where w_0 is the actual world.

Most of the time, verbs that do select for true propositions when embedding questions, do not consider the truth or falsity of an embedded declarative. See the difference in (2.34).

(2.34) a. Irene told Marcos that Marina won the Trivia game.

       b. Irene told Marcos who won the Trivia game.

Karttunen's proposal is also influential because the analysis relates *wh*-phrases to indefinites and treats them as existential quantifiers. Therefore, the semantics comes from a question operator.

Although Karttunen's (1977) proposal represents an improvement over Hamblin's analysis, it still does not solve certain issues. The proposal models full answers, but how the straightforward answers, for example, of a polar question (*yes* and *no*) can be directly captured in the analysis is still not solved. Moreover, the proposal cannot distinguish between polar (2.35) and alternative questions (2.36), since both are represented in the same way (2.37).

(2.35) A: Did Marina win?
       B: Yes. / Marina did (win).

(2.36) A: Did Marina win or not?
       B: * Yes. / Marina did (win).

(2.37) $\{\lambda x[\text{win' (Marina)}], \lambda x \neg[\text{win'(Marina)}]\}$

2.3.2.3 The partitional approach (Groenendijk & Stokhof 1984)

The idea of the partitional approach is that questions denote a proposition which counts as their single complete answer in the actual world. Groenendijk & Stokhof (1984) propose to create a relation between indices that

result in an equivalence relation that creates a partition of the set of indices, making them become indistinguishable. The set of indices consist of a set of propositions that are mutually non-overlapping and exhaust the set of all indices. How a polar question and a content question are modelled into the analysis is represented in (2.38) and (2.39) respectively.

(2.38)   Did Irene cook? = whether Irene cooked.
         λw[cooked'(i) in w = cooked'(i) in w_0]

(2.39)   Who cooked? = who cooked.
         λw[λx[cooked'(x) in w = λx[cooked'(x) in w_0]]

Therefore, the proposal concludes that the set of possible worlds at which the truth-value of *Irene cooked* is identical to the truth-value of *Irene cooked* in the actual world and, likewise, it concludes that the set of possible worlds at which the set of people that cooked is identical to the set of people that cooked in the actual world. That means that if in the actual world Irene cooked, then *Marcos knows whether Irene cooked* has the same truth conditions as *Marcos knows that Irene cooked*; and, likewise, if in the actual world Marina cooked and no one else, *Marcos knows who cooked* has the same truth conditions as *Marcos knows that Marina cooked and that no one else cooked*. The set of possible worlds is divided into two cells (units) for polar questions (2.40), whereas a content question divides the set of possible worlds into 2^n cells; n represents the cardinality of the set of individuals that is denoted by the *wh*-word (2.41).

(2.40)   a.   Did Irene cook?
         b. $\pi = \{\text{cook(i)}, \neg\text{cook(i)}\}$

(2.41)   a.   What did Irene cook?[2]

---

[2]Suppose, for this example, that *what* ranges over pancakes and cookies (and nothing

b.　　$\pi = \{$　　cook(i,p) $\wedge$　　cook(i,c),

　　　　　　　　cook(i,p) $\wedge \neg$ cook(i,c),

　　　　　　　$\neg$ cook(i,p) $\wedge$　　cook(i,c),

　　　　　　　$\neg$ cook(i,p) $\wedge \neg$ cook(i,c)$\}$

The approach, therefore, allows for a natural way to model partial answers. If we consider (2.41) again, a complete answer to this question would consist on any answer that removes all but one cell of the partition. All the complete answers presented in (2.42) are drawn from the representation above.

(2.42)　a.　　Irene cooks both pancakes and cookies.

　　　　b.　　Irene cooks only pancakes.

　　　　c.　　Irene cooks only cookies.

　　　　d.　　Irene cooks nothing (neither pancakes or cookies).

A partial answer to this question would consist on any answer that removes at least one of the cells (but not all of them) from the partition denoted by the question. For example, (2.43a) removes the cells where Irene does not cook pancakes and (2.43c) removes the single cell where Irene cooks both pancakes and cookies.

(2.43)　a.　　Irene cooks pancakes, but I am not sure about cookies.

　　　　b.　　Irene does not cook both cookies and pancakes.

It is worth mentioning that, in this approach, negative answers are also included in the set. And this is actually one of the reasons why Groenendijk & Stokhof's approach is appealing: it captures what happened and what

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else); this results in 2^2 that equals 4 partition cells in the representation of this particular question.

did not happen. Therefore the truth-conditions are said to be strongly exhaustive. According to Groenendijk & Stokhof (1984), the following entailment (2.44) is valid and must be maintained —and it is maintained (2.45)— in the proposal.

(2.44) a.   Marcos believes that Marina and Irene are sleeping.

   b.   Actually, only Marina is sleeping.

   c.   Therefore, Marcos does not know who is sleeping.

(2.45) a.   Marcos knows who is sleeping.
          is true iff

   b.   About all the people that are sleeping (Marina), Marcos knows they are sleeping, and...

   c.   ... about all the people that are not sleeping (Irene), Marcos knows that they are not sleeping.

Truth-conditions in Karttunen's (1977) proposal are weakly exhaustive: the analysis captures what happened, but it does not say anything about what did not happen (2.46). Therefore, the proposal does not capture the entailment pattern of (2.44).

(2.46) a.   Marcos knows who is sleeping.
          is true iff

   b.   About all the people that are sleeping (Marina), Marcos knows they are sleeping, and...

   c.   ... it does not matter what Marcos believes about people who are not sleeping (Irene).

Groenendijk & Stokhof (1984) assume the existence of an operator that takes the semantics of *only* which allows for an unified treatment of

polar and content questions. In this analysis, *wh*-words do not correspond to quantifiers (Karttunen 1977) or sets of individuals (Hamblin 1958), but to lambda operators. Another attractive feature of the partitional approach is that it explains in an elegant way the properties of embedded questions, since, rather than sets of propositions, they denote propositions, such as declaratives. In this way, knowing-who and knowing-that can be straightforwardly modelled. This idea receives support from the fact that embedded declaratives and interrogatives can be coordinated (2.47).

(2.47)   a.   Marcos knows [that Marina will be travelling this summer], and [whether Irene is joining her].

         b.   Irene told Marcos [that she was going on vacation], but not [where she was going].

However, a theory of focus has not been developed within this approach and, as long as focus indicates alternatives Krifka (2011:1765), it should be considered.

2.3.3   Categorial (or functional) approaches

For categorial approaches (also known as functional approaches), the meaning of a question is a function that, when applied to the answer, results in a proposition. Thus, the main idea is that questions and answers are "incomplete" and, when combined together, provide a "complete" propositional meaning.

In a nutshell, a polar question denotes the set of functions from propositions to propositions (2.48). Likewise, the short answers to polar questions, *yes* and *no*, also denote functions from propositions to propositions, their meanings are represented in (2.49). When the question and answer are brought together, the meaning of the question is achieved (2.50).

(2.48)   Did Marina win?

$\lambda f[f[(\text{Marina won})]$

(2.49)   a. $[\![\text{yes}]\!] = \lambda p[p]$

b. $[\![\text{no}]\!] = \lambda p[\neg p]$

(2.50)   a.   —Did Marina win? —No.

b. $\lambda f[f[(\text{Marina won})] (\lambda p[\neg p])$

$= \lambda p[\neg p](\text{Marina won})$

$= \neg(\text{Marina won})$

$= \text{Marina didn't win.}$

For its part, a content question denote the set of its potential short answers (2.51). When the question is applied to the answer, it gets its full propositional meaning (2.52).

(2.51)   Who won?

$\lambda x[x \text{ won}]$

(2.52)   a.   —Who won? —Irene.

b. $\lambda x[x \text{ won}](\text{i})$

$= \text{i won}$

$= \text{Irene won.}$

This is by far the approach that needs less machinery to derive the meaning of questions. Categorial approaches do not require a question operation and *wh*-phrases are treated as logical lambdas. Moreover, it has been argued that short answers are, in fact, the "real answers" to the question. Note the example (2.53) below.

(2.53)   A: Which lecturer was at the conference?

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B:	Jimmy.	*(J is a lecturer)*
B':	Jimmy was at the conference.	*(J is probably not a lecturer)*

While in (2.53B) no one will doubt that Jimmy is a lecturer, (2.53B') provides an answer that surprisingly does not entail that, but rather it infers exactly the opposite, that Jimmy is not a lecturer. This argues in favor of short answers as the genuine ones.

However, categorial approaches are not exempt of problems. The most important issue is that the semantic type of *wh*-words is not uniform, since it depends on the type of answer. This has consequences when it comes to question-embedding, as embedding verbs are, then, ambiguous.

2.3.3.1 The structured meaning approach (Krifka 2001)

The structured meaning approach is the most popular variant within the categorial approaches. In this approach, a question denotes ordered pairs $\langle Q,D \rangle$; Q represents the denotation of the question (under the categorial approach) and D represents the domain that contains all the possible short answers to the question. See the examples (2.54-2.55) for a representation of a polar and a content question.

(2.54)   Is Irene cooking?
$\langle \lambda f[f(\text{Irene is cooking})], \{\text{yes,no}\}\rangle$

(2.55)   What did Irene cooked?
$\langle \lambda x[\text{Irene is cooking } x], \{x : \text{thing'}(x)\}\rangle$

According to Krifka (2001), polar questions expect short answers like *yes* and *no*, and they should be considered congruent answers. While *no* is assumed to be a propositional operator that reverses the truth value of the proposition, what does *yes*, also a propositional operator, is to retain the

truth value of the proposition. When the meaning of content questions is applied to the meaning of their short answer(s), the resulting representation is a set of possible worlds in which that proposition stands true.

Given the fact that the prosodic contour of an answer can relate it to a particular question, but not to another one, Krifka (2001) considers that is the focus of the answer what lead us to the meaning of the question. He emphasizes the fact that focus has not been taking into account for the development of semantic theories of questions meaning, and it should be integrated. The structured meaning approach is therefore appropriate for the treatment of question-answer congruence. Declaratives can also be modelled into a structured meaning analysis. A declarative sentence denotes an ordered pair $\langle B,F \rangle$, where B represents the background and F represents the focus. The application of the background to the focus results in standard propositional semantics (2.56-2.57).

(2.56) Who cooked?

    a. IRENE cooked.

    b. $\langle \lambda x[\text{cooked'}(x)], \text{i} \rangle$

    c. $B(F) = \text{cooked'}(\text{i})$

(2.57) What did Irene do?

    a. Irene COOKED.

    b. $\langle \lambda P[P(\text{i})], \text{cooked'} \rangle$

    c. $B(F) = \text{cooked'}(\text{i})$

Krifka's (2001) structured meaning approach treats questions and answers (interrogatives and declaratives) in an unified way. Moreover it gives a solution for short answers since they are presented as the "real" ones; at the same time, the approach provides a simple solution to integrate the notion of focus to a theory of questions, improving the treatment of question-answer congruence.

2.4 Summary

In this chapter, questions were defined within the semantic domain. A question, as any other utterance that can be used to perform a speech act, can be divided into two elements: a sentence-radical denoting a semantic object and a modal element, indicating the sentence mood. The chapter focused on the sentence-radicals of questions, which denote, unlike assertions, incomplete propositions. Nevertheless, the sentence-radical of an assertion is what gives completion to the open proposition denoted by the question, since it provides the lacking piece of information. There exists well-developed semantic theories for assertions, therefore, establishing a relationship between answers and questions may lead us to a theory of questions. The last sections of the chapter discussed the three approaches that represent questions within the truth-conditional semantics.

3. The form of questions

Huddleston (1994) makes a clear distinction between questions and interrogatives. While questions are a semantic category defining the sets of answers required, interrogatives are a syntactic type of sentence, which contrasts with declaratives, imperatives and others (e.g. exclamatives).

For a number of issues to be clarified, this distinction should be maintained. Understanding interrogative as a term within the syntactic system, signifies that any language in which this category applies, it will be syntactically distinct from the other categories. Therefore, which type of sentence a particular example belongs to, will be resolved in terms of syntactic properties, not by reference to its meaning. Moreover, each sentence type is suited, but not limited, to a particular range of illocutionary forces, i.e. its illocutionary act potential. So the illocutionary force may be ambiguous between two or more speech acts, but not the sentence type. In addition, we have three kinds of questions at the semantic level —polar questions, alternative questions and content questions—, but syntactically only two —closed interrogatives and open interrogatives—.

The following section focus on the most basic sentence types in languages (§3.1). Section 3.2 is devoted to the strategies a language may have in their grammar to code interrogatives. Special attention is paid to the mechanisms that languages have to mark polar interrogatives in the last section (§3.2.1).

3.1 Interrogatives as sentence types

Now as linguists, we have been interested in finding those grammatical distinctions that can be correlated with a certain illocutionary force: "such a coincidence of grammatical structure and conventional conversational use we call a **sentence type**" (Sadock & Zwicky 1985:155). The definition of sentence type, just like the definition of speech act, should be based in some kind of formal criterion in order to be useful for cross-linguistic purposes. To this effect, Sadock & Zwicky (1985) proposal considers that the formal properties defining a sentence token should be exclusive to one sentence type, so there is no sentence token that simultaneously belongs to more than one type. This way, sentence types form a system of mutually exclusive alternatives in the language (Fig. 3.1.).
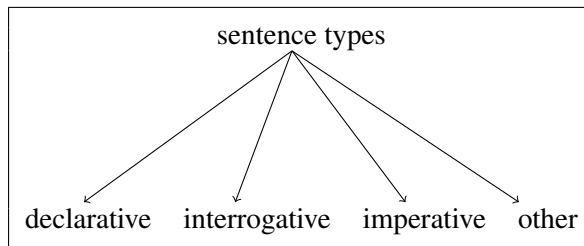
Figure 3.1: Sentence types (König & Siemund 2007:2)

This criterion of mutual exclusiveness is easily noticed in Greenlandic Eskimo (3.1), where the verbal affixes are the formal marks that identify different sentence types, conforming a system of alternative choices. This criterion is also observed in Japanese, as seen in example (3.2).

(3.1) Different sentence types in Greenlandic Eskimo:
  a. Iga-voq
   cook-DEC.3.SG
   'He cooks.'

b. Iga-va
cook-INT.3.SG
'Does he cook?'

c. Iga-git   / -guk
cook-IMP.2.SG / -IMP.2/3.SG
'Cook (something) / it!'   (Sadock & Zwicky 1985:167)

(3.2)   Different sentence types in Japanese:
a. Sakana-o tabe-ru
fish-ACC eat-PRES.DEC
'I eat fish.'

b. Sakana-o tabe-ru-ka
fish-ACC eat-PRES.DEC-INT
'Do you eat fish?'

c. Sakana-o tabe-ro/-te (kudasai)
fish-ACC eat-IMP
'Eat the fish!'   (König & Siemund 2007:4)

However, finding those regular associations between form and use, i.e. sentence types, is not a straightforward task. The fact that a sentence token cannot belong simultaneously to more than two sentence types, does not omit the fact that it can be ambiguous between two or more speech acts. Sentences with conventionalized uses can be, in fact, employed to serve other functions. König & Siemund (2007) illustrates this handicap with a mere sentence: *Sit here*. This simple utterance can be used as a command, request, offer, advisory or exhortation. The potential answers to this utterance can guide us to its proper interpretation: *Yes, sir* (command), *Okay* (request), *No thanks* (offer), *What a good idea* (advisory), *Thank you* (exhortation) (König & Siemund 2007:1). The wide communicative potential of a sentence can, however, be easily explained in terms of cooperative

negotiations between interlocutors. The formal properties of a sentence will determine its default interpretation, but it is its illocutionary force and, consequently, its perlocution, which will depend on various contextual factors: social situation, current state of the interaction, background knowledge of the interlocutors, etc. (König & Siemund 2007). I already stated that languages can serve innumerable purposes, but traditionally, three basic functions, or speech acts, have been distinguished that all known languages can perform: to pass on information, to glean information and to issue commands (Velupillai 2012:345). Not surprisingly, for these three core functions, languages present three basic distinct sentence types: declaratives, interrogatives and imperatives. These can be described as follows:

- A declarative is a statement, an assertion, subject to judgments of truth and falsehood. It is primarily used to perform representative speech acts: assert, report, complain, predict, promise, etc. Such speech acts commit the speaker to the truth of the expressed proposition. An example of a declarative sentence is *Marina laughs frequently* (1.1a).

- An interrogative is conventionally posed as a question and associated with the speech act of requesting information. This sentence type elicits a response from the addressee. An example of an interrogative sentence is *Does Marina laugh frequently?* (1.1b).

- An imperative is a command, a construction to typically perform directive speech acts: order, request, warning, invite, give advice, etc. Such speech acts intend to get the addressee to do something. An example of an imperative sentence is *Marina, laugh frequently!* (1.1c).

These three types by no means exhaust the list of basic sentences types a language may distinguish. Prohibitives, optatives or exclamatives are other sentence types that can often be identified in languages (König & Siemund 2007, Velupillai 2012), but they are fundamentally based on the aforementioned basic form types (König & Siemund 2007). Going back to (1.1), one can realize that Searle (1969) already presented these three sentence types while discussing the expressions and meanings that language can serve through distinct speech acts. Although the declarative, interrogative and imperative sentences are regularly associated with a sentence type, they are compatible with a wide variety of specific functions. Hence, König & Siemund (2007:35) reminds us that what we can find in grammar are distinctions of sentence types, rather than distinctions of speech acts.

With cross-linguistic studies, it has been proved that languages often resort to similar strategies as a way of identifying such basic form types in their grammars (Sadock & Zwicky 1985, Haspelmath et al. 2001, König & Siemund 2007, Velupillai 2012, Dryer & Haspelmath 2013, a.o.). The finite set of recurrent strategies consists in phonological, morphological, syntactic and semantic properties. Regarding imperatives, it seems that the range of markers to identify such sentence type is wider than in the other two types. That means that there is a greater differentiation between the strategies that the languages may use. König (2007) considers this to be logical due to the many types of interaction associated with directive speech acts. Differentiating between imperatives, prohibitives, optatives, rogatives, adhortatives or debitives seems an optimal choice among the languages. Declaratives are considered to be the unmarked sentence type. They are often identified because of the indicative mood of the sentence. Be that as it may, I am not going to discuss in depth the formal properties

that define these two kinds of sentence type, since it is not the aim of the current thesis. Yet, I will devote some pages to discuss the formal properties that serve as a way of identifying the sentence type under study, interrogatives.

3.2 Strategies to mark interrogatives

All languages allow the existence of interrogatives, which are considered a universal property of natural languages. However, not all languages share the same strategies for coding interrogatives. Actually, it has been reported there to be seven basic strategies for encoding interrogatives (3.3).

(3.3) Strategies to mark interrogatives

- Intonation
- Interrogative particles
- Interrogative tags
- Disjunctive constructions
- Order of constituents
- Verbal inflection
- Interrogative words   (Haspelmath et al. 2001:1011)

Some of these strategies are only used in a particular type of interrogative. Moreover, some of them can occur in combination and others may be used alone. There is also the possibility for some of these strategies to be mutually exclusive. Interrogative systems are related to other systems in the languages, such as the system of relative pronouns, indefinite pronouns or conditionals (Haspelmath et al. 2001). The interrogative marking of a language may, therefore, be derived from those systems or expand into

these areas of grammar. The following sections deal with the mechanisms that SpLs employ to distinguish each type of interrogative in the grammar. The structure of alternative interrogatives and content interrogatives is briefly discussed in sections 3.2.2 and 3.2.3 respectively. The structure of polar interrogatives and the strategies that languages use to indicate this type of interrogative are discussed in detail in section 3.2.1. A following chapter 5 is devoted to extensively treat the strategies that SLs employ to distinguish this type of interrogative in grammar.

3.2.1   Polar interrogatives

Polar interrogatives (PIs), as the most widely distributed kind of interrogative, are also known as *closed*, *yes-no* or *nexus* interrogatives (Sadock & Zwicky 1985 and Siemund 2001). PIs request an answer that specifies if the proposition expressed by the sentence radical holds or does not hold. Therefore, this type of interrogative does not seek for an answer to close an open proposition, unlike content interrogatives. Consequently, PIs belong to the syntactic type of *closed interrogatives*. The mechanisms that SpLs use to signal this construction, in order for the speaker to identify it, vary cross-linguistically. However, this variation has some clearly fixed boundaries within grammar and languages have alternative devices within a range that comprises the use of intonation patterns, question particles, tags, disjunctive structures, verbal inflection, a change in word order or an absence of declarative morphemes (Ultan 1978; Sadock & Zwicky 1985; Haspelmath et al. 2001; Krifka 2011; Dryer 2013 and Velupillai 2012). The next sections address each of these strategies, while presenting examples from different languages. Later on, the mechanisms that SLs use to mark this same construction are discussed in chapter 5 and compared with the ones presented below.

3.2.1.1 Intonation

Ultan (1978), Sadock & Zwicky (1985), Haspelmath et al. (2001), and Velupillai (2012) consider intonation to be the most wide-spread strategy in the grammar of SpLs to mark PIs. Although Dryer's database (2013) shows that the preferred strategy is, instead, the use of a question particle (§3.2.1.2), he let us know that languages using a distinct intonation pattern to distinguish PIs from declarative sentences are "proportionally underrepresented" in his work, since languages coded for this strategy are those that do not own any other grammatical means for forming a PI. There are languages in which intonation is found to be in complementary distribution with some other formal markers of interrogation, whereas in other languages, intonation is the only feature signalling a PI (Sadock & Zwicky 1985). Languages according to this last description are commonly found in sub-Saharan Africa, Australia, Papua New Guinea, South and Meso-America (Velupillai 2012:353). There are also some Indo-European languages that only use intonation to mark a PI, such as Italian (3.4).

(3.4)   Italian
   a. Laura viene   con ↘noi   (declarative)
       PN   come.3SG.PRES.IND with 1PL
       'Laura is coming with us.'
   b. Laura viene   con ↗noi   (PI)
       PN   come.3SG.PRES.IND with 1PL
       'Is Laura coming with us?'   (Velupillai 2012:353)

The most employed intonation contour to mark PIs, and interrogation in general, is a raising one, with the raise usually placed towards the end of the contour (95% of world languages according to Ultan 1978). This idea is supported by Greenberg (1966, in Haspelmath et al. 2001:1012) who claims that "intonational marking of interrogatives is typically found

in clause-final position", and considers this property to be a language universal. However, Ultan (1978) finds some cross-linguistic variation at the time of placing the rise towards the end of the contour (Table 3.1).

VARIATION OVER STRATEGY	EXAMPLE OF LANGUAGE
higher ultima	Vietnamese
higher penult	Chontal
higher pitch on last stressed vowel	Bashkir
rising toward last stressed vowel	Hebrew

Table 3.1: Higher pitch towards end of contour: cross-linguistic variation (Ultan 1978:46)

Certainly the dominant strategy is employing a raising intonation contour at the end of the sentence, but some languages are found to mark PIs with a higher pitch not at the end of the contour, but at the beginning of it, therefore, at the beginning of the sentence. Ultan (1978) also adds the variation within this strategy on his analysis (Table 3.2).

VARIATION OVER STRATEGY	EXAMPLE OF LANGUAGE
higher initial syllable	Western Desert
higher stressed vowels	Finnish

Table 3.2: Higher pitch towards the beginning of contour: cross-linguistic variation (Ultan 1978:46)

There are languages that do not follow the raise contour tendency and, instead, own a falling intonation contour to mark PIs. That is the case of Hawai'i Creole English (Velupillai 2012:353) and Sesotho (Bantu), which is a language that employs a lowered pitch on the final syllable of the sentence (Paroz 1946, in Dryer 2013). Even more interesting are those languages that use a raising contour to mark declaratives and a falling

contour to form PIs; such as Chitimaca (Isolate), Fanti (Kwa) and Grebo (Niger-Congo). Finally, Ultan (1978:46) talks about languages with some more complex patterns, such as Aramaic (Semitic), which uses a "higher ultima followed by falling", Hausa (Chadic), which uses a "extra-high ultima falling to mid", and Guaraní (Tupian), which uses "higher stressed vowels at any point within the contour".

Of the 53 languages for which Ultan (1978:47) has information about their PIs intonation pattern, 71,7% have a rising contour, 34% have a higher pitch of some sort, 5,7% have a falling contour only, and another 5,7% have both rising and falling contour types.

3.2.1.2   Interrogative particles

After intonation, this is, by far, the most common strategy to form PIs in SpLs. The use of an interrogative particle is the strategy employed by 61,26% of languages in Dryer's database (2013), these languages are spread all over the world, except in Western Europe (Velupillai 2012). An interrogative particle consists on a expression that can be a free particle or a clitic that is added to a declarative sentence to turn it into an interrogative one (3.5).

(3.5)   Japanese
    a. yamada-san wa   ginkoo de hataraite-imasu
        yamada-Mr. TOP bank   at working
        'Mr. Yamada works at the bank.'
    b. yamada-san wa   ginkoo de hataraite-imasu ka?
        yamada-Mr. TOP bank   at working   QP
        'Does Mr. Yamada work at the bank?'   (Hinds 1984:158)[1]

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[1]Example cited in Haspelmath et al. 2001:1013.

French *est-ce que*, Polish *czy*, Finnish *kö*, Mandarin *ma*, Slavic *li*, Turkish *mi* or Bengali *ki*, are examples of question particles. Haspelmath et al. (2001) adds that languages may have more than one question particle and each of them will be used in a particular case. For example, in Korean, there are several question particles, which have grammaticalized different levels of formality: *pnikka* (formal), *eyo* (polite), *e* (intimate), *nunya* (plain). These question particles can be interchanged in order for the speaker to express her intention. The speaker will place any of the question particles mentioned above in the blank of example (3.6).

(3.6) Korean
Kui-nun cal   cwumwusi-___?
he-TOP   well sleep-QP
'Does he sleep well?'   (Chang 1996:84)[2]

Velupillai (2012:354) claims that clause-final position is the most common pattern for languages with question particles. This idea is supported by Haspelmath et al. (2001:1014) who claims that "dominant positions for interrogative particles to occur in are the beginning or end of a clause with the clause-final position being slightly preferred". This goes in coherence with Krifka's (2011:1748) remark: "Peripherial realization is to be expected for illocutionary operators, which take the whole sentence radical as their scope". Japanese (3.5), Korean (3.6) or Maybrat (3.7) are languages that place the question particle at the end of the sentence. By contrast, question particles in Swahili (3.8), Yiddish (3.9) or Tzutujil (3.10) occur sentence-initially.

(3.7) Maybrat
ana m-amo Kumurkek a
3PL 3-go   Kumurkek QP

---

[2]Example cited in Haspelmath et al. (2001:1014).

'Are they going to Kumurkek?'   (Doll 1999:200)[3]

(3.8)   Swahili
je, a-li-kwenda shule-ni?
QP 3SG-PST-go school-LOC
'Did (s)he go to school?'   (Krifka 2011:1748)

(3.9)   Yiddish
Ci hot Mojše gekojft a hunt?
QP has Moses bought a dog
'Did Moses buy a dog?'   (Sadock & Zwicky 1985:181)

(3.10) Tzutujil
la   n-at-war-i?
QP INCOMPL-2SG-sleep-IVNPFS
'Are you going to sleep?'   (Dayley 1981:334)[4]

It is also possible to find languages that place question particles in positions other than sentence-initially or sentence-finally. For example, Georgian (3.11) places its question particles preverbally and Ute (3.12) places its question particle enclitic to the first constituent of the sentence.

(3.11) Georgian
čai xom ginda?
tea QP   you.want
'Do you want tea?'   (Krifka 2011:1748)

(3.12) Ute:
a. mamá-ci-aa   'u   wýýka-pụgá?
woman-SUBJ-QP that.SUBJ work-REM
'Did the woman work?'

_____
[3]Example cited in Dryer (2013).
[4]Example cited in Velupillai 2012:355.

b. kúaw-aa   pága-kway-kya?
   yesterday-QP leave-go-ANT

   'Did (she) leave yesterday?'   (Givón 1984:219)[5]

Question particles must be certainly differentiated from the strategy
described below, interrogative tags.

3.2.1.3   Interrogative tags

Interrogative tags are another strategy for marking PIs. Velupillai (2012)
considers that interrogative tags can be defined as a type of interrogative
particle, since they are certainly related in terms of meaning and distribu-
tion. Bengali *ki* is used as an interrogative particle (3.13a) and it is also a
part of an interrogative tag (3.13b).

(3.13)   Bengali:
    a. ki beral pakhita dhorechilo?
       QP cat   bird.SG caught

       'Did the cat caught the bird?'
    b. beral pakhita dhorechilo, noy   ki?
       cat   bird.SG caught   not-is QP

       'The cat caught the bird, didn't it?'   (Saha 1984:131-132)[6]

Velupillai (2012), however, makes a clear distinction between interrog-
ative particles and interrogatives tags when talking about the biases that
the latter one can add to the utterance. According to König & Siemund
(2007:296), interrogative tags "contribute a certain bias by raising expec-
tations towards either a positive or a negative answer"; Haspelmath et al.
(2001:1015) also reinforces this idea: "[PIs] based on tags are always

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[5]Example cited in Haspelmath et al. 2001:1014.
[6]Example cited in Haspelmath et al. 2001:1015.

biased with respect to the answer expected". As a rule of thumb, negative tags presuppose positive answers and positive tags presuppose negative answers (Hudson 1975:22), see that for English in (3.14).

(3.14) English:

    a. You do know it, don't you?
       (Expected answer: Yes, I do).

    b. You don't know it, do you?
       (Expected answer: No, I don't).   (Velupillai 2012:355)

However, the picture is much more complex. Ultan (1978) observes that the expected answer for a PI with a tag does not depend that much on the tag, but on the polarity of the declarative sentence used for forming the question. Table 3.3 shows the combinations that he found possible for languages, regarding the polarity of the declarative sentence and the tag. The majority of languages expect a positive answer to a positive declarative with a negative tag. The next most frequent combination for languages is a positive declarative with a positive tag inducing a positive answer.

DECLARATIVE	TAG	RESPONSE	LANGUAGES
P	N	P	10 + 5 (?)
P	P	P	5 + 1 (?)
N	P	N	2 + 1 (?)
N	N	N	1
N	N	P	1 (?)
P	N	N	1 (?)

Table 3.3: Tags and polarity (Ultan 1978:51)

Although the most common pattern for languages to place interrogative particles is sentence-finally, it is no less likely to find languages with interrogative particles occurring sentence-initially. That is no a possibility for interrogative tags, which are always found to be place at the end of the sentence, appended to the declarative. Another difference is that interrogative tags, in fact, are not particles, but either content words (3.15), phrases (3.16) or clauses (3.17). Negative tags are usually formally related to the negative marker of the language and positive tags can involve a copula or existential predicate, an interjection or words related to the predicate "true".

(3.15)   Russian:
         Ty ego slyšal, pravda?
         'You heard him, didn't you?'   (Haspelmath et al. 2001:1015)

(3.16)   German:
         Er ist sehr reich, nicht wahr?
         'He is very rich, isn't he?'   (Haspelmath et al. 2001:1015)

(3.17)   English:
         John would not do that, would he? (Haspelmath et al. 2001:1015)

Note that interrogatives tags in examples (3.13–3.17) are preceded by a comma: it represents a prosodic break between the declarative and the tag. So, they are performed in two different intonation phrases. Velupillai (2012) considers interrogative tags a shorter version of A-NOT-A construction, which is the device described in next section (§3.2.1.4).

3.2.1.4   Disjunction

It has been shown that languages can employ a strategy to signal PIs that normally would be used to mark alternative interrogatives (see §3.2.2):

the disjunctive structure. This is a commonly found device in Chinese languages, such as Mandarin (3.18a), where PIs can be formed with the disjunction of an affirmative clause and its counterpart (Haspelmath et al. 2001:1016). This disjunction is known as the A-NOT-A construction. Sometimes, however, the repeated material can be omitted, and sentences such as (3.18b) or (3.18c) can be uttered.

(3.18) Mandarin:

    a. tā   zài jiā   bu   zài jiā?
       3SG at home NOT at home

      'Is s/he at home?'   (Li & Thompson 1984:53)[7]

    b. tā zài bu zài jiā?

    c. tā zài jiā bu zài?   (Haspelmath et al. 2001:1016)

For Velupillai (2012), interrogative tags were originated from A-NOT-A constructions. Note that PIs formed with this device are not biased, however, is not challenging to obtain other disjunctions that do express an expectation towards an answer. However, the A-NOT-A structures that are accepted to be used as interrogative tags are comprised in a very restricted list and are highly lexicalised (see example (3.19) from Haspelmath et al. 2001:1016).

(3.19) Mandarin:

    a. zhāng-sān xǐhuan hē   jiǔ, duì bu duì?
       Zhang-san like   drink wine right NEG right

      'Zhang-san likes to drink wine, right?'

    b. nǐ   míngtiān lái   kàn wǒ, hǎo bu hao?
       you tomorrow come see me good NEG good

      'You come to see me tomorrow, ok?'

---

[7]Example cited in Haspelmath et al. 2001:1016.

3.2.1.5 Word order

Another way to signal that a sentence is a PI is by using a different word order from the one used in declarative sentences, however this is not a particularly likely strategy to manifest in languages across the world. This strategy is only represented by 1,3% languages in Dryer's (2013) database.

From a typological point of view, the constituent that is most likely to be affected by this device is the finite verb (3.20). Languages that show a change in word order to mark PIs, usually place the finite verb sentence-initially. That is why only languages whose basic word order type is SVO or SOV are able to employ this strategy.

(3.20)   German:
   a.   Der Lehrer trinkt-t   das Wasser.
        the teacher drink-3SG the water
        'The teacher is drinking the water.'
   b.   Trink-t   der Lehrer das Wasser?
        drink-3SG the teacher the water
        'Is the teacher drinking the water?'   (Dryer 2013)

English (3.21) employ a slightly different version of this strategy, in the sense that it is only the auxiliary or the modal verb the one that occurs sentence-initially. In cases where those operators are not found, *do*-support is necessary to convert declaratives into PIs (Haspelmath et al. 2001:1017).

(3.21)   English:
   a.   John is a policeman.
        Is John a policeman?
   b.   John phoned me yesterday.
        Did John phone you yesterday?

Most languages that employ a change in word order to mark PIs are clustered in Europe. Two Austronesian languages, Palauan and Manggarai,

and two languages from South America, Warekena and Hup, also employ this strategy. As a mere curiosity, Hup's strategy involves subject-verb inversion, but it does not place the verb sentence-initially, it is the subject that follows the verb. Therefore, PIs are characterized by the appearance of the subject in sentence-final position.

3.2.1.6   Verbal inflection

According to Dryer's database (2013), having a distinct verbal morphology for PIs is a quite common strategy for SpLs to mark PI and it is represented by 17,17% of the languages analyzed. Having specific verbal inflection for PIs is a rather interesting strategy and totally different to the ones described so far. One can assume an interrogative mood for this group of languages. Hunzib (3.22) and Tunica (3.23) are languages that employ this strategy, where the verbal morphology involves an affix.

(3.22)   Hunzib
      eλ'e-čó-y
      go-PRES.1/2-Q
      'Are you going?'   (Dryer 2013)

(3.23)   Tunica
      lo'ta wi-wa'năn
      run   2SG-want-Q
      'Do you want to run?'   (Dryer 2013)

Haspelmath et al. (2001) observes that some of these languages contain distributional gaps in interrogative morphology. This is the case of Greenlandic Eskimo, that owns a special verb morphology for second and third person, but not for first. This does not seem to be unmotivated and may be explained by the function of the interrogative. Since the speaker will utter

a PI to elicit information from the addressee, it seems reasonable to think that the speaker would not be interested in eliciting information about herself, since she already has it. 1,5% of languages in Dryer's database own both question particles (§3.2.1.2) and interrogative morphology to mark PIs (3.24). These strategies can occur together or not.

(3.24)   Pirahã
        xísi   ib-áo-p-**óxóí**   **"híx**
        3.ANIMAL hit.arrow-TELIC-IMP-**Q QP**
        'Did you arrow fish?'   (Dryer 2013)

3.2.1.7   Other strategies

A very uncommon strategy for coding PIs consists on the absence of morphemes used in declaratives sentences (Dryer 2013). In Zayse (3.25), verbs in declarative sentences contain a morpheme that is absent in PIs.

(3.25)   a. hámatte-ten   b. háma-ten
           'I will go.'   'Will I go?'   (Dryer 2013)

Burunge, for its part, employs a strategy that is difficult to classify. The final vowel in declaratives sentences is whispered, whereas in PIs is voiced. Dryer (2013) treats this contrast as a lack of a declarative morpheme. Finally, Dryer (2013) includes in his database a language that do not own any formal marking for PIs, Chalcatongo. Therefore, PIs cannot be distinguished from declarative sentences in this language (3.26).

(3.26)   Chalcatongo
        xakú=ro
        laugh=2
        'You are laughing.'/'Are you laughing?'   (Dryer 2013)

3.2.2 Alternative interrogatives

Alternative interrogatives provide a list of alternatives from which the answer should be picked out, so all the possible answers are made explicit. Syntactically, they are most of the time subsumed under polar interrogatives, since they are usually analyzed as two (or more) coordinated polar interrogatives, which are considered to be reduced due to ellipsis (Haspelmath et al. 2001:1012). Therefore, alternative interrogatives are also categorized within the "closed interrogative" type.

(3.27)   Would you like tea or [would you like] coffee?

The alternatives listed are propositions that can differ in some way other than logical polarity. Note the difference between examples (3.28a) and (3.28b).

(3.28)   a.   Is it alive or is it dead?

          b.   Is it raining or is it snowing?

Moreover, the list of alternatives might consist of a proposition and its negation (3.29). But the list always includes the alternatives that the speaker implies to be mutually exclusive.

(3.29)   Is it raining or isn't it?   (Sadock & Zwicky 1985:179)

Alternative interrogatives do have a typical intonation pattern that distinguishes between the final and all other non-final alternatives. In English, for instance, all the alternatives receive a rising accent, except for the last alternative, which is marked with a strong falling accent. Interestingly, if this intonation pattern is not uttered and, therefore, replaced by normal interrogative intonation, the alternative interrogative becomes a large polar interrogative. Do notice the difference by trying both intonation patterns in (3.30).

(3.30) Were you ever a member of the Cub Scouts or were you ever
        engaged in Scouting activities?

<div align="right">(Sadock & Zwicky 1985:179)</div>

Finally, as stated by Krifka (2011:1749), alternative questions let the
speaker ask about finite verbs, prepositions and quantifiers (3.31)[8], which
are not possible to be asked for in a content question, at least in English.

(3.31) a.   Did Bill búy or bórrow this book?

        b.   Did the plane fly abóve or belów the clouds?

        c.   Did you drink móst or áll of the whiskey?

3.2.3   Content interrogatives

This type of interrogative has also been labelled in the literature as *con-
stituent*, *open*, *variable*, *partial*, *question-word*, *wh* or *information* inter-
rogative (Sadock & Zwicky 1985; Huddleston 1994 and Siemund 2001).
They belong to the *open interrogative* syntactic type.

Content interrogatives are distinguished in grammar since they contain
an interrogative phrase which may consist of an interrogative word (inter-
rogative pro-form) or an interrogative word plus a noun phrase (Velupillai
2012). Krifka (2011) points out that, typically, languages possess their
own interrogative pro-forms (see (3.32) for English) to introduce the al-
ternatives, that is, special words that replace the unknown information of
the proposition and specify for the addressee what kind of information is
desired. Therefore, this type of interrogative can be used to query things,
persons, times, locations or circumstances (Siemund 2001).

---

[8]The example contains written accents which mark the focus of the intonation pattern
for each of the alternatives.

(3.32)   English interrogative pro-forms (wh-words)
  a. *What* did John read?
  b. *Who* read this book?
  c. *When* did John read this book?
  d. *Where* did John read this book?
  e. *Why* did John read this book?   (Krifka 2011:1744)

The speaker thus expects an answer to these questions that supplies adequate information according to the wh-word. Note that in English, the interrogative pro-form is placed sentence initially and leaves a "gap" where the original constituent would have been placed in the corresponding declarative sentence ($[What]_0$ did John read? vs. John read [Romeo and Juliet]$_0$). A 29.3% of a total of 902 languages from Dryer's (2013) database, obligatorily place the interrogative pro-form in sentence initial position, this constituent movement is known as *fronting*. However, a 68.2% of the languages studied let the interrogative phrase occur in other positions. In most of the languages where the interrogative phrase is not fronted, it occupies the same position as its equivalent constituent in the declarative sentence; that is to say, it remains *in situ*. The 2.6% of languages remained from Dryer's (2013) database exhibit a mixed behavior.

Other languages, instead of interrogative pro-forms, own interrogative pro-verbs that can express meanings like 'to do what', 'to be where' or 'to do how'. That is the case of Kiribati (3.33), from the Austronesian language family. Still the speaker searches for an answer according to the variable.

(3.33)   Kam   na   era?
         you.PL FUT do.what
         'What will you do'   (Krifka 2011:1744)

Hence, languages differ heavily in the semantic distinctions that their interrogative pro-forms draw and, as well, in the number of interrogative pro-forms they possess. There are even languages that do not have any interrogative pro-form, so the constituent question looks exactly like a declarative sentence. The only noticeable difference would be the intonation with which the proposition is uttered and the gap in which the constituent that is the answer would appear on a declarative sentence. Rising intonation is essential for German in example (3.34).

(3.34)   Sie sind geboren ↗ am_?
         you are   born   at_
         'When are you born?'   (Krifka 2011:1745)

Languages tend to be economical in terms of grammatical marking. Since content interrogatives are clearly characterised as interrogatives through the presence of an interrogative pro-form, intonation is not an extended strategy to mark these constructions. However, there are some cases where the marking could be considered redundant, as in (3.35) from Japanese, where the interrogative pro-form occurs with a question particle.

(3.35)   Taroo wa sono okane o   dare ni yatta ka?
         Taroo TOP the   money OBJ who to gave QP
         'Who did Taroo give the money too?'   (Kuno 1978:93)

Subconstituents can also be questioned with this type of interrogative and, again, languages differ in their way to do so (see Krifka 2011). Content interrogatives can also have multiple interrogative words. When a clause contains more than one pro-form, it is recognised as a "multiple question" (3.36). Of course, the speaker expects each variable to be answered, so a multiple question recalls more than one answer.

(3.36)   Who did what to whom?   (Siemund 2001:1012)

3.3 Summary

In this chapter, I have presented the three most basic sentence types in languages, i.e. declaratives, interrogatives and imperatives. I have payed little attention to declaratives and imperatives, but devoted some of the sections of this chapter to review the strategies that SpLs have to mark the different types of questions. Regarding PIs, they have been addressed exhaustively; the mechanisms that have been found to mark this structure have been illustrated and described in detail. Although the strategies vary cross-linguistically, SpLs have a constrained range of grammar alternatives to indicate that a sentence is indeed a PI. Intonation is considered to be the most wide-spread strategy to mark the interrogative across SpLs. The second most common strategy were the use of interrogative particles. Other strategies such as the use of interrogative tags, verbal inflection or a change in word order were also explicated in this chapter. Finally, the strategies that SpLs have to signal alternative and content interrogatives are briefly discussed in the last sections.

4. PART I: Summary

This first part of the thesis, called "PART I: DEFINITION", tries to give a wide perspective on how questions have been studied in different linguistic domains. This part is divided in three chapters: "The function of questions", "The meaning of questions" and "The structure of questions".

In the first chapter (§1), questions are defined within the framework of the speech act theory, proposed by Austin (1962) and followed by Searle (1969, 1975). The basic function of a question is the one of requesting information. Questions are, therefore, treated as directive speech acts, since they are an attempt from the speaker to get the addressee to do something, in this case, to provide an answer. This is in fact the felicity condition of a speech act that involves questioning, since any directive act is satisfied if and only if the speaker or hearer makes its propositional content true. A classification of the different types of questions, regarding the particular piece of information the speaker is lacking and expecting as an answer, is also provided. Questions are classified in polar questions, alternative questions and content questions. Polar questions are defined as those questions that ask about the truth or falsity of the uttered proposition. Alternatives questions, for its part, provide an explicit list of alternatives from which the addressee must choose the correct answer to complete the proposition. Content questions, by contrast, create an open proposition, but do not list the possible answers, the alternatives are, therefore, introduced

in an open-ended way. I have reported that the basic pragmatic function of a question is to express a lack of information of a specific type, in order to get an answer from the addressee. For this to be true, a question must be uttered under certain conditions: a question must request an answer, questions must allow for more than one possible answer and the speaker must not know the answer to the question. Any question that does not meet these conditions will be treated as having a derived pragmatic function, which is not the conventional use of a question. This first chapter, then, defines questions within the pragmatic domain.

In chapter 2, questions are categorized as semantic objects. Stenius (1967) proposes that every utterance that is used to perform a speech act can be divided into two elements: the modal element and the sentence-radical. While the modal element is what turns the sentence-radical into a communicative act, the sentence-radical is what denotes the semantic object. It is assumed that, in general, the sentence-radical of a question denotes an incomplete proposition, i.e. a propositional function. That is directly connected to the fact that a question is performed because there is a lacking piece of information on the part of the speaker. The answer of the addressee will provide the lacking piece of information and the unspecified part of the proposition will be expressed; therefore, the proposition will be closed. According to Stenius (1967), polar questions do not share the same sentence-radical as other questions, but the same as assertions. It is logic, thus, to think that different types of questions have different sentence-radicals, which at the same time have different denotations. Different sentence-radicals from different types of questions may be defined by the kind of answer the question expects, since it is the missing piece of information to complete the proposition. The relation between these different sentence-radicals is explained within the truth-

conditional semantics framework. Before turning into that, the chapter exposes the different types of answers that questions may get and that will be considered congruent. If that assertion represents an appropriate answer, it will give completion to the propositional function denoted by the sentence-radical of the question, providing semantic information about it. The last part of the chapter discusses the three established approaches within the truth-conditional framework that have attempted to represent the meaning of questions: the embedding approach, the propositional approach and the categorial approach.

Last chapter (§3) presented interrogatives as the most conventional way of representing a question in grammar. Interrogatives are defined within the syntactic domain and, together with declaratives and imperatives, represent one of the three core functions of language; questioning, in this case. Languages have developed grammaticalized forms to form each of these sentence types. This chapter focuses on the strategies that SpLs have to signal interrogative sentences. In accordance with Haspelmath et al. (2001), there are seven basic strategies to mark this sentence type: intonation, interrogative particles, interrogative tags, disjunctive constructions, order of constituents, verbal inflection and interrogative words. The interrogative marking of a language may, therefore, be derived from those systems or expand into these areas of grammar. Some of these strategies can occur in combination and others may be used alone. PIs strategies were described in detail: intonation and interrogative particles were found to be the most common strategy across languages to mark this sentence type.

The following chapters in "PART II: DESCRIPTION" describe the strategies that SLs have to signal this structure, in order to establish any possible parallelism between the strategies that both modality languages use. A morphosyntactic description of PIs in LSC is also provided.

PART II: DESCRIPTION

Polar interrogatives in SLs and Catalan Sign Language (LSC)

How PIs are coded in SpLs has been reviewed in a previous section (§3.2.1). Literature has shown that although languages vary in their way of marking the structure, the strategies that they employ are quite restricted in grammar. According to Sutton-Spence & Woll (1999), SLs and SpLs do not vary that much in this sense, since both modalities of languages have a limited range of devices for marking PIs. Therefore, the conclusion of their study is that, regardless of the modality of the language, interrogative constructions differ from other constructions because they contain at least one of the features listed in (4.1).

(4.1)   Features that mark interrogatives

- a word or sign that signals an interrogative
- a characteristic intonation pattern or facial expression
- a characteristic word or sign order

Chapter 5 discusses the strategies that SLs[1] use to signal the structure under study and explores their differences cross-linguistically, while comparing the devices to the ones detailed for SpLs. Chapter 6 offers a formal description of PIs in LSC.

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[1]See the list of abbreviations for SLs at the beginning of the thesis.

5. Polar interrogatives in SLs

There are a few studies regarding PIs in SLs. The most important one was carried out by Zeshan (2004): she provided cross-linguistic information about PIs, including in her study thirty-five SLs from all over the world. Still, many other researchers who also provide us with important linguistic information about PIs in other SLs can be listed. The studies that have been reviewed to depict the strategies that SLs own to code the structure under study, and to portray the differences that may exist cross-linguistically, are the following ones: for ASL, Wilbur & Patschke (1999), Neidle et al. (1996), Fischer (2006), and Valli & Lucas (2011); for AUSLAN, Johnston & Schembri (2007); for BSL, Sutton-Spence & Woll (1999); for FinSL, Savolainen (2006); for HKSL, Tang (2006); for HZJ, Šarac & Wilbur (2006); for IPSL, Zeshan (2004); for ISL, Meir (2004); for LIBRAS, Quadros (2006); for LSE, Herrero (2009); for NS, Morgan (2006); for NZSL, McKee (2006); for ÖGS, Šarac et al. (2007); for TİD, Zeshan (2006); and for VGT, Van Herreweghe & Vermeerbergen (2006); cross-linguistic studies Zeshan (2004) and Cecchetto (2012) are also reviewed.

In the following pages, the non-manual (§5.1) and manual (§5.2-§5.3) devices to mark PIs in SLs are examined cross-linguistically. It is worth mentioning that other interrogative constructions are not treated here; however, accurate information about them is provided when necessary for the purpose of this research.

5.1 Non-manual marking

Non-manual marking (NMM) in SL linguistics is defined as the use of any part of the upper body (facial expression, head and torso movements, eye gaze, etc., but the hands) for marking grammatical or lexical functions. Zeshan (2006:39) points out that NMM "has been shown to play an important role in the structure of SL, in particular in identifying various clause types". Cecchetto (2012), in his basic summary of the intrinsic properties of PIs, and in consonance with Zeshan (2004), claims that in all known SLs it is the NMM what makes a PI to be a PI; thus, the NMM is the marking device that would allow signers to differentiate this structure from a declarative one. This is true for all the SLs for which this sentence type has been reviewed. Most of the studies describe the NMM as the key device for marking PIs and reveal the obligatory nature of this feature in PIs. Tang (2006) points out that the absence of NMM would make any PI become ungrammatical.

According to Zeshan (2006), NNM is a suprasegmental feature that can extend over one or more signs in an utterance; then, it is crucial to understand that NMM is for SLs the equivalent of what intonation is for SpLs. This is illustrated in (5.1) and (5.2), from Zeshan (2004:19), which compare Hindi intonation with IPSL NMM.

(5.1)   Hindi
        bacca bemar ↗ hai
        child ill   be.3SG.PRES
        'Is the child ill?'

(5.2)   IPSL:
                                   pol-q
        BOOK INDEX , INTERESTING INDEX
        'Is the book interesting?'

While a rising intonation is the typical marker for PIs in Hindi, the pol-q NMM is what signals a PI in IPSL. Section 5.1.1 is devoted to the form of non-manual markers that can appear in SLs to mark PIs and section 5.1.2 treats the scope of NMM.

5.1.1 The form of non-manual marking

As stated by Zeshan (2004:19): "nonmanual signals marking polar questions tend to be very similar across signed languages" and, as claimed by Cecchetto (2012:294), the specific NMM of the structure under study will involve a combination of several features, which can be either of the ones listed in (5.3).

(5.3)   NMM features associated with PIs

- eyebrow raise
- eyes wide open
- eye contact with the addressee
- head forward position
- forward body posture

This is a satisfactory summary of the NMM features that one may encounter while studying PIs in SLs. However, the picture is much more complex. This list only offers a very general perspective on PIs NMM and is not detailed enough to include the range of variation that NMM can experience at cross-linguistic level. Each SL contains specific NMM features that are distinctive and unique to that language. For detailed information regarding the specific NMM features that each of the SLs reviewed so far may display, please consult Table 5.1.

NMM FEATURES

	EYEBROWS		EYES		HEAD		HEAD/SHOULDERS		CHIN		DIRECT EYE GAZE TO ADDRESSEE
	RAISED	LOWERED	OPENED	SQUINTED	TILT	NOD	FORWARD	BACKWARD	TUCKED	UPWARD	
ASL	X		X				X		X		
BSL	X	X	X					X			
FinSL	X				X						
HKSL	X				X		X				
HZJ	X		X				X		X		
IPSL	X		X				X				X
ISL	X	X	X		X						
LIBRAS	X				X		X				
LSE	X	X					X				
NS	X				X	X	X		X		X
NZSL	X	X					X		X		X
ÖGS				X			X		X		
TİD	X	X	X				X				X
VGT	X	X								X	X

Table 5.1: NMM features for PIs in SLs

Cecchetto (2012) pays special attention to the "eyebrow raise" feature and stresses its importance as a PI coding device, since he considers that this is the feature that will help us to discriminate PIs from content interrogatives, considering that "eyebrow lowering" is the principal NMM feature on this last structure. However, Zeshan (2004:20) mentions that the general pattern of NMM may be complicated by various factors, and PIs can actually see their NMM features modified for some reasons that she does not discuss. This may also apply to the so-called most prominent NMM feature: the "eyebrow raise". As a matter of fact, various of the SLs reported about do accept the "eyebrow lowering" as a valid feature to signal PIs. Therefore, one cannot assume that PIs and content interrogatives can be distinguished solely by the position of the brows, since, at least, PIs can contain both the "lowering" and "raising" eyebrows features. A change in NMM features due to pragmatic reasons has been reported for the following SLs: ASL, BSL, ISL, LIBRAS, NS, NZSL, ÖGS, TİD and VGT. In LIBRAS (Quadros 2006), for example, the NMM of a question can vary according to how difficult what the signer is requesting is, depending also on the social relationship the signer might have with the interlocutor. In ISL, the NMM changes some of its features when the signer is actually asking a question with a slightly different intention, like *Do you have any money?*, meaning 'Can I borrow some?', or *Do you have a car?*, meaning 'Can I have a ride home?'. For these utterances, the signer employs the NMM features that are usually associated with content interrogatives. The existence of these examples should make us rethink the way in which we are approaching the study of NMM. What this evidence seems to indicate is that there is no one-to-one correlation between the syntactic structure and the NMM that accompanies it.

5.1.2 The scope of non-manual marking

The notion of scope is understood in this research as it is defined by Zeshan (2006:39): NMM scope is "the extent of a string of manual signs co-occurring with the non-manual marker". When it is said that a manual sign falls under the NMM scope, it means that it actually co-occurs with it. For most of the SLs consulted, the NMM spreads over the entire interrogative, leaving out of their scope any topicalized constituents.

(5.4) NS:

$$\overline{\text{BOOK BUY}}^{\text{top}} \quad \overline{\text{INDEX}_2}^{\text{pol-q}}$$

'Was it you who bought the book?' (Morgan 2006:101)

(5.5) NZSL:

$$\overline{\text{HOMEWORK}}^{\text{t}} \quad \overline{\text{FINISH PRO}_{2pl}}^{\text{pol-q}}$$

'The homework, have you done it?' (McKee 2006:75)

In VGT, for example, the NMMs are often held long after the manual signs that express the question have finalized. NMM can be held until the question has been answered. In HKSL (5.6), the NMM scope usually extends over the entire interrogative; however, the brow raise is also observed to start right after signing the grammatical subject of the sentence.

(5.6) HKSL:

$$\text{INDEX}_a \text{ MALE } \overline{\text{WORK FINISH}_3}^{\text{pol-q}}$$

'Has that man finished working?' (Tang 2006:201)

In this same SL, it has been noticed that signers vary the NMM scope according to the scope of interrogation, i.e. the constituents being questioned. See the difference between (5.7) and (5.8).

(5.7)   INDEX$_2$ NEXT WEEK $\overline{\text{VIDEO-TAPE BABY}}^{\text{pol-q}}$

    a. 'Is it true that you are going to video-tape the baby next week?'

    b. 'Are you going to video-tape the baby next week or not?'

(5.8)   INDEX$_2$ NEXT WEEK VIDEO-TAPE $\overline{\text{BABY}}^{\text{pol-q}}$

    'Is it the baby that you are going to video-tape next week?'

Some SLs, such as FinSL, do not allow NMM in non-final position. In terms of intensity, in HZJ, for example, the NMM features have their onset at the beginning of the interrogative and are held throughout the whole sentence, but their intensity is increased towards the end of the sentence (see Fig. 5.1). NMMs do also intensify towards the final sign for NZSL PIs, and are held fractionally longer than normal.
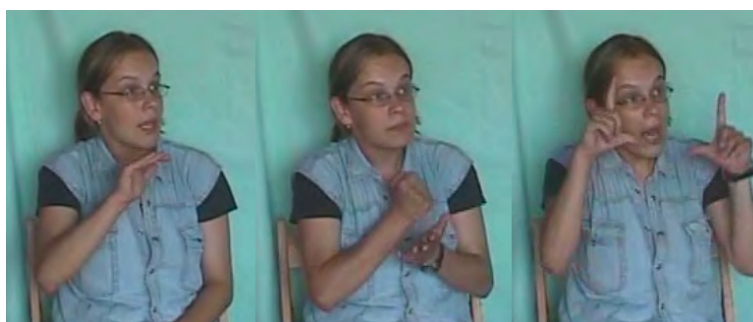
CHILDREN   MANAGE   TAKE-A-PHOTO

$\overline{\text{CHILDREN MANAGE TAKE-A-PHOTO}}^{\text{hf,br,eo}}$
'Did the children manage to take a photo?'

Figure 5.1: Intensity gradation of NMM in HZJ PIs

NMM features parallel intonation in SpLs, so they contribute to the interpretation of the sentence and may spread over the whole sentence.

5.2 Interrogative particles

SLs, as SpLs, use these particles to mark and specify that a particular sentence is an interrogative. As opposed to SpLs, which most of the time need to use an interrogative particle if they have it, to mark an interrogative whenever it is uttered, SL interrogative particles are not obligatory. Moreover, according to Zeshan (2004: 32), "it is common for the [interrogative] particle to occur only in certain contexts that are often pragmatically constrained". For a particle to be called interrogative particle, it must appear in the same prosodic unit as the interrogative clause per se; otherwise, if an intonational break before the interrogative particle can be identified, it turns out to be a tag (5.9).

(5.9) AUSLAN:

$$\overset{\text{pol-q}}{\text{CLASS CANCEL TODAY \underline{RIGHT}}}$$

'The class has been canceled today, right?'   (Zeshan 2004:32)

Note that the lexical signs grammaticalized as interrogative particles have lost their original meaning. Interrogative particles in SLs tend to appear at the periphery of the sentence, either at the beginning or at the end, although this last position is the preferred one in most of the SLs studied so far. Sometimes, it is also possible for the particle to appear in both positions within a single interrogative. Some SL interrogative particles can adopt the form of an A-not-A construction (5.10), which is found in some Sinitic languages.

(5.10) TSL:

$$\overset{\text{pol-q}}{\underline{\text{IX}_3 \text{ GO HAVE-NOT-HAVE}}}$$

'Is he going?'   (Zeshan 2004:35)

The map in Fig. 5.2 belongs to The World Atlas of Languages (Dryer & Haspelmath 2013) and it provides information regarding interrogative particles in SLs. From the 38 SLs represented here, only 34.21% have an interrogative particle. SLs use interrogative particles solely in PIs; although it is uncommon, there are some SLs (e.g. FinSL) which also makes use of this device in content interrogatives (Zeshan 2013). However, no SL has been reported to use interrogative particles to solely mark content interrogatives. Zeshan (2013) also reports that SLs which allow question particles for PIs and content interrogatives do not have different interrogative particles for each kind of structure. However, what she claims is that there exist some SLs with more than one question particle (they represent a 10,52% of the total of 38 SLs in the map). Some of the interrogative particles that SLs have are discussed below.

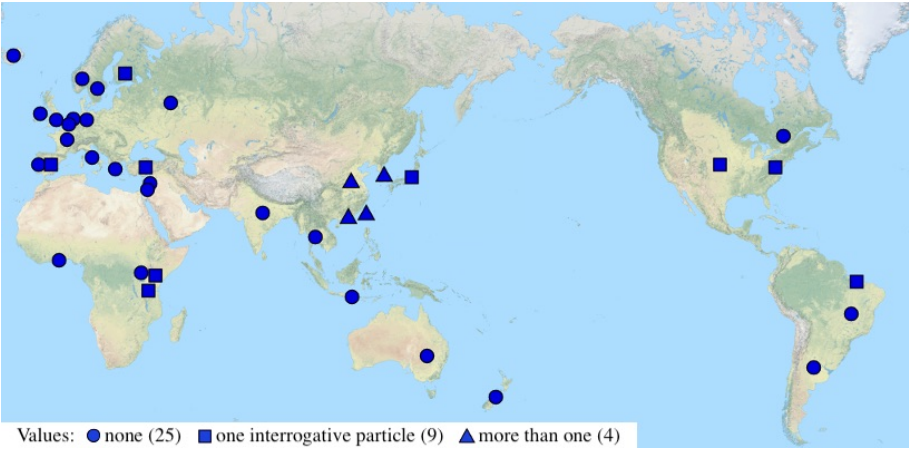Values: ● none (25) ■ one interrogative particle (9) ▲ more than one (4)

Figure 5.2: About interrogative particles in SLs (Dryer & Haspelmath 2013)

ISL contains an interrogative particle glossed as WHETHER, which derives from a reduced fingerspelled of the Hebrew word *haʔim*, 'whether'. This interrogative particle is used to explicitly mark PIs, otherwise the

structure is marked by NMM features only (Meir 2004). Another SL that has an interrogative particle which comes from the influence of the SpL of the region is NS. This SL displays an interrogative particle, glossed as Q, that parallels the Japanese *ka*. Q is very similar to the second-person index, the final part of the sign ASK and the content interrogative wh-word HOW-ABOUT (Morgan 2006). Q can be used for PIs, alternative and content interrogatives (5.11); it always occurs sentence-finally and is marked with prototypical NMM for interrogative sentences. The nature of this particle needs further research but its use seems conditioned by pragmatic and sociolinguistic factors.

(5.11) NS:

a. $\overline{\text{INDEX}_3\ \text{TRUE Q}}^{\text{pol-q}}$

Correction below:

a. INDEX$_3$ $\overline{\text{TRUE Q}}^{\text{pol-q}}$

'Is that true?'

b. $\overline{\text{LIE Q}}^{\text{pol-q}}$ $\overline{\text{TRUE Q}}^{\text{pol-q}}$

'Is it true or false?'

c. INDEX$_2$ $\overline{\text{NAME WHAT Q}}^{\text{cont-q}}$

'What is your name?'   (Morgan 2006:98-99)

ASL has the Q-M sign, which consists of a single or reduplicated and shortened form of a question mark, which is traced with the index or by bending the index repeatedly (Fischer 2006). Q-M is used when a signer wants to request permissions to ask a question or to reinforce the fact that one is asking a question. Moreover, Q-M also appears when the signer is surprised by the information given or when she wants to check what the other person is saying. Q-M adds unexpectedness to the interrogative (Valli & Lucas 2011). NMM should appear over Q-M and it can optionally extend to the rest of the sentence (5.12).

(5.12)   ASL:

$$\overset{\text{pol-q}}{}$$

a.   INDEX$_a$ TRUE DOCTOR $\overline{\text{Q-M}}^{\text{pol-q}}$

'S/he's really a doctor?'   (Fischer 2006:169)

b. $\overline{\text{THINK TEST EASY Q-M}}^{\text{pol-q}}$

'Was the test easy?'   (Valli & Lucas 2011:93)

The sign JE-LI (IS-IT) in HZJ is considered to be an interrogative particle too. It appears sentence-initially and is made with the Y shape while twisting the wrist in short and rapid movements. It can also appear at the very end of the sentence, but, in this case, it occurs after a small pause, therefore it is considered to be an adjunct to the question that works as a tag. See the difference in (5.13).

(5.13)   HZJ:

a. $\overline{\text{IS IT COMPANY BANKRUPT}}^{\text{pol-q}}$

'Is the company bankrupt?'   (Šarac & Wilbur 2006:155)

b. $\overline{\text{MAN LOOK-LIKE WORM, IS-IT}}^{\text{pol-q}}$

'The man looks like a worm, doesn't he?' (Šarac et al. 2007:226)

TİD contains two interrogative particles, known as PALM-UP and QUESTION-MARK. The first sign is articulated with one or two hands held with the palm turned upwards, and it is used to express uncertainty. The second sign consists of a drawing of a question mark in the air. This second one is pragmatically stronger than PALM-UP and it suggests a final answer (5.14). Signers may accompany the interrogative particles with a [mi] mouthing (Zeshan 2006).

(5.14)   TİD:

<u>   ^{pol-q}   </u>
MARRY/SPOUSE QUESTION-MARK

'Is s/he married?'   (Zeshan 2006:135)

VGT also contains these two types of interrogative marks, but they are not treated as interrogative particles. This is mainly because either of the signs does not occur in the same prosodic unit as the interrogative, and QUESTION-MARK can occur at the end of other sentence types. The appearance of both signs, anyway, is related to pragmatics factors (Van Herreweghe & Vermeerbergen 2006). ÖGS has an interrogative particle (5.15), glossed as 5-5 (Šarac et al. 2007), and FinSL (5.16) contains also one, which can be used in informal contexts without the NMM. The effect is reported to be intonational, like playing with one's tone of voice (Savolainen 2006).

(5.15)   ÖGS:

<u>   ^{pol-q}   </u>
HAVE TIME COFFEE DRINK 5-5

'Do you have time for coffee?'   (Šarac et al. 2007:227)

(5.16)   FinSL:

<u>   ^{pol-q}   </u>
WHEN BE-ABLE-TO COME Q

'When could you come?'   (Savolainen 2006:289)

There are other SLs that seems to have an interrogative particle, but, in fact, they have an interrogative tag. BSL is one of those languages. Tags are formed by signing a declarative sentence and attaching one of the signs RIGHT or TRUE to the right periphery of the sentence accompanied with the appropriate NMM of a PI (Sutton-Spence & Woll 1999:67); as illustrated in (5.17). These tags ask for confirmation of information, rather

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than for additional information, so tags do not occur freely, but in very restricted contexts that actually convey a bias towards a particular answer.

(5.17) BSL:

$$\overline{\text{pol-q}}$$

THREE CHILDREN HAVE RIGHT/TRUE
'You've got three children, haven't you?'

Another SL that has an interrogative tag is ASL. The ASL sign WELL, also glossed as HUH, occurs sentence-finally and is not limited to questions. It works as an afterthought and, morphologically, it is very similar to the wh-sign WHAT. The case of HKSL is more complex. PIs in HKSL frequently end with a Q-sign, which takes the form of an A-not-A construction; the most common ones are GOOD+BAD and HAVE+HAVE-NOT (5.18). These signs are understood as one bimorphemic sign and not as two different signs. They appear sentence-finally and occur under the scope of NMMs, although these do not extend over any preceding material. Both signs are used in HKSL to question the truth or falsity of a proposition or the existence or non-existence of entities and events (Tang 2006).

(5.18) HKSL:

a. INDEX$_{2-1}$ FLY BEIJING $\overline{\text{GOOD+BAD}}$ (pol-q)
    'Will you and I fly to Beijing?'

b. TIN INDEX$_i$ BISCUIT $\overline{\text{HAVE+NOT-HAVE}}$ (pol-q)
    'Are there any biscuits inside the tin?'   (Tang 2006:206)

Although they may seem interrogative particles that do take the form of a disjunction, they are not. It is true that they share the same prosodic unit with the rest of the sentence, but, first of all, the NMM cannot extend over the preceding signs. Secondly, the lexical signs have not yet lost their

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original meaning and, moreover, in terms of distribution, they are very restricted, since they can only occur at the end of the sentence, never at the beginning. In addition, these signs cannot appear in every context, the meaning they convey is very restricted, giving rise to a particular type of PI: a confirmation question. This can be compared with the previous example from TSL (5.10), which clearly contains an interrogative particle.

Table 5.2 provides information about the interrogative signs that SLs contain in their grammars and also about their distribution.

	CONTAINS Q-SIGN		PREFERRED DISTRIBUTION	
	PARTICLE	TAG	LEFT PERIPHERY	RIGHT PERIPHERY
ASL	X	X	particle	particle/tag
BSL		X		X
FinSL	X			X
HKSL		X		X
HZJ	X	X	particle	tag
ISL	X		?	?
LSE	X			X
NS	X			X
ÖGS	X		X	X
TÍD	X			X

Table 5.2: SLs Q-signs and their preferred distribution

From what it has been seen so far, different pragmatic factors influence the way a PI is marked. Pragmatics seems to have a fundamental role in both the appearance of interrogative particles and a change in PI NMM features. Table 5.3 gathers the information that is available on this topic for the SLs studied so far.

	PRAGMATIC INFLUENCE	
	CHANGE IN NMM	APPEARANCE OF Q-SIGN
ASL	X	X
BSL	X	X
FinSL		
HKSL		X
HZJ		X
ISL	X	?
LIBRAS	X	
LSE	X	?
NS	X	X
NZSL	X	
ÖGS	X	?
TÍD	X	X
VGT	X	

Table 5.3: Pragmatic influence over NMM and interrogative Q-signs in SLs

5.3   Syntactic mechanisms

In addition to NMM and interrogative particles, Zeshan (2004) reports the following two syntactic devices found in some SLs to mark PIs: change in word order and doubling constituents. Nonetheless, it seems that the elements which are involved in these marking devices are, most of the time, pronouns. Frequently the INDEX sign appears postponed, occupying the sentence final position, or appears both in front and end position. In (5.19a) and (5.20a) one can see that the pronominal index appears at the end of the clause, while it is expected to be found preverbally in a declarative, since that is its nonmarked or most neutral position as a subject (TSL is an

SVO language, while LSF is an SOV language). Furthermore, it is also possible to double the pronoun in polar questions and make it appear both at the beginning and at the end of the clause, as it can be seen in (5.19b) and (5.20b).

(5.19) LSF:

                                           pol-q
a. $\overline{\text{TONIGHT FREE INDEX}_2}$
'Are you free tonight?'

                                           pol-q
b. $\overline{\text{INDEX}_2 \text{ STAY HOME INDEX}_2}$
'Are you staying home?'　　　　　(Moody et. al 1983:144)[1]

(5.20) TSL:

                                           pol-q
a. $\overline{\text{SMOKE INDEX}_2}$
'Do you smoke?'

                                           pol-q
b. $\overline{\text{INDEX}_2 \text{ DEAF INDEX}_2}$
'Are you deaf?'　　　　　　　　　(Zeshan 2004:22)

Studies from ASL (Fischer 2006), NS (Morgan 2006), NZSL (McKee 2006), TİD (Zeshan 2006) and VGT (Van Herreweghe & Vermeerbergen 2006) report that these SLs frequently make use of these mechanisms to signal a PI. BSL (Sutton-Spence & Woll 1999), LIBRAS (Quadros 2006) and HZJ (Šarac & Wilbur 2006) do not present any of these changes regarding word order or doubling constituents. Zeshan (2004) points out that neither of these syntactic devices provides the clause with any special semantic meaning other than what we see in declaratives. As for the pronoun shifting, it seems that "there is no preference for this word order" in declaratives, unlike in polar questions (Zeshan 2004:21).

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[1]Example cited in Zeshan (2004:22)

Regarding pronoun doubling, it is also possible to reproduce this structure in declaratives, but it "tends to convey emphasis", while it does not in polar questions (Zeshan 2004:21). Finally, Zeshan (2004) adds a further interesting finding, namely that HKSL also allows doubling the main verb when the signer is asking about the predicate (5.21).

(5.21)   HKSL:

a. $\overline{\text{INDEX}_2 \text{ PLAY PLAY}}^{\text{pol-q}}$

  'Are you playing/going to play?'

b. $\overline{\text{INDEX}_2 \text{ GO GO PLAY}}^{\text{pol-q}}$

  'Will you go to play?'   (Zeshan 2004:22)

5.4   Summary

This chapter has reviewed the strategies that SLs have to signal PIs. We have seen that NMMs are essential when it comes to mark the structure under study. They are, indeed, the marking that discriminates between a declarative and a PI. It has been shown that SLs display different combinations of NMM features when relizing a PI. This variability may be due to pragmatic factors, as it has been reported for most SLs; however, we still do not know what the nature of these changes is. I have also explained the notion of NMM scope and examples showed that NMMs normally extend over the entire interrogative, except for any topicalized constituent. Only one SL has been reported to vary the scope of NMM in order to vary the scope of interrogation, HKSL. Another strategy that is common among SLs is the use of an interrogative particle. In this chapter, I have also reviewed the interrogative particles that some SLs have in their grammar and discussed how to distinguishe them from interrogative tags.

Finally, we have seen that some SLs have a tendency to place the subject pronominal index in sentence final position, or to double it by placing it in its base position and again sentence-finally.

6. Polar interrogatives in LSC

As previously stated (§5), SLs employ several strategies —such as the appearance of specific lexical items or non-manual marking features, a change in word order, etc.— in order to mark their PIs. LSC, as any other language, has also developed grammaticalized forms that are associated with interrogation. LSC PIs, concretely, are most of the time only identified by the nonmanual markers (NMMs) that accompany them. Word order remains the same as in declarative sentences, thus LSC does not feature any noticeable syntactic mechanism for marking this kind of structure. However, LSC seems to have an optional interrogative particle (YES-NO Q-sign) which usually occurs sentence-finally.

This chapter focuses on the devices that LSC have to mark PIs, therefore, a formal description of PIs in LSC is provided in section 6.2. But, first of all, section 6.1 explains how the linguistic corpus that has made this research possible has been collected.

6.1   Methodology - PIs in LSC

This section deals with the backstage of this very first part of the research. It explains where the linguistic corpus used comes from and who the participants providing the examples were. How the examples that I am

going to provide here were annotated for later analysis was explained in the introduction of the present thesis.

The research presented here is mainly based on elicited data. Most of the information about PIs was collected through grammaticality and felicity judgment tasks, where the participants were asked to assess the acceptability of the constructions proposed. The main idea was to go into the basis of PIs and, from there, gradually expand the information related to the object of study. With this aim, grammaticality judgement tasks with very basic information relative to PIs were presented to the participants. Most of the sentences provided for this very first task were collected from the only description available about PIs in LSC in *Gramàtica bàsica de la LSC* (Quer et al. 2005). Once the basic of this structure were established, the work proceeded a more extensive analysis of this structure. Three other different techniques, apart from grammaticality judgment tasks, were employed in order to get examples from semi-spontaneous and spontaneous communication interactions between the participants:

- WHO IS WHO GAME. Participants played the popular game with photographs of famous people and people close to them too.

- CONTEXT GAME. Some preceding contexts of a PI were proposed. Participants were asked to perform a PI according to the situation.

- THEATRE GAME. Participants were given a context and a character role and were asked to perform according to the situation.

The first activity, "Who is who game", was useful to understand the main inherent characteristics of PIs in LSC (basic word order, neutral NMM marking form, most neutral NMM scope, etc.), as the conversation unfolded spontaneously. The last two activities, "context game" and "theatre game", certainly provided interesting information about the variation

of NMM scope and NMM within the structure under study. These three tasks were interspersed with grammaticality judgment tasks, since all the information collected was planned to be verified in more than one session and through different tasks. Each of the game activities took place in three sessions of approximately two hours. Examples from each game that had not resulted in a unanimous assessment by participants were repeated in subsequent sessions.

Participants were two LSC native signers, tagged as TG and EB to preserve their identity. Both were raised in native LSC deaf families, went to schools for the deaf in Catalonia and their entire life have been actively involved in the deaf community. They both work in the academic field (university level) and are familiar with SLs research.

All kinds of data were contrasted, showed, and discussed with the signers for a final verification before being added to the research.

6.2   Morphosyntactic description of PIs in LSC

NMM plays an important role in LSC PIs, since, most of the times, NMMs are the only formal difference between a declarative and an interrogative sentence. For LSC, word order remains the same as in declarative sentences, thus this SL does not feature any noticeable syntactic mechanism for signaling this kind of structure. LSC can optionally include an interrogative particle (YES-NO Q-sign) which is usually placed at the end of the sentence. The following sections (§6.2.1-§6.2.3) focus on LSC's own mechanisms for signalling PIs with the aim of presenting a morphosyntactic description of this structure.

6.2.1 Non-manual marking

NMM is the key marking device in LSC which distinguishes PIs from declaratives. The fact that this marking device is the most significant one comes as no surprise, inasmuch as it is the archetypical feature in almost every, if not all, SLs studied so far (see §5). NMM is for SLs the equivalent of intonation for SpLs; and, similarly, many pragmatic factors do interfere in the realization or non-manual markers (NMMs). Although this issue would probably need to be further investigated, my first contributions to this yet open field are presented in chapter 11. Sections 6.2.1.1 and 6.2.1.2 provide a description of NMM form and scope.

6.2.1.1 Non-manual marking form

NMM obligatorily accompanies PIs in LSC. It usually involves a combination of the features listed in (6.1).

(6.1) NMM features to mark PIs in LSC

- Raised eyebrows
- Wide open eyes
- Direct eye gaze at the addressee
- Forward and downward head position
- Forward body position

These NMMs can also be accompanied by a slightly raised chin (which can also remain on its horizontal neutral position), a slight sideway head position and a small upward shoulder movement. Witness the combination of NMMs in Fig. 6.1, which includes two images of neutral NMM (before starting the utterance) and two images of PI NMM (during the interrogative).
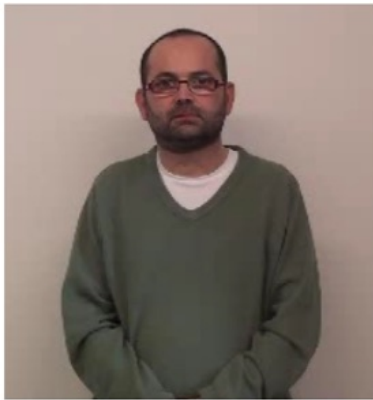
Resting position   NMM over sign PARIS

$$\overline{\text{PARIS CAPITAL FRANCE}}^{\text{pol-q}}$$

a. PARIS CAPITAL FRANCE
  'Is Paris the capital city of France?'
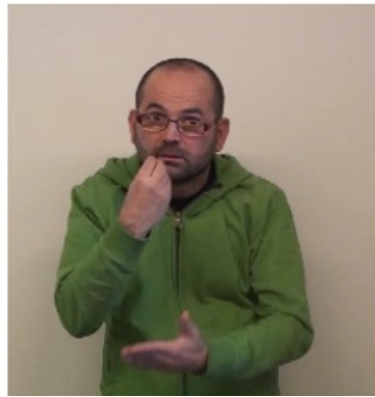
Resting position   NMM over sign EAT

b. IX$_2$ BREAD EAT
  'Do you eat bread?'

Figure 6.1: Difference between neutral NMM and PI NMM in LSC

Observing these images, one can clearly determine that the most prominent NMM features are eyebrow raise and eye widening with eye gaze on the addressee; one can also identify the head and body forward position.
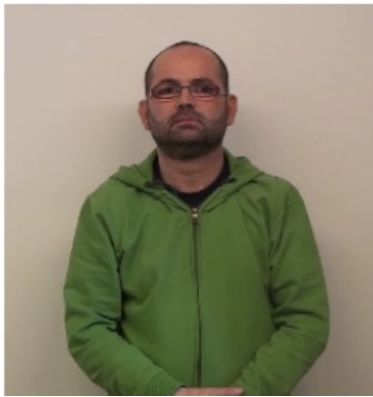
Due to pragmatic factors, however, the NNM in charge of signalling this structure, can experience a change in several of its components. A first approach to this phenomenon is to consider the signers' attitude towards the content of the interrogative as the cause of the changes; therefore, a signer may express doubt, skepticism, disbelief or surprise through NMM features —see §11.3 for an in-depth analysis on this variation phenomenon—. Hence, LSC signers may replace some of the NMM features in (6.1) with the ones in (6.2).

(6.2)   NMM features to mark PIs in LSC

- Furrowed eyebrows (typical of content interrogatives)
- Squinted eyes
- Tucked chin
- Head nod
- Backward body posture

Whatever the resulting combination of NMM is, the eyebrow movement (raising or furrowing) and the direct eye gaze towards the addressee are the most prominent NMM features. See the different combinations of eyebrow movements in Fig. 6.2. Indeed, the combination of NMMs showed in Fig. 6.2b are typical from another interrogative structure: content interrogatives. Hence, a PI may be marked with furrowed and lowered eyebrows —as opposed to raised ones—, but also with a more prominent forward head and body movement. The most outstanding feature is, in any case, the position of eyebrows.

| IX$_2$ | HOLIDAY | GO |

a. $\overline{\text{IX}_2\ \text{HOLIDAY GO}}^{\text{br}}$
'Are you going on holiday?'

| IX$_2$ | HOLIDAY | GO |

b. $\overline{\text{IX}_2\ \text{HOLIDAY GO}}^{\text{bf}}$
'Are you going on holiday?'

Figure 6.2: Eyebrow movements in LSC PIs

In terms of intensity, NMMs tend to be more conspicuous toward the end of the sentence. The intensity of NMM can be noticed in Fig. 6.1. If one compares the second image of Fig. 6.1a is taken at the beginning of the sentence —since sign PARIS starts the utterance—, while the second

image of Fig. 6.1b is taken at the end of the sentence —since sign EAT finalizes the utterance—. What one should perceive is that body and head forward position appear to be more prominent in (Fig. 6.1b), where the signer is performing the end of the sentence. The gradation of NMM can be also observed in the sequences of Fig. 6.2 and more clearly in Fig. 6.3.

PARIS   CAPITAL   FRANCE

<u>   pol-q   </u>
PARIS CAPITAL FRANCE
'Is Paris the capital city of France?'

Figure 6.3: Intensity gradation of NMM in LSC PIs

In Fig. 6.3, raised eyebrows occur throughout the whole sentence, and eye contact is held with the addressee. Body and head move forward during the sentence realization: the culmination of their position is found at the end of the interrogative; even sideways head position is more prominent at the end of the sentence. LSC signers may also modulate the intensification of NMM realization. The more intense the NMM realization is, the stronger the question is uttered. Conversely, weak NMM realization could be experienced in informal situations or in contexts where the utterance is allowed to be understood uniquely as a PI. When that happens, the

most reduced components in NMM are the most prominent ones, namely the eyebrow raise and eye widening. However, other typical PI NMM components (as eye gaze or forward head and body movement) remain still and are perceptible in these reduced NMM structures. Then, identifying a PI does not become an unattainable task.

All in all, any structure marked with one of the previously presented NMM combinations, and regardless of the intensity of the NNMs, will be obviously grammatical and understood as a PI in LSC.

6.2.1.2 Non-manual marking scope

The scope of NMM in LSC PIs is usually the whole clause. Therefore, the NMM has their onset at the very beginning of the sentence and extends until the end. NMM in non-final position is not allowed in LSC (6.3). Moreover, the NMM of PIs does not take scope over topicalized constituents, if any (6.4).

(6.3) * $\overline{\text{IX}_2}^{\text{pol-q}}$ BREAD EAT
        'Do you eat bread?'

(6.4) $\overline{\text{IX}_1 \text{ BOOK}}^{\text{top}}$ $\overline{\text{IX}_2 \text{ READ ALREADY}}^{\text{pol-q}}$
        'As for my book, have you already read it?'

Note that NMMs involved in topicalization are quite similar to those of PIs (the raised eyebrows being the most outstanding feature). In these cases LSC signers preferably use furrowed eyebrows to mark PIs when they appear right after a topicalized element (6.5). Consistently changing the eyebrow position, LSC signers clearly distinguish the topic elements from the interrogative sentence.

$$\overline{\text{(6.5)} \quad \overset{\text{top}}{\overline{\text{IX}_1 \text{ BOOK}}} \overset{\text{bf}}{\overline{\text{IX}_2 \text{ READ ALREADY}}}}$$

(6.5) $\overset{\text{top}}{\overline{\text{IX}_1 \text{ BOOK}}}$ $\overset{\text{bf}}{\overline{\text{IX}_2 \text{ READ ALREADY}}}$

'As for my book, have you already read it?'

Since NMM in LSC PIs does not always take scope over the whole sentence, but only over some constituents, one might hypothesize that NMM scope is used in LSC to disambiguate which of the constituents of the sentence is being questioned, as it has been reported for HKSL. In this line, sentences in which all constituents are under the scope of NMM would be understood as asking about the first constituent of the sentence; since interrogatives with NNM in non-final position are not possible in LSC and NMM must be spread from the element being questioned until the end of the sentence. A variation of NMM scope was observed in some instances of the "context game" task. See Fig. 6.4 to note the differences in NMM scope.

However, I am not in a position to make any conclusive statement about this issue, inasmuch as no sufficient data has been collected to claim that one of the functions of NMM scope, in terms of adding meaning to the sentence, is this one. Sometimes, LSC signers made use of topicalizations to take some constituents out from under the PI NMM scope, turning topicalization into maybe a strategy to also modify the scope of the interrogation (6.6). Signers preferred this option to 1) marking all the sentence with PI NMMs, which was characterized as "heavy" and "tiring", and 2) leaving some signs out of the scope of NMM, avoiding a break between them and the signs co-occurring with NMM.

(6.6) $\overset{\text{top}}{\overline{\text{IX}_2 \text{ BREAD}}}$ $\overset{\text{bf}}{\overline{\text{EAT}}}$

'Did you eat the bread?'

a. [CONTEXT: Your daughter has an excursion today and this morning you
    have prepared her picnic lunch. To accompany the meal, you have added
    some bread. When she arrives at the afternoon, you want to know if she
    ate the bread. Ask her about it.]

    $$\overline{\text{IX}_2 \text{ BREAD EAT}}^{\text{pol-q}}$$
    'Did you eat the bread?'

b. [CONTEXT: You arrive home after work. You see your daughter at the
    kitchen eating something (she has already finished what she was eating,
    but she still has her mouth filled). Ask her if she has eaten the bread.]

    $$\text{IX}_2 \ \overline{\text{BREAD EAT}}^{\text{pol-q}}$$
    'Did you eat the bread?'

c. [CONTEXT: You are in the kitchen and you see some bread on the table.
    Then, your daughter enters the kitchen and you both talk. You leave
    5 minutes because the telephone rings. When you come back to the
    kitchen, there is no more bread. You do not know what your daughter
    has done with it. Ask her if she has eaten the bread.]

    $$\text{IX}_2 \text{ BREAD } \overline{\text{EAT}}^{\text{pol-q}}$$
    'Did you eat the bread?'

Figure 6.4: Variation of NMM scope
(instance of "context game")

6.2.2 YES-NO Q-sign

In addition to NMM, LSC features an interrogative particle to signal the
structure, such as those that have been reported in many other SLs in

previous studies (Neidle et al. 2000; Fischer 2006 and Valli & Lucas 2011 for ASL; Savolainen 2006 for FinSL; Tang 2006 for HKSL; Herrero 2009 for LSE; Morgan 2006 for NS; Šarac et al. 2007 for ÖGS and Zeshan 2006 for TÍD. Zeshan (2004) points out that interrogative particles are also found in the sign languages of Denmark, South Korea, Taiwan and possibly in the sign languages of Tanzania and Kenya.

This sign has been glossed as YES-NO. Below, a description of this Q-sign is offered to provide enough arguments to explain why this sign has been grammatically categorized as an interrogative particle (§6.2.2.1). Moreover, its meaning and contribution to the interpretation of the sentence is explained in an additional section (§6.2.2.2).

6.2.2.1   Morphosyntactic description of YES-NO Q-sign

LSC has an interrogative particle to mark exclusively PIs: the YES-NO Q-sign. YES-NO (Fig. 6.5) is a one-handed sign which is articulated with index configuration in two consecutive, rapid movements. The first movement is downwards —it corresponds to the part of the sign understood as 'yes' and is performed as the sign ALSO or TOO—, and the second one from left to right — it corresponds to the part of the sign interpreted as 'no', which is performed as the sign NEITHER—; both movements are performed in the frontal plane and involve the wrist. The second part of the sign is accompanied with an [o] mouthing.

Despite the fact that this sign could be probably perceived as actually two, since only one movement per sign is expected by default —one path between two articulation points (Quer 2004)—, both informants described the YES-NO Q-sign not as the result of a sequence of two signs but rather as one bimorphemic (concept proposed by Tang, 2006) unique sign. Just as what Tang (2006) found for A+–A Q-signs in HKSL, the

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Figure 6.5: Sequences of two signers performing the YES-NO Q-sign

phonological deletion process (due to the complexity of the syllable) also renders the YES-NO Q-sign compressed temporally. This is what gives us the impression that YES-NO is not a very large sign and it only occupies a very little space when performed.

The YES-NO Q-sign only appears in PIs and it is never used in content interrogatives; if used, the content interrogative becomes ungrammatical (6.8). However, it does not need to be uttered in every construction (6.7). YES-NO is an optional sign for marking explicitly a PI; when it is not used, the sentence remains as an interrogative one, but marked with the corresponding NMM, which are compulsory.

(6.7) a. $\overline{\text{IX}_2 \text{ SLEEP}}^{\text{pol-q}}$
 'Have you slept?'

 b. $\overline{\text{IX}_2 \text{ SLEEP YES-NO}}^{\text{pol-q}}$
 'Have you slept?'

(6.8) a. $\overline{\text{IX}_2 \text{ SLEEP WHERE}}^{\text{wh}}$
 'Where have you slept?'

 b. * $\overline{\text{IX}_2 \text{ SLEEP WHERE YES-NO}}^{\text{wh}}$
 'Where have you slept?'

See the difference in grammaticality between PIs and content interrogatives when the sign YES-NO is added. This should come as no surprise: the sign itself is a reference to polarity, since it is composed (and interpreted) by the adverbs for negation and affirmation in LSC —which are to be the expected answers in PIs—.

The YES-NO Q-sign always occurs within the same prosodic unit as the rest of the interrogative and it appears in sentence-final position. When the interrogative particle occurs, it is always marked with prototypical PI NMM features: body and head forward, eye contact with the addressee and eyebrow movement. When the YES-NO sign occurs, it is capable of carrying the obligatory PI NMM by itself. Therefore, adding the YES-NO Q-sign at the very end of a sentence (with its corresponding PI NMM features), turns, in fact, that sentence into a PI (6.9).

(6.9)   IX$_2$ COKE DRINK $\overline{\text{YES-NO}}^{\text{pol-q}}$
      'Do you drink coke?'

Nevertheless, the non-manual marking can optionally spread over the whole sentence (6.10). However, it is not possible to find a question without NMM over the Q-sign (6.11). This is evidence that YES-NO is not a substitute for NMM.

(6.10) $\overline{\text{IX}_2 \text{ PARTY GO YES-NO}}^{\text{pol-q}}$
      'Are you going to the party?'

(6.11)   * IX$_2$ PARTY GO YES-NO
      'Are you going to the party?'

Regarding the distribution of YES-NO Q-sign, it is a particle that is typically found at the end of the sentence. There are very few occurrences

of the sign appearing at the left edge of the sentence, but when it does, it is normally repeated at the end of the sentence and the NMM is much more prominent (6.15).

(6.12) $\overline{\text{YES-NO IX}_2 \text{ HOLIDAYS YES-NO}}^{\text{pol-q}}$
          'Do you have holidays?'

NMM in non-final position is not possible for LSC PIs; therefore, if YES-NO occurs sentence-initially, NMM extend over the whole sentence, marking the whole interrogative (6.13). Marking YES-NO solely will result in an ungrammatical sentence (6.14).

(6.13) $\overline{\text{YES-NO IX}_2 \text{ COKE DRINK}}^{\text{pol-q}}$
          'Do you drink coke?'

(6.14)   * $\overline{\text{YES-NO}}^{\text{pol-q}}$ IX$_2$ PARTY GO
          'Are you going to the party?'

6.2.2.2 Meaning of YES-NO Q-sign

As other interrogative particles from other SLs (§5.2), the YES-NO Q-sign is pragmatically marked. Adding this optional interrogative particle slightly changes the interpretation of the PI: it demands an urgent, concrete and fast response. It has also been observed that the faster we want our question to be responded, the more prominent and intense our NMM must be. This would be comparable to playing with one's intonational voice intensity in SpL: when we are anxiously seeking an answer, our voice's tone will be stronger, louder and also more intense.

6.2.3 Syntactic mechanisms

LSC does not have any particular syntactic device to mark PIs. This structure maintains the word order of declarative sentences, which is SOV. The only relevant changes that a PI can optionally experience in terms of word order concern its pronominal subject. It can be doubled (6.15) —it occurs in its base position and also at the very end of the sentence— or it can appear in sentence final position (6.16) —it does not occur in its neutral position—.

$$\text{(6.15)} \quad \overline{\text{IX}_2 \ \text{DEAF} \ \text{IX}_2}^{\text{pol-q}}$$

'Are you deaf?'

$$\text{(6.16)} \quad \overline{\text{DEAF} \ \text{IX}_2}^{\text{pol-q}}$$

'Are you deaf?'

6.3 Summary

In this chapter I presented a morphosyntactic description of PIs in LSC. The strategies that LSC have to encode this sentence type have been reviewed and illustrated through the examples collected in the elicitation tasks. NMM is an obligatory device to mark PIs in LSC; a sentence without those non-manual features automatically becomes ungrammatical. I have shown that LSC has different NMM features that are combined to mark the sentence, the eyebrow position being the most prominent one. Moreover, the NNM extends over the whole sentence, minus any topicalized constituents. The chapter also presents the YES-NO Q-sign, which is defined as an interrogative particle; its form, distribution and meaning are also analyzed. Regarding other syntactic mechanisms to mark PIs, LSC shows no other strategy than placing the pronominal subject index in sentence final position or in its base position and again repeated sentence-finally.

7. PART II: Summary

This second part of the thesis, called "PART II: DESCRIPTION", is divided in two chapters: "Polar interrogatives in sign languages" and "Polar interrogatives in Catalan Sign Language".

In chapter 5, a description of the mechanisms that SLs employ to mark PIs has been provided. The chapter focuses on NMM, as the key strategy for SLs to mark PIs, paying special attention to its form and scope. It has been noted that not all SLs employ the same features to mark the structure under study; in fact, the range of features that SLs display is quite wide. For Cecchetto (2012), one of the most prominent features to signal a PI is the eyebrow raise; however, data shows that this is not accurate enough and that other features such as eyebrow furrowing can also occur with the same frequency due to pragmatic factors. Therefore, eyebrow raise is not the feature that can always discriminate between PIs and other structures in SLs. In terms of scope, SLs also exhibit different behaviours, although most of them mark the whole interrogative minus any topicalised elements. There are even some SLs that use the NMM scope to signal which is the constituent being asked. Another device that SLs have to mark PIs are the interrogative particles. One of the goals of the description was to discern whether a Q-sign was or not an interrogative particle. We saw that, in SLs, interrogative particles are used optionally, they have lost the original meaning of the sign(s) that they stem from, they occur mostly

sentence-finally, but sometimes can occur sentence-initially (sometimes allowed in both positions), they do share the same prosodic unit as the rest of the sentence, and they normally appear in pragmatically constrained contexts. Q-signs that do not meet these conditions were categorized as Q-expressions or interrogative tags. These are also considered to be a way of signaling a PI, but, they form a subtype of PI that is always used in the same contexts, and the question they present is always biased towards a particular answer. Therefore, they do not occur freely and their distribution is much more restricted than that of PIs, they appear either sentence-initially or sentence-finally, but always in the same position. Moreover, they occur after a break, so they do not share the same prosodic unit as the rest of the sentence. Before moving forward, an exhaustive work was done to prove that a change in NMM features and an occurrence of a Q-sign (an interrogative particle or an interrogative tag) in SL PIs is due to a pragmatic effect. Finally, a last section was devoted to the study of other syntactic mechanisms that SLs may have in their grammars to mark PIs. This description was completed taking into account the most relevant studies for PIs in SLs. Comparing what it has been showed so far for SLs and SpLs (§3.2.1), I can determine that most of the strategies to encode this structure are shared by both language modalities —taking into account that NMM parallels intonation—. However, SpLs seem to rely on some other mechanisms, other that intonation, to mark this structure, whereas SLs seem to strictly depend on NMM to signal PIs.

In chapter 6, a morphosyntactic description of PIs has been presented. A first section was devoted to explain the methods with which the data was collected. The following sections provide a full description of the different strategies that LSC grammar resorts to let a signer know that a sentence is a PI. LSC is not out of the ordinary, in the fact that, as a SL, NMM is required

in order to perform the interrogative sentence. We saw the different NMM features that LSC displays to mark the structure, paying special attention to eyebrow position, as it is the most notable NMM feature. As in other SLs, the eyebrow position in LSC is not constant and varies from one PI to another, and so do the other features, showing different combinations of NMMs to code a PI. In terms of scope, LSC behaves as most SLs: it prefers to mark the whole sentence leaving out of the NMM scope any topicalised constituents. Moreover, NMM in non-final position makes the sentence ungrammatical. LSC has an interrogative particle, i.e. the YES-NO Q-sign. The form and distribution of this particle is also dealt with in this chapter. What I am interested in is that, as it has been previously observed for other SLs, this particle again only occurs in some constrained contexts, adding some meaning to the final interpretation of the sentence. No special syntactic mechanism has been described for LSC, other than a tendency to place or repeat the pronominal subject in final position.

Since a morphosyntactic description of this structure in LSC is not enough to tell us more about the use of different NMM combinations and the appearance of the YES-NO Q-sign, the following chapters in "PART III: ANALYSIS" will try to provide a innovative solution to explain the cause of this variation. NMM features and the YES-NO Q-sign will be treated as triggers of different biases in LSC PIs. This analysis is based on Sudo's (2013) feature-based description system for biases.

PART III: ANALYSIS

The meaning of NMM

Non-manual marking (NMM) is an essential part of the grammar of SLs. It consists on any action which is produced by any part of the body other than hands. Non-manual markers (NMMs) can fulfill different functions at different linguistic levels at the same time, due to the simultaneity property of the visual-gestural modality languages. This last part of the thesis focuses on the role that NMMs have when it comes to express a prosodic function. The fact that NMMs can co-occur with manual signs and also with other NMMs as well, creates a net of interactions that may affect the final interpretation of the utterance. This is exactly what will be claimed for LSC: NMMs in PI trigger a pragmatic bias.

Chapter 8 focuses on the pragmatic functions associated to different syntactic structures and intonation contours that SpLs have to signal biased questions. Chapter 9 presents a feature-based theory of biases (Sudo 2013) that is able to characterize and identify the biases triggered by different strategies that two unrelated languages have to mark biased questions. Chapter 10 describes different grammatical functions that NMMs can fulfill in SLs, paying special attention to the role of NMMs in prosody. Finally, in chapter 11, Sudo's (2013) theory of biases is applied to LSC PIs and NMMs and the occurrence of the YES-NO Q-sign are associated with different pragmatic biases, proving that these strategies are not solely marking sentence type but providing pragmatic meaning to the utterance.

8. Biased questions

A speaker uses a neutral question, also called "unbiased case" (Haspelmath et al. 2001), when she has no expectations with respect to the answer of the question. However, when the speaker wants to express her belief that a particular answer, *yes* or *no*, is likely to be the correct one, a biased question will be used. This question is requesting assurance that the belief expressed is actually true (Sadock & Zwicky 1985). As seen in section 2.3, the abstract representation of a polar question involves two declarative sentences connected with a disjunction, symbolized as $\{p, \neg p\}$. This abstract representation includes the question embedded under a declarative sentence that can be paraphrased as I ASK YOU TO TELL ME. Biased questions, however, cannot be subsumed under this last condition, since their abstract representation would include an additional I SUGGEST X (Moravcsik 1971), considering that there is an additional meaning in these questions, which is that the speaker has an answer preference. Therefore, biased questions, are suggested to be a sub-class of polar questions. If is true that there is an additional meaning in biased questions, differentiating them from neutral questions should be possible: the interrogative must somehow explicitly incorporate that in their structure. This chapter introduces the reader to the existent research of biased questions, probing the notion of bias and showing how syntax and prosody may interact with the structure and the possible interpretations that may arise from their effect.

8.1 Biased questions in grammar

A distinction between neutral and biased questions has already been made. In fact, many languages have a three-way distinction among polar questions (Sadock & Zwicky 1985:180): neutral polar questions, those biased towards a positive answer and those biased towards a negative answer. See this distinction in (8.1). There are some languages for which has been claimed to only have biased questions, such as Onondaga (Sadock & Zwicky 1985).

(8.1) English:

    a. Was she happy?   (neutral)

    b. She was happy, wasn't she? ↗   (positively biased)

    c. She wasn't happy, was she? ↗   (negatively biased)

The following sections present a range of polar questions which are not neutral; therefore, their abstract representation would include the additional declarative I SUGGEST X. I discuss those grammatical forms which have been reported as strategies from languages to inform their speakers that a polar question is indeed a biased one, paying special attention to intonation. Section 8.1.1 discusses negative and positive polar questions and section 8.1.2 examines tag questions. Section 8.1.3 focuses on the role of prosody as a marker of biased questions in two Romance languages.

8.1.1 Negative and positive polar questions

Negative polar questions differ from positive polar questions in two respects. First of all, negative questions convey a certain attitude of the speaker towards the issue being questioned, as a positive answer is expected. A felicitous continuation of a context like the one presented in

(8.2) would be (8.2a), since it is epistemically neutral. However, (8.2b) would be infelicitous since it conveys a previous belief towards the issue being questioned, and the speaker would expect a particular answer: a positive one (example from Asher & Reese 2007:10).

(8.2)   I have no beliefs on the matter. I just want to know...
    a. Did the President read the August 6 PDB?
    b. # Didn't the President read the August 6 PDB?

Secondly, negative polar questions are ambiguous, while positive polar questions are not. Ladd (1981) reports this very interesting puzzle regarding the scope of negation in polar questions. He claims that there is an obvious ambiguity in negative polar questions such as the one in (8.3).

(8.3)   Isn't there a vegetarian restaurant around here? (Ladd 1981:164)

In one of the interpretations, the speaker is asking to confirm something which she believes to be true, whereas in the other interpretation, the speaker is asking to check for a new inference. These interpretations are elaborated in the situations presented in (8.4) and (8.5), both examples from Ladd (1981:164).

(8.4)   [Context: Kathleen and Jeff have just come from Chicago on the Greyhound bus to visit Bob in Ithaca.]
    a. Bob: You guys must be starving. You want to go to get something to eat?
    b. Kathleen: Yeah, isn't there a vegetarian restaurant around here – Moosewood, or something like that?
    c. Bob: Gee, you've heard of Moosewood all the way out in Chicago, huh? OK, let's go there.

In this case, the negative polar question is asked by Kathleen with the aim to confirm the information that she already has. This can be compared with the following situation (8.5).

(8.5)   [Context: Bob is visiting Kathleen and Jeff in Chicago, attending CLS.]

    a. Bob: I'd like to take you guys out to dinner while I'm here. We'd have time to go somewhere around here before the evening session tonight, don't you think?

    b. Kathleen: I guess, but there's no really any place to go in Hyde park.

    c. Bob: Oh, really, isn't there a vegetarian restaurant around here?

    d. Kathleen: No, about all we can get is hamburgers and souvlaki.

By contrast, in this case, Bob assumed the proposition 'there is a vegetarian restaurant around here' to be true, but from Kathleen's response, he is inferring that he was wrong, and that the proposition is in fact false. Therefore, he is using the negative question to check on a new an unexpected inference. Ladd (1981) considers that this difference in interpretation is due to a syntactic/semantic ambiguity that involves the scope of negation. He proposes that when the speaker believes P and wants to confirm it, negation is in some way placed outside the proposition being asked. Contrariwise, when the speaker has just inferred ¬P, negation is placed inside the proposition under question, since the speaker is asking about the inference –P. Given this, Ladd (1981) proposes the existence of two readings in negative polar questions due to the scope of negation. He labelled the readings as 'inside NEG' and 'outside NEG'. However, being aware that talking about negation being inside or outside the questioned proposition is not clear, he provides syntactic evidence to prove this point. The distribution of negative polarity items (NPIs) in negative polar

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questions is the most important evidence. Consider the sentences in (8.6).

(8.6)   a.   Jane's coming too. (P)

     b.   Jane's not coming either. (¬P)   (Ladd 1981:166)

Ladd (1981) points out that non-negative polar questions formed from (8.6) presumably are asking about P, so they would accept 'too' but not 'either'. This is illustrated in (8.7).

(8.7)   a.   Is Jane coming too? (P)

     b.   * Is Jane coming either? (¬P)   (Ladd 1981:166)

Negative polar questions, on the contrary, due to their ambiguity, should be able to question about P and ¬P and therefore accept 'too' and 'either'. And this is true according to (8.8).

(8.8)   a.   Isn't Jane coming too? (P)

     b.   Isn't Jane coming either? (¬P)   (Ladd 1981:166)

The fact that (8.8a) accepts the presence of the positive polarity item "too", can only be explained if negation is understood to be placed outside the proposition. By contrast, the negation is placed inside the proposition in (8.8b), giving the option for the NPI "either" to appear. See the difference in interpretation too: in (8.8a), the speaker is looking for a confirmation of a belief that Jane is coming; in (8.8b), the speaker assumed that at least Jane was coming and now has drawn the inference that this is not the case, that is why the speaker asks about the inference that Jane isn't coming either. Therefore, a way of disambiguating between the two readings available for negative polar questions is by placing either a NPI or a PPI.

Büring & Gunlogson (2000) claim that positive polar questions can sometimes be biased too. They consider that there are two kinds of positive

questions, such that one expresses the opposite (or something close to it) of the other, e.g. 'Is it raining?' vs. 'It is sunny?'. These questions are given the same meaning in formal semantics, although in some contexts they are not interchangeable. Compare the felicity of the same questions uttered in different contexts, one neutral (8.9) and one with contextual evidence favouring a specific answer (8.10). Both examples are from Büring & Gunlogson (2000:6-7).

(8.9)   [Context: (S)peaker and (A)ddressee are talking long-distance on the phone.]

   S: What's the weather like today? Is it raining?

   S: What's the weather like today? Is it sunny?

(8.10)   [Context: A enters S's windowless computer room wearing a dripping wet raincoat.]

   S: What's the weather like today? Is it raining?

   S: # What's the weather like today? Is it sunny?

Since the context presented in (8.9) is neutral, either questions can be uttered. Intuitively, one can see that the context in (8.10) includes contextual evidence that makes the speaker ask for a specific proposition, and not the other. And, again, the speaker would have an expectation towards a particular answer, concluding that any positive polar question is not always felicitous in every context. I will come back to this point when exposing a theory of biases in section 9.

Next section discusses tag questions as another syntactically marked structure to encode biased questions in languages. I will pay special attention to prosody and how its interaction with the structure may lead to different readings.

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8.1.2   Tag questions

Tag questions possess both a declarative and an interrogative component, the latter being a reduced form of an interrogative sentence. Following Ladd (1981) I will use the terminology "main sentence" and "tag" to respectively refer to each part of the tag question. In section 3.2.1.3, I already looked at the form of interrogative tags and their distribution in languages. Moreover, we took as a general rule that positive tags (8.11a) expect a negative answer, whereas negative tags (8.11b) expect a positive answer. However, following Ultan (1978), we saw in section 3.2.1.3 that this sketch was not totally accurate, since the polarity of the main sentence can also alter the expected answer.

(8.11)   English:

    a.   Jane isn't coming, is she?

    b.   Jane is coming, isn't she?   (Asher & Reese 2007:3)

In addition, another factor comes into play when generating different interpretations from a very same structure: intonation. Be that as it may, tag questions have proved not to always be biased towards a particular answer; prosody, according to the pitch it places over the tag and a possible intonational break in the sentence, will take a fundamental role in their interpretation. A final falling vs. a final raising intonation pattern on a tag has been associated with different interpretative effects (Asher & Reese 2007), as well as the existence vs. the non-existence of an intonational break between the main sentence and the tag (Ladd 1981). These interpretations have been consistently described in the literature (Sadock 1974; Lakoff 1975; Hudson 1975; Millar & Brown 1979; Rando1980; Quirk et al. 1985). Ladd's (1981) proposal distinguishes tag questions according to the existence or non-existence of an intonational break between

its components. He labels the questions that make a pause between the main sentence and the tag as **nuclear tags**, and refers to questions that do not have this intonational break as **postnuclear tags**. According to him, most of the time, nuclear tags have a falling intonation pattern (Fig. 8.1), whereas postnuclear tags have a rising pattern (Fig. 8.2)[1]
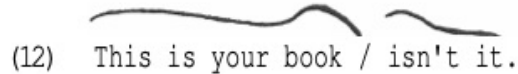
(12)   This is your book / isn't it.

Figure 8.1: Nuclear tag and its prosodic features (Ladd 1981:167)
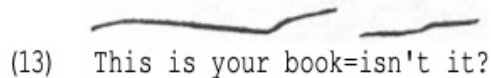
(13)   This is your book=isn't it?

Figure 8.2: Postnuclear tag and its prosodic features (Ladd 1981:167)

As reported by Ladd (1981), nuclear tags seems to state or assert a speaker's assumption and sometimes can signal a certain amount of disapproval. Postnuclear tags, by contrast, check or reconfirm and assumption, therefore, a certain level of doubt or uncertainty is conveyed. However, later research has claimed that a change in the intonation pattern can overlay new readings to these structures. Asher & Reese (2007) considers that a nuclear tag can be pronounced with either falling or raising intonation and the reading that one gets from a question pronounced with each of these patterns is different. The following paragraphs elaborate on these assumptions.

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[1]The sign / symbolizes a pause, whereas the sign = informs the reader that there is no intonational break between the components in which it is placed. Moreover, the sign ? indicates that the intonation pattern is a rising one, otherwise the sentence is ended with a . meaning that its intonation pattern is a falling one.

According to Asher & Reese (2007), a nuclear tag with a falling intonation is interpreted as asking for acknowledgement from the addressee that the communicative goal of the main sentence is achieved. Since the goal of a declarative sentence is to transfer belief, a tag question with final falling intonation suggests that the speaker is requesting the addressee to believe the truth of her statement. This goes in line with Ladd's (1981) work. Take the following situation (8.12), suggested by Asher & Reese (2007), as an example of a nuclear tag with falling intonation.

(8.12)   [Context: A and B are trying to complete a task at which neither of them is proficient, but Julie is known to be.]

    A: Julie won't do it that way.

    B: Well, Julie isn't here, / is she.   (Asher & Reese 2007:7)[2]

The utterance pronounced by B is not expressing doubt over the fact that Julie is not there, but rather requesting to A to acknowledge this fact. By contrast, a nuclear tag pronounced with a final raising intonation expresses some doubt or uncertainty. This is illustrated in (8.13).

(8.13)   A: Can Julie do it for us?

    B: Julie isn't here, / is she?   (Asher & Reese 2007:8)

In her turn, B expresses that Julie is not there, but the tag adds some doubt an uncertainty over this fact, opening the door to the possibility of B being wrong. The tag is used in this case to confirm the information posed in the main sentence. The speaker expects the addressee to confirm that Julie is not there, but if the addressee has evidence that Julie is there indeed, the speaker will expect the addressee to provide this information.

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[2]The signs are directly transcribed from Asher & Reese (2007), which follows Ladd (1981): / symbolizes a pause; = symbolizes a continuum intonation rhythm; ? symbolizes a raising intonation pattern and . symbolizes a falling one.

For Asher & Reese (2007), a postnuclear tag, contrary to what Ladd (1981) asserts, can be uttered with a final falling intonation pattern. In this case, the tag question would lose its biased meaning and would serve as a neutral request of information (8.14).

(8.14)   A: We need to find somebody who has done this before.

         B: Julie isn't here = is she.   (Asher & Reese 2007:8)

According to Asher & Reese (2007), for a postnuclear tag to be considered a neutral question, it must contain a negation on the main sentence and the tag should appear with no intonational break (or a very short one) after the main sentence. Ladd's (1981) proposal only distinguishes the readings on tag questions according to the existence or non-existence of the intonational break. A more in-depth analysis by Asher & Reese (2007) has proven that different intonation patterns may give rise to different readings from the same structures, conveying different biases. Moreover, from what we have seen so far, one might venture to say that, in fact, the trigger of the distinct readings are the intonational patterns (and not so much the intonational breaks) in which sentences are uttered. A raising or falling pattern is adding meaning to the sentence, since, in any case, sentences with a raising intonation were understood as conveying doubt and uncertainty towards the previous statement, whereas sentences with a falling intonation where understood as an assertion of an assumption.

So far, tag questions and negative polar questions, as well as positive polar questions, have been reported to be syntactically the most relevant structures to allow an interpretation of a biased question in English. In this section, we have also seen that a suprasegmental element, such as intonation, may interact with the structure and yet change its meaning. Next section puts the syntax aside and shows how prosody interacts with a

neutral question structure and provides it with different biased readings. Examples come from two romance languages: Catalan and Spanish.

8.1.3   The role of prosody

The role of prosody is fundamental in the interpretation of many linguistic phenomena. Different interpretations can arise from the same sentence due to a variation in its suprasegmental elements. For example, a change in the location of the nuclear stress in an utterance inevitably affects its interpretation, as what is perceived as focus is altered. The focus of an utterance may be identified by asking: "To what question(s) is the utterance with this specified accent pattern a felicitous answer?" (Hirschberg 2004:526). See the difference in (8.15).

(8.15)   a.   John introduced MARY to Sue.

       b.   John introduced Mary to SUE.

<div align="right">(Hirschberg 2004:527)</div>

Sentence (8.15a) is a felicitous response to the question "Whom did John introduce to Sue?", whereas (8.15b) is an appropiate response to "To whom did John introduce Mary?".

Intonation may convey syntactic mood, speech act, speaker attitude or speaker belief or emotion. Even inherent meanings for particular contours have been described. In English, for example, a continuation rise contour is interpreted as conveying that 'there is more to come'; a rise-fall-rise contour indicates uncertainty or incredulity; a surprise-redundancy contour, as its name suggests, conveys surprise, and a downstepped contour is used to open or close a topic.

Tag questions and negative polar questions are syntactically marked structures that convey biases. However, this first categorization of types

of biased questions is mainly based on English, where tag questions exist and a distinction between inside and outside negation is linguistically fairly straightforward. When looking at other languages, however, one may realize that this distinction is not that obvious and that languages have rather developed other grammaticalized forms to allow the inclusion of biased questions. We have seen so far that, at least in tag questions, prosody interacts with the structure and a difference in a prosodic break or intonation pattern results into having distinct readings for a biased question. Thus, the question that follows is: is it possible for prosody to produce this effect on its own? The answer is yes: intonation can be the main strategy for some languages to mark biased questions. Catalan and Spanish do not need any mechanism other than intonation to ask a polar question. Therefore, it seems reasonable to expect that intonation may be sufficient to also ask a biased question. The following sections try to elaborate on this assumption by looking at Catalan and Spanish biased questions.

8.1.3.1 Biased questions in Spanish

A polar question in Spanish is marked by intonation solely. That means that the word order remains the same as in a declarative sentence and only the intonation can disambiguate between the two sentence types. A representation of the intonation of a polar question is shown in Fig. 8.3.
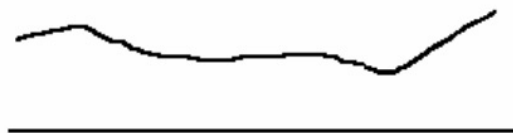

Figure 8.3: Typical intonation pattern of a Spanish
polar question (Escandell 1999:11)

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Spanish grammar has a range of devices available to form biased questions, such as a change in intonation, a change in word order, an occurrence of negation or interrogative particles (Escandell 2006, 1999). For the purpose of this research, I am just focusing on intonation, as a main device to mark biased questions in this language. According to Escandell (1999), Spanish has two different intonation contours to let a speaker know that a question must be interpreted with a bias. These two contours are labelled as the circumflex contour and the progressively-rising contour.

The circumflex contour is the prototypical intonation contour for content questions. It is basically characterized by a constant rise followed by a marked decrease, although the pitch starts higher than it ends. The ascent and descent draw a 'circumflex' pattern, from which it takes its name. See the representation in Fig. 8.4.
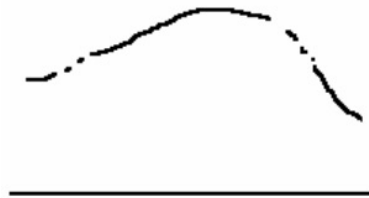
Figure 8.4: Circumflex contour for a Spanish
biased question (Escandell 1999:20)

This perceptible differentiation in intonation is systematically associated with a series of uses. First of all, by using the circumflex contour, the speaker attributes the content represented in the proposition to another person, usually the addressee (example (8.16)). Moreover, the interrogatives in which this contour appears pose a contradiction, express disagreement, strangeness, perplexity or annoyance. Depending on the situational context, the contour can also indicate astonishment, irony or interest. Adding

a falling at the end, it can indicate reproach, indignation or repulsion.

(8.16)   A: Y desde que *se casó*...
             'And since s/he got married...'

         B: ¿Ah! *¿Se casó?*
             'Ah! S/he got married?'   (Escandell 1999:22)

The progressively-rising contour (8.5) is usually used to openly mark that the speaker already knows the answer to the question posed. The speaker is not, therefore, neutral with respect to the content of the utterance. The use of the progressively-rising contour does not respond to an authentic lack of knowledge, and this fact must also be evident to the addressee, since the speaker's intention is in no way to confuse him by making him believe that he knows less than he really does.
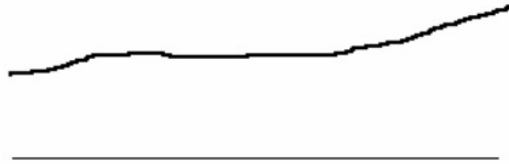
Figure 8.5: Progressively-rising contour for a
Spanish biased question (Escandell 1999:24)

This would be the expected intonation for any exam-question (8.17). Sometimes the utterance may be interpret as a recrimination when the answer concerns or directly involves the recipient (8.18), although this only occurs when uttering content questions (Escandell 1999:25).

(8.17)   [En un examen, la profesora pregunta] ¿Son las ranas amfibios?
             '[During an exam, the professor asks] Are frogs amphibians?'

(8.18) ¿Quién se ha dormido hoy? [dicho al interlocutor, que llega tarde]
         'Who fell asleep today? [to the interlocutor, who is late]'

The two contours that have been described prove that intonation in Spanish can by itself give rise to different readings from an unmarked syntactically structure, conveying different biases.

8.1.3.2   Biased questions in Catalan

Catalan, just as in Spanish, has the option to mark its polar questions only by intonation. Different studies have shown that intonation contours in Catalan polar questions can express various degrees of certainty and counterexpectational meanings (Prieto 2002; Prieto & Rigau 2007, 2011; Borràs-Comes 2012 and Prieto & Cabré 2013). In this section, I analyze the contribution of prosody to the interpretation of different pragmatic meanings in Catalan polar questions.

Catalan allows two possible intonation contours for forming a neutral polar question: a falling pattern and a raising pattern. Those are represented in Fig. 8.6 and Fig. 8.7 respectively. Polar questions with a falling pattern are optionally headed by *que* 'that'. Note the difference in the graphs: *Que tenen mandarines?* 'Do you have mandarins?' vs. *Teniu mandarines?* 'Do you have mandarins?'. The falling pattern starts with a high pitch which extends until the onset of the last accented syllable within the prosodic phrase. After that, the pitch falls significantly. By contrast, the rising pattern is associated with a low tone over the last stressed syllable followed by a sharp pitch rise. Research has proved that these contours are, in fact, not interchangeable and they are sensitive to a pragmatic cost-benefit scale in which the speaker estimates the cost of the action proposed to the addressee. A falling contour will be used when the cost of the proposed action is considered to be low, whereas the rising contour
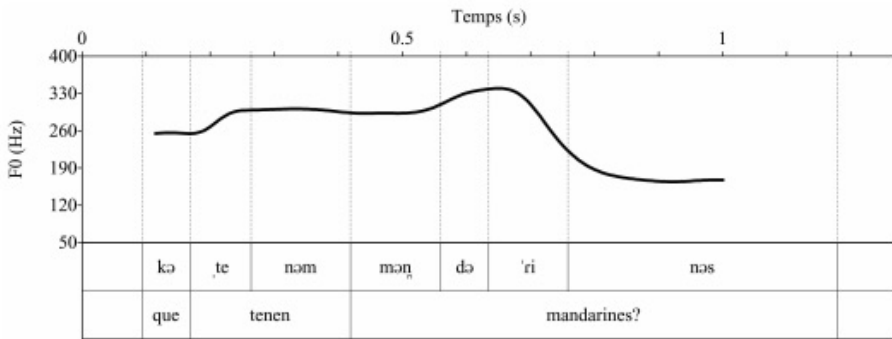
Figure 8.6: Typical falling intonation pattern of a Catalan
polar question (Prieto & Cabré 2013:18)
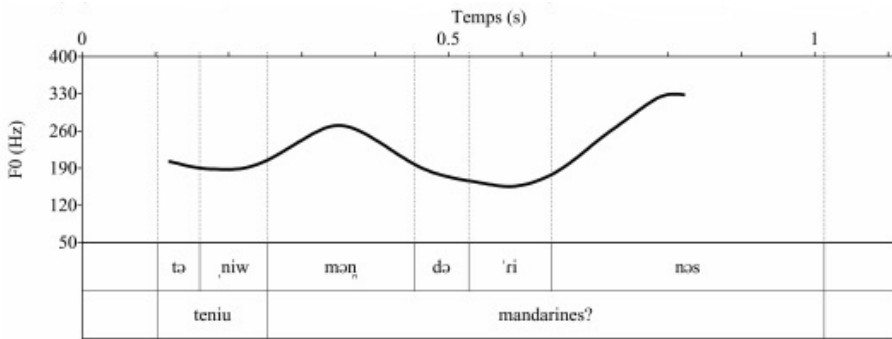
Figure 8.7: Typical rising intonation pattern of a Catalan
polar question (Prieto & Cabré 2013:7)

will be used in those cases in which the speaker believes that the action
is relatively high in cost for the addressee. See the contour felicity in two
situations in which the cost of the action is considered to be high for the
addressee (8.19). In both situations, only the rising tone is accepted and
felicitous, in neither situation a falling contour pattern will be accepted.
The examples are from Prieto & Rigau (2011:29).

(8.19)   a. # (Que) em deixes el teu apartament, aquest cap de setmana?
              / Em deixes el teu apartament, aquest cap de setmana?
              'Would you let me use your apartment this weekend?'

          b. # (Que) et puc deixar els nens, aquest cap de setmana?
              / Et puc deixar els nens, aquest cap de setmana?
              'Could I leave the kids with you this weekend?'

Intonation has a special role in counterexpectational questions in Catalan. Those are uttered when there is a lack of agreement between the speaker's expectation and the reality of the conversational context, i.e. the speaker has a previous idea and from the context she infers that this idea is false. The intonation contour that the speaker chooses for these questions depends on whether she accepts or not the situation. In the first case, the contour expresses a certain degree of surprise or astonishment; in the second case, the contour indicates incredulity.

Fig. 8.8 reproduces the contour of a counterexpectational question, *Has parlat amb el president?* 'Did you speak with the president?', that denotes surprise on the part of the speaker. The contour of this question starts with a low pitch that continues until the last stressed syllable, which is pronounced with a higher pitch accent, before ending the sentence with a final fall. By contrast, a counterexpectational question that denotes incredulity is pronounced with a different contour: the pitch is raised during the first stressed syllable of the interrogative sentence, followed by a very short pause, and it continues downwards until it reaches the final syllable of the sentence, where the pitch quickly raises. This contour is reproduced in Fig. 8.9, *el Jaume, alcalde?* 'Jaume, a mayor?'.

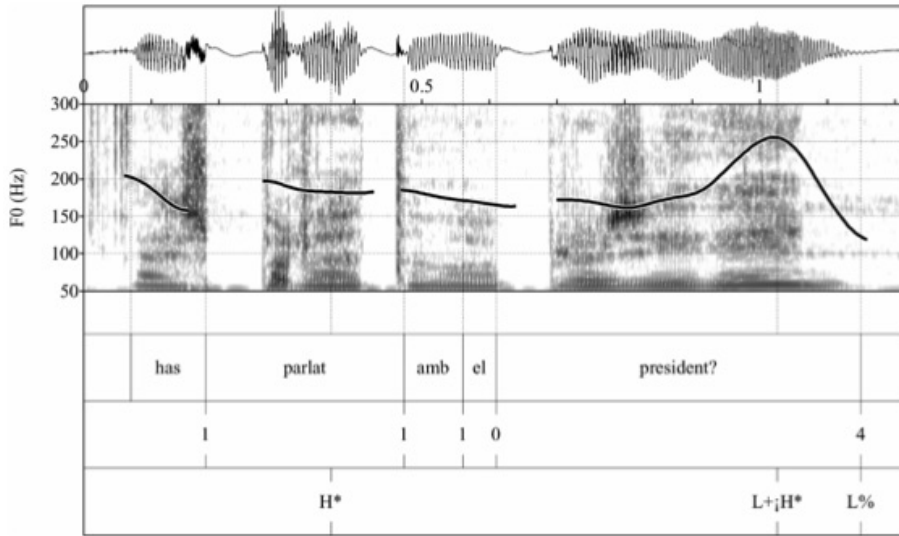**Figure 8.8:** Contour of surprise counterexpectational questions in Catalan (Prieto & Rigau 2011:32)
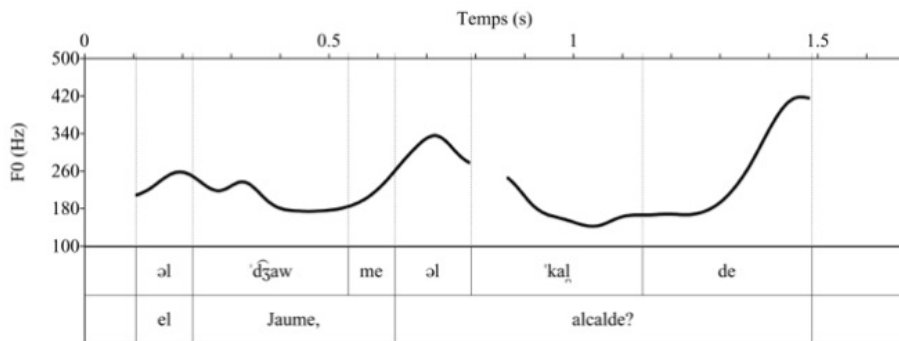
Figure 8.9: Contour of incredulity counterexpectational questions in Catalan (Prieto & Cabré 2013:23)

Another type of Catalan biased question that relies solely on intonation is the confirmation-seeking question. These questions are used when the speaker knows or believes that she knows the answer to the question

and is looking for a confirmation on that supposition, so her ignorance is not absolute. Confirmation-seeking questions are characterized by a descending contour. This can be identified in the question *tens gana?* 'Are you hungry?' in Fig. 8.10. The speaker utters a question with this contour just in case she expects a positive answer.

With these examples, Catalan has been shown to be a language that also uses prosody to form questions from an unmarked syntactic structure and to convey different biases.
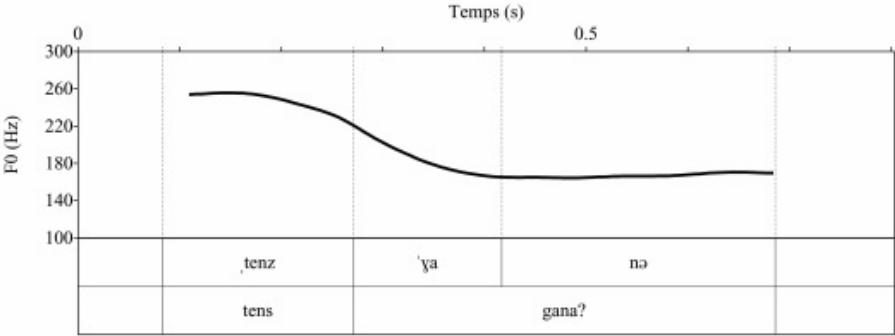
Figure 8.10: Contour of confirmation-seeking questions
in Catalan (Prieto & Cabré 2013:20)

Taken together, the examples presented in this last two sections convincingly show that prosody is one linguistic marker that speakers use in the interpretation of biased questions in Spanish and Catalan. And this assumption may be also true for other languages. Nevertheless, researchers are aware that there is still a long way to go and further investigation is needed in this area. Future studies will uncover the contributions of each contour to utterance interpretation.

8.2   Summary

This chapter has described the pragmatic functions associated to specific syntactic structures and intonation contours for biased questions. Tag questions and negative polar questions, as well as positives, are uttered when the speaker has an expectation towards a particular answer. English examples have confirmed this premise. Moreover, a suprasegmental element such as intonation can determine different readings for an unmarked structure. Some examples from Spanish and Catalan show that this is indeed possible. So prosody is not only giving information about a speech act, but also about how the interlocutor should interpret it.

9. A theory of biases

The following sections provide the reader with the necessary background to understand the theory of biases in which the analysis that will be presented in chapter 11 for LSC polar questions is based. This chapter relies on the main ideas of Büring & Gunlogson (2000) and Sudo (2013) as an attempt to explain the different flavors of biases that languages may express.

9.1 Evidence condition

Büring & Gunlogson (2000) highlight an interesting point when identifying the notion of evidence as being a key factor for determining the felicity of a biased question in a specific context. Remember from section 8.1.1 that positive polar questions (PPQs) are reported not to work for all contexts. I explicitly talked about PPQs that in some way are interpreted as opposites and how sometimes this condition makes only one of them acceptable in a specific context. Recall example (8.10), repeated here as (9.1).

(9.1)   [Context: A enters S's windowless computer room wearing a dripping wet raincoat.]

      S: What's the weather like today? Is it raining?

      S: # What's the weather like today? Is it sunny?

This context is, in someway, preventing a proposition from being expressed. Asking whether it is sunny is not possible in a context with such evidence against this fact. Therefore, it seems that PPQs are, therefore, not neutral, as they are incompatible with evidence against them. According to Büring & Gunlogson (2000), it seems that contextual evidence is also useful in formulating the felicity conditions for negative polar questions (NPQs). To prove that, they tried to embed a morphosyntactically unambiguous NPQ in neutral, positively and negatively biased contexts to see if they were felicitous. To disambiguate between inner and outer negation, Büring & Gunlogson (2000) use the negative determiner *no* and the negation marker *not some* for each respective case.

According to (9.2)[1], an inner negation polar question (INPQ) seems to be inappropriate in a neutral context.

(9.2) [Context: A and S want to go out for dinner.]

      A: Where do you want to go for dinner? (neutral)

      S: # Is there no vegetarian restaurant around here?

This response from S is unexpected and thus not felicitous in this context. Moreover, it seems that INPQs are not felicitous either when appearing in a context whose evidence favors *p* (9.3).

(9.3) [Context: A and S want to go out for dinner.]

      A: I bet we can find any type of restaurant you can think of in this city. Make your choice! (evidence for *p*)

      S: # Is there no vegetarian restaurant around here?

The only case in which INPQs are acceptable is when occurring in a context in which *p* and the contextual evidence clash (9.4).

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[1] All the examples from this section belong to Büring & Gunlogson (2000).

(9.4)   [Context: A and S want to go out for dinner.]

    A: Since you guys are vegetarians, we can't go out in this town, where it's all meat and potatoes. (evidence against *p*)

    S: Is there no vegetarian restaurant around here?

Regarding outer negation polar questions (ONPQs), as PPQs, they are accepted in neutral contexts, such as the one in (9.5).

(9.5)   [Context: A and S want to go out for dinner. S has been to Moosewood a couple of years back.]

    A: Where do you want to go for dinner? (neutral)

    S: Isn't there some vegetarian restaurant around here?

However (unlike PPQs, but like INPQs), ONPQs are not felicitous in a context that provides evidence for *p* (9.6).

(9.6)   [Context: A and S want to go out for dinner. S has been to Moosewood a couple of years back.]

    A: I bet we can find any type of restaurant you can think of in this city. Make your choice! (evidence for *p*)

    S: # Isn't there some vegetarian restaurant around here?

Finally, ONPQs are felicitous in a context which contains evidence against *p*. This is showed in (9.7).

(9.7)   [Context: A and S want to go out for dinner.]

    A: Since you guys are vegetarians, we can't go out in this town, where it's all meat and potatoes. (evidence against *p*)

    S: Isn't there some vegetarian restaurant around here?

Büring & Gunlogson (2000) claim that ONPQs contain an implication which is that the speaker believes p. The idea is that for the speaker to ask an ONPQ, she does not need to expect p, but to have particular evidence for the fact that p. Sudo's (2013) theory of biases will deepen on this first intuition. Table 9.1 summarizes the felicity conditions of each question regarding context evidence.

CONTEXTUAL EVIDENCE	PPQ	ONPQ	INPQ
for p	ok	-	-
neutral	ok	ok	-
against p	-	ok	ok

Table 9.1: Summary of the effect of contextual evidence on biased questions felicity (Büring & Gunlogson 2000:11)

9.2 A feature-based description system

As previously stated in section 2.3, according to traditional literature (Hamblin (1973); Karttunen (1977); Groenendijk & Stokhof (1984); Krifka (2001)), the truth-conditional meaning of a question is determined by the truth-conditional meaning of its (possible) answers. However, Sudo (2013:276) reveals an interesting fact: "distinct forms of PQs may have the same truth-conditional meaning, [i.e.] they can be used to ask about the same thing." He illustrates it with (9.8)[2].

(9.8)   a. Did John come to the party?

b. Didn't John come to the party?

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[2]All the examples from this section belong to Sudo (2013).

Both questions in example (9.8) are asking whether John went or not to the party. Why would English, for instance, have two different forms to ask exactly about the same thing? Sudo's answer is quite simple: questions do carry information about the questioner's bias towards a particular answer. No one would discuss whether the information asked in examples (9.8a–b) is the same (i.e. whether John went or not to the party), but one would note that in terms of interpretation both examples do not intend to mean the same. Therefore, "this difference should lie in a non-truth-conditional aspect of their meanings"(Sudo 2013:276).

What he attempts from here is to formally characterize the inferences that may be encoded in PQs. Thus, Sudo (2013:275) proposes a "novel feature-based description system [...] fine-grained enough" to characterize the inferences regarding biases that can be encoded in distinct forms of polar interrogatives in natural languages. Moreover, he shows that grammar is, in fact, encoding these biases in PQs. Sudo (2013) considers PPQs, ONPQs, INPQs and, as an addition to Büring & Gunlogson (2000) analysis, a combination of these structures with specific question particles, as the resulting mechanisms of grammar to encode biases within a PQ in a natural language. Sudo's proposal concerns two qualitatively distinct types of biases, namely the **epistemic bias** and the **evidential bias**:

- EPISTEMIC BIAS. It is described as the evidence, inherently public, mutually available to all the participants in the current conversational context.

- EVIDENTIAL BIAS. It is described as the private state of beliefs or expectations a speaker may have. This information is not public and needs to be shared with the other participants.

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Through specific examples of two unrelated languages, English and Japanese, Sudo (2013) demonstrates that both notions of biases are necessary and sufficient to 1) explain the biases associated with PQs and, therefore, to 2) give an answer to the question of why there are different types of PQs in natural languages. In his analysis, Sudo (2013) assigns different variables, i.e. "values", to each particular type of PQ, regarding the epistemic and evidential bias they carry. Therefore, he concludes that each distinct form of PQ is expected to exist in the language, since each one of them does carry different biases (that can be made explicit through the values assigned). Both epistemic and evidential bias can be associated with a positive or negative value, with regards to their compatibility with that situation. Moreover, the evidential bias can, in addition, demand another specific value: requirement (+) or incompatibility (–), gradually increasing the number of possible combinations that end up triggering distinct flavors of biases. Below, the meaning of each of the values that, according to Sudo (2013), can be assigned to PQs are presented.

(9.9)   Regarding the evidential bias:

- [+positive]: A PQ requires contextual evidence suggesting its positive answer in order to be performed.

- [+negative]: A PQ requires contextual evidence suggesting its negative answer in order to be performed.

- [–positive]: A PQ is incompatible with contextual evidence suggesting its positive answer.

- [–negative]: A PQ is incompatible with contextual evidence suggesting its negative answer.

- [none]: Contextual evidence suggesting either answer does not affect the performance of the PQ.

(9.10)   Regarding the epistemic bias:

- [positive]: A PQ can be performed iff the questioner expects a positive answer.

- [negative]: A PQ can be performed iff the questioner expects a negative answer.

- [none]: Whether the questioner has or does not have any expectations towards the answer, that does not affect the performance of the PQ.

To define the values of a particular type of PQ, Sudo tries to fit it into different discourse contexts that have been built considering the values described for the two kind of biases. If a PQ works in a particular context, it means that it is obligatorily carrying the pragmatic information related to the biases. Sudo (2013), therefore, can assign those specific values to the PQ. This way, he is showing that grammar contains specific types of PQs to encode unique information.

English positive polar questions (PPQs), as pointed out by Büring & Gunlogson (2000), are associated with a bias regarding the evidence available in the context. That means, when there is evidence suggesting the negative answer (i.e. negative evidence) in the context, the PPQ becomes infelicitous. Hence, PPQs are associated with a [–negative] bias.

Note how the following outer negation negative polar interrogative (ONPQs)[3] only works in specific contexts too.

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[3]Sudo (2013), along the lines proposed by Ladd (1981), firstly makes a distinction between outer negation negative PQs and inner negation negative PQs. By using a negative polarity item and a positive polarity item, he demonstrates that although both PQs may at first seem to have the same form, both diverge in terms of interpretation. Therefore, both can encode different biases, and, consequently, have different values assigned.

(9.11)   [Context: For a psychological experiment, we are looking for some left-handed subjects. We have asked some of our friends, but only Mary was left-handed so far. To my surprise, John is using a pencil with his left hand.]

    a. # Isn't John left-handed too?

    b. Isn't John right-handed too?

This context provides positive evidence for (9.11a), while it provides negative evidence for (9.11b). The fact that (9.11a) is infelicitous in the given context indicates that ONPQs in English are incompatible with positive evidence; therefore this type of PQ encodes a [–positive] evidential bias. This is in line with Büring & Gunlogson's (2000) findings. However, this is not the only bias this type of PQ is obligatorily associated with.

(9.12)   [Context: We just learned that Mary is left-handed, and are wondering who else is. I think John, who is not here, is probably left-handed too, but I am not sure.]

Isn't John left-handed too?

(9.13)   [Context: We just learned that Mary is left-handed, and are wondering who else is. Given its rarity, I believe that Mary is the only left-handed person among us, so I think it's very likely that John, who is not around, is right-handed.]

Isn't John left-handed too?

As one can derive from examples (9.12–9.13), [–positive] is not the only bias an ONPQ is encoding. This type of PQs in English seems to work only in those contexts where the speaker has an expectation for the positive answer.

Example (9.14) contains a context in which the speaker's epistemic state is neutral and that is incompatible with a positive expectation. An ONPQ, therefore, sounds odd, but the speaker is allowed to perform a PPQ, since it does not encode an epistemic bias. Sudo (2013) proves this way that a positive expectation is an obligatory component encoded in English ONPQs. Therefore, this type of PQ encodes two kinds of bias: [–positive] (evidential bias) and [positive] (epistemic bias).

(9.14)   [Context: You told me that you went to the party yesterday. I have no idea who else did.]

    a. Did John go to the party too?

    b. # Didn't John go to the party too?

Regarding INPQs, they suggest that the speaker expects the negative answer to be true. Sudo (2013), with the same two parameters, demonstrates that this type of PQ is associated with a stronger notion of evidential bias, i.e. INPQs require the presence of negative evidence, otherwise they would not be felicitous (9.15).

(9.15)   [Context: Bill is right-handed and Mary is left-handed. We're wondering who else is lefty. John is using a pen with his right hand in front of us.]

    a. # Isn't John right-handed either?

    b. Isn't John left-handed either?

The fact that John is using a pen with his right hand, offers negative evidence for (9.15b), and not to (9.15a), which is incompatible. This is proved by the following example (9.16).

(9.16)   [Context: In the same context as 9.15, we just learned that Mary is left-handed, and are wondering who else is. Given its rarity, I believe

that Mary is the only left-handed person among us, so I think it's very
likely that John, who is not around, is right-handed.]

Isn't John left-handed too?

Therefore an INPQ is associated with a [+negative] bias. Be aware that
the notion of [+positive] is not equivalent to [–negative]. [+positive] means
that positive evidence is required to utter the question, whereas [–negative]
means that negative evidence must not be present. Table 9.2 summarizes
these findings.

	EVIDENTIAL BIAS	EPISTEMIC BIAS
PPQ	–negative	none
ONPQ	–positive	positive
INPQ	+negative	positive

Table 9.2: Summary of biases for English PPQs,
ONPQs and INPQs (Sudo 2013:11)

To prove his point, that the epistemic bias and the evidential bias are
sufficient to explain the range of flavors that a PQ can experience, Sudo
(2013) applies this system to Japanese PQs. This language can base the
marking of this structure solely on intonation. Sudo (2013) specifies
that the Japanese contour for PQs is one with rising intonation towards
the end. However, he does not analyze in his work any PQ coded only
by intonation cues, rather he focuses on question particles as having a
potential role in conveying biases to the question. In fact, he demonstrates
that the additional readings that arise from Japanese PQs containing a
question particle are also characterised by the proposed feature-based
system. The question particles that he includes in the study are *-no* and
-desho. Moreover, one aspect that should be taken into consideration is

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that, like English, Japanese also makes a distinction between ONPQs and INPQs.

The first part of Sudo's analysis is dedicated to characterizing the biases that Japanese PQs may have, leaving the question particles aside. What Sudo (2013) found for PQs without a particle is summarized in Table 9.3.

∅	EVIDENTIAL BIAS	EPISTEMIC BIAS
PPQ	–negative & –positive	none
ONPQ	–negative	positive
INPQ	+negative	none

Table 9.3: Summary of biases for Japanese PQs without question particles (Sudo 2013:12)

Note that any of the combinations presented in Table 9.3 were previously found for English. Let me illustrate, as an example, how Sudo (2013) reaches the conclusion that ONPQs contain a [–negative] evidential bias and a [positive] epistemic bias. That means, ONPQs in Japanese are infelicitous in those contexts that have negative evidence, but fine in neutral contexts and positive contexts; moreover, the use of this PQ suggests that the speaker expects the positive answer to be true. This characterization of ONQPs can be inferred from the contexts in (9.17-9.19).

(9.17)   [Context: I am in Osnabrück for the first time. My friend Daniel might or might not have been to this city before.]

doko-ka   oisii resutoran sir-anai?
where-KA good restaurant know-neg
'Don't you know some good restaurant?'

(9.18)   [Context: At a student meeting. A is the student representative and knows who will be present today. B is another student.]

A: We are all here now. Shall we begin the meeting?

B: # dare-ka hokani ko-nai?
   who-KA else   come-neg
   'Isn't someone else coming?'

(9.19) A: (Looking at a guidebook) There are all sorts of restaurants
          around here.

B: doko-ka   oisii resutoran sir-anai?
   where-KA good restaurant know-neg
   'Don't you know some good restaurant?'

The context in (9.17) is neutral, and the ONPQ is accepted. That does not happen when the context has negative evidence, as in (9.18); then, the ONPQ is not felicitous. The last context (9.19) contains positive evidence and, again, the ONPQ is felicitous. Sudo (2013) continues his analysis with those questions in which there is an occurrence of a question particle. He first presents the results (Table 9.4) obtained for the different PQs when containing the question particle *-no*.

-no	EVIDENTIAL BIAS	EPISTEMIC BIAS
PPQ-no	+positive	none
ONPQ-no	none	positive
INPQ-no	+negative	positive

Table 9.4: Summary of biases for Japanese PQs containing
the particle *-no* (Sudo 2013:15)

As an example, I will review the case of PPQ-no. This PQ requires positive evidence to be formulated. As PPQs without a particle, it does not convey an expectation on the part of the speaker towards an answer. This is illustrated in examples (9.20-9.22).

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(9.20)   [Context: We're looking for a left-handed person. I'm wondering about
         John, who is not around.]

   # John-wa hidarikiki-na no?
     John-top lefty-cop   Q
     'Is John lefty?'

(9.21)   [Context: My friend has just entered our windowless office wearing a
         dripping wet raincoat.]

   # ima hareteru no?
     now sunny   Q
     'Is it sunny now?'

(9.22)   [Context: Same as in (9.21).]

     ima ame futteru   no?
     now rain is.falling Q
     'Is it raining now?'

A PPQ with the question particle -no is only felicitous in a context
that has positive evidence according to the proposition being asked. In any
other context, the question becomes unacceptable. Moreover, the question
does not carry any evidential bias.

Finally, Sudo (2013) shows the results he got from the analysis of PQs
with the particle -desho (9.5). I will elaborate the case of INPQs with
-desho particle. These questions are reported not to be sensitive to any
kind of evidence (positive or negative) available in the context. However,
they do carry an evidential bias, i.e. [negative], suggesting that the speaker
expects the negative answer to be true. INPQs with -desho are felicitous
in neutral contexts and contexts providing negative and positive evidence
(9.23-9.25). However, for the question to be felicitous, the speaker must
be expecting a negative answer as response.

-desho	EVIDENTIAL BIAS	EPISTEMIC BIAS
PPQ-desho	none	positive
ONPQ-desho	–positive	negative
INPQ-desho	none	negative

Table 9.5: Summary of biases for Japanese PQs containing the particle *-desho* (Sudo 2013:18)

(9.23) [Context: My friend has just entered our windowless office wearing a dripping wet raincoat.]

doko-mo oisii resutoran sir-anai desho?
where-MO good restaurant know-neg Q
'Don't you know any good restaurant?'

(9.24) [Context: At a student meeting. A is the student representative and knows who will be present today. B is another student.]

A: We are all here now. Shall we begin the meeting?

B: dare-mo hokani ko-nai desho?
who-MO else come-neg Q
'Isn't anyone else coming?'

(9.25) A: (Looking at a guidebook) There are all sorts of restaurants around here.

B: doko-mo nihon-shoku nai desho?
where-MO Japanese-food not.exist Q
'Isn't there any Japanese restaurant?'

When comparing Table 9.3 to the following two Tables 9.4 and 9.5, one observes that adding a question particle to a Japanese PQ entirely changes the biases associated to that particular PQ. Sudo's (2013) point is extremely

appealing in the sense that he is adding question particles to the formula. Question particles were treated as a common strategy for languages to code PQs in section 3.2.1.2, but were not discussed in section 8.1, when I talked about the syntactic and prosodic mechanisms that languages may have for signalling biased questions. Question particles were understood as a general marking device for PQs, not as an element which can provide the PQ with different interpretations. Sudo (2013:15) claims that "[g]nerally, a question particle is void of truth-conditional import, but operates on a non-truth-conditional dimension of the meaning". This leads me to think that other strategies not treated in truth-conditional semantics may be also conveying biases to PQs, such as intonation.

9.3   Summary

Sudo's (2013) analysis for biased questions in English and Japanese, shows that, although languages may have different devices to mark biased questions, their biases can all be characterized by the proposed featured-based system, which takes into consideration two types of biases, i.e. the evidential bias and the epistemic bias. His analysis is applied to LSC PQs (§11), with the aim of proving whether a change in NNM features or the occurrence of the interrogative particle is actually fulfilling a pragmatic function, i.e. conveying a bias, and not solely a syntactic one, marking the sentence type.

10. Linguistic levels of NMM

In addition to the hands, sign languages make extensive use of non-manual marking (NMM) to convey linguistic information. Non-manual markers (NMMs), as described in section 5.1, consist on any action which is produced by any part of the body other than hands. The upper part of the body, the head and the face (including any movement of the mouth, cheeks, eyes, eyebrows and any other facial expression), are considered to be the basic NMM articulators.

According to Herrmann & Steinbach (2013), more and more studies on sign languages have focus on NMMs trying to demonstrate the variety of grammatical functions that they can fulfill. In fact, it has been shown that, when communicating, signers pay more attention on each other's face rather than hands, since it is there were the essential grammatical information is encoded (Pfau & Quer 2010). It goes without saying that NMMs are a genuine part of SLs' grammars due to the modality of these languages: the gestural-visual modality is what gives these languages the unique property to grammaticalise non-manual signs.

NMMs need to be distinguished of that purely affective marking. In SLs, gestures and NMMs share the same channel, and although sometimes it can be challenging to differentiate them, there are basically two systematic differences between both types of NMM (Herrmann & Steinbach 2013): scope and timing. First, grammatical NMMs have a clear onset

and offset, which is not a consistent property of gestures. And second, grammatical NMMs are linguistically constrained regarding the signs they accompany, since they are aligned with constituent structures. This does not occur with affective NMM, which are not constrained to appear over specific signs with the aim of paralleling that structure.

Two properties of NMMs have been depicted by Herrmann & Steinbach (2013). First, NMMs can be layered with manual signs and other NMMs as well. The property of simultaneity that exhibit SLs between different channels is not found in SpLs, this provides a new complex and unique field of research: the NMMs interaction with other NMMs or manual signs and the interpretative effects this may generate. Moreover, NMMs are multifunctional, meaning that a "specific nonmanual marker may express various grammatical functions and vice versa" (Herrmann & Steinbach 2013:1). NMMs may express lexical, morphosyntactic, prosodic, semantic and/or pragmatic functions. The following section (§10.1) focuses on the grammatical functions that NMMs fulfill. I will pay special attention to the prosodic role of NMMs in section 10.2.

10.1 Grammatical functions of NMM

One of the basic functions that NMMs have is within the phonological domain of language. I already expounded this in the introduction of this research: NMM together with configuration, point of articulation, movement and orientation, conform the phonological components of a sign. For example, in LSC the sign SLEEP is performed with a tilt of the head towards the side of the head where the hands have been brought, simulating the posture of "lying down" (Pfau & Quer 2010)[1]. Facial

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[1]All the examples from this section belong to this reference.

expressions can also be part of a sign. In DGS and NGT the signs HAPPY, ANGRY and SURPRISED are accompanied with a facial expression that reflects that emotion. Having two signs that differ only in facial is an event that can occur in SLs. Earlier I presented an example for LSC, that I am reproducing in Figure 10.1. The signs PITY and FALL-IN-LOVE are distinguished thanks to the NMMs that accompany them.

Figure 10.1: Facial expression for the signs SADNESS and LOVE in LSC (Pfau & Quer 2010)

In NGT the sign BE-PRESENT is accompanied with another NMM feature, which is a mouth gesture. That means, during the performance of the manual sign, the signer will accompany it with the mouth position one uses to pronounce [shhhh], see Figure 10.2. There are other signs in NGT that instead of using a mouth gesture, are performed with a mouthing, i.e. the full articulation (or a part of it) of the equivalent spoken word in the SpL of the region. Therefore, the signs FLOWER and MOTHER, are performed, respectively, with the full mouthing [blu:m] (from the Dutch word *bloem* 'flower'), and the reduced mouthing [mu:] (from the Dutch word *moeder* 'mother').

Figure 10.2: Mouthing during the sign BE-PRESENT
in NGT (Pfau & Quer 2010)

NMMs have a function in morphology too. They can serve an adjectival function, when modifying nouns, or an adverbial function, when modifying verbs. According to Pfau & Quer (2010), certain adjectival meanings are achieved by performing specific NMMs simultaneously to the nominal sign they modify. This is the case of DGS when expressing the diminutive or augmentative adjectival meaning. To perform the former meaning, the signer will suck in his cheeks, whereas he will blow his cheeks to conform the last meaning (10.1).

(10.1)   DGS:

a.   POSS₁ FRIEND $\overline{\text{HOUSE}}^{)(}$ BUY

'My friend bought a small house.'

b.   TODAY MAN $\overline{\text{TREE}}^{()}$ INDEX₃ CUT-WITH-SAW₃

'Today the man will cut down the huge tree.'

The NMMs ')(' and '()' when performed with the adjectives SMALL and BIG work as intensifiers. NMMs occurring at the same time as a verb, are giving us information about how that action was performed. ASL,

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for instance, uses a NMM feature glossed as 'mm' when an action is performed in a relaxed manner. 'mm' is realized with the lips together and pushed out a little bit. By contrast, when a signer wants to indicate that an action was done with unawareness, inattention or lack of control, she uses 'th'. This NMM feature is performed with a "slight head tilt and protrusion of the tongue through the lips" (Pfau & Quer 2010:5). (10.2) illustrates these cases.

(10.2) ASL:

a. MAN $\overline{\text{FISH}_{continuous}}^{\text{m m}}$

'The man was fishing with relaxation and enjoyment.'

b. INDEX₁ $\overline{\text{GO-ACROSS}}^{\text{th}}$. WRONG, ACCIDENT

'I crossed the street carelessly. Whoops! There was an accident.'

Another domain in which NMMs can fulfill different functions is syntax. NMM play a role in coding negation and affirmation, interrogatives[2], topics, conditionals, relative clauses, agreement and pronominalization.

Regarding negation, most SLs share a common NMM feature to negate a sentence: the headshake (hs). However, it has been shown that, in terms of distribution, the headshake does not behave equally in all SLs. In ASL, for instance, can either occur with the negative particle NOT or be extended over the rest of the whole VP (10.3a). The particle, however, is optional, and headshake is sufficient to negate the sentence, but it must be extended over the whole VP (10.3b).

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[2]I am not treating interrogatives in this section, since they are extensively described throughout the thesis and I already showed the role of NMMs when performing this sentence type in section 5.1.

(10.3) ASL:

<pre>
         hs (hs)
a. JOHN NOT BUY HOUSE
</pre>

'John didn't buy the house.'

<pre>
                hs
b. JOHN BUY HOUSE
</pre>

'John didn't buy the house.'

LSC behaves like ASL when the negative particle appears in the sentence: the NMMs occur over the particle and optionally may be spread over the whole VP (10.4a). By contrast, when the negative particle is not signed, LSC commonly performs the NMM only over the predicate, although it may spread over the direct object too (10.4b). Performing the NMMs only over the sign BUY in (10.3b), will make the sentence ungrammatical for ASL.

(10.4) LSC:

<pre>
           (( )) hs
a. SANTI MEAT EAT NOT
</pre>

'Santi doesn't eat meat.'

<pre>
           (   ) hs
b. SANTI MEAT EAT
</pre>

'Santi doesn't eat meat.'

Topics can also be marked through NMM features. The most basic marking involves raised eyebrows, although other NMMs can also occur. Sentence topics are frequently positioned on the left periphery and NMM spread over the whole topicalised constituent (10.5). In addition, the topicalised constituent is frequently followed by an intonational break.

(10.5) LSC:

<pre>
          t
ONION, INDEX₁ HATE
</pre>

'Onions, I hate.'

Conditionals are also made explicit through NMM (10.6). Just as topics, a basic NMM feature to mark conditional sentences is raised eyebrows; it can be combined with other features such as raised chin. Conditionals also appear sentence initially and may be followed by an eye blink or a change in head orientation.

(10.6) ISL:

$$\overline{\text{IF INDEX}_3 \text{ INVITE-ME BIRTHDAY-PARTY OF-HIM,}}^{\text{br}} \text{INDEX}_1 \text{ GO}$$

'If he invites me to his birthday party, I will go.'

NMMs also have a role when performing relative clauses. Like topics and conditionals, raised eyebrows is the most common NMM feature to mark this structure. In LIS, for example, a relative clause is placed in sentence initial position and NMM spreads over the whole prosodic constituent (10.7). Note that LIS adds the sign PE at the end of the relative clause, since it is an obligatory clause-final marker.

(10.7) LIS:

$$\overline{(\text{TODAY MAN}_3 \text{ PIE BRING PE}_3}^{\text{br}}) \text{ YESTERDAY (INDEX}_3) \text{ DANCE}$$

'The man that brought the pie today danced yesterday.'

According to Pfau & Quer (2010:11), at least ASL (10.8) may mark agreement with NMMs: "in transitive sentences, head tilt towards the subject locus may be used to express subject agreement while eye gaze towards the object locus may mark object agreement". It has been reported that head-tilt starts a little bit before the eye gaze is directed to the object.

(10.8) ASL:

$$\text{ANN}_{3a} \quad \overline{\overline{{}_{3a}\text{BLAME}_{3b}}^{\text{eye gaze-3b}} \text{ MARY}_{3b}}^{\text{head tilt-3a}}$$

Finally, NMMs have been claimed to play a role in pronominalization. SLs use the pointing sign INDEX to fulfill different functions, such as localizing a referent in the signing space, presenting a definite determiner or a spatial adverbial, and pronominalizing an argument (Pfau & Quer 2010:12). When using the INDEX sign to introduce a pronoun, SLs pose a problem in distinguishing second person pronoun from third person pronoun. Unlike first person pronoun, which has a fixed location (the chest of the signer), second and third person pronouns can be placed anywhere in the signing space. However, research in LIBRAS and HZJ has demonstrated that actually NMMs are systematically used to distinguish between second and third person pronoun. It has been claimed that the direction of pointing, the direction of eye gaze and the degree of head turn are aligned when presenting a second person pronoun, thus these parameters are in disjunction when presenting a third person pronoun. See this difference for HZJ in Fig. 10.3.

2nd person pronoun   3rd person pronoun

Figure 10.3: HZJ pronouns distinguished by NMMs
(Alibašić Ciciliani & Wilbur 2006:116-117)

NMMs have also been claimed to fulfill a pragmatic function, since they reveal how a sentence may be interpret in discourse. Pfau & Quer

(2010) explain two cases, that I am going to expose below, in which NMMs are essential. First of all, NMMs give us information regarding the notion of focus. Body leans are associated with the marking of this pragmatic function. A distinction is made between forward leans, which express inclusion and affirmation, and backward leans, which express exclusion and negation. The following example from ASL (10.9) shows a case of contrastive focus, in which the rejected element is marked with backward body lean, while the element that replaces it is marked with forward body lean.

(10.9)   ASL:

$$\text{INDEX}_1 \quad \overline{\overset{\text{lean back}}{\text{THINK TUESDAY}}} \; \text{TODAY}, \; \text{INDEX}_1 \quad \overline{\overset{\text{lean back}}{\text{MISTAKE INDEX}_1}},$$

$$\overline{\overset{\text{lean forward}}{\text{WEDNESDAY}}}$$

'I thought it was Tuesday but I was wrong. It's Wednesday.'

The second pragmatic function that NMMs fulfill is the marking of role shift. Role shift can be use to directly report the speech; See the distinction between (10.10a) and (10.10b).

(10.10)   LSC:

    a. $\text{ANNA}_{3a} \; {}_{3a}\text{SAY}_1 \; \text{INDEX}_{3a} \; \text{FED-UP LOSE}{+}{+}{+}$

       'Anna told me that she was fed-up with losing so often.'

    b. $\text{ANNA}_{3a} \; {}_{3a}\text{SAY}_1 \; \overline{\overset{\text{bs-3a}}{\text{INDEX}_{3a} \; \text{FED-UP LOSE}{+}{+}{+}}}$

       'Anna told me "I am fed-up with losing so often".'

Example (10.10a) involves indirect speech; the embedded sign INDEX_{3a} locates the subject ANNA in the signing space. By contrast, in example (10.10b), there is a body shift towards the location of ANNA and the signer uses the first person pronoun INDEX_{1a} to refer to, in this case, the person producing the reported speech. Body shift may be accompanied by other

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NMMs such as a change in head position and a break in eye gaze contact with the addressee (Pfau & Quer 2010:13). Another function of role shift occurs when a signer embodies an event from a character's perspective. Signer will express the character's action, including facial expressions and nonlinguistic gestures.

In this section, I have addressed some of the grammatical functions that NMM features may have in SLs. Now I will be exposing those prosodic functions that have been associated with NMM.

10.2   Prosodic function of NMM

Now that NMMs have been shown to be a crucial part of SLs' grammars, I can turn to another domain in which NMMs have also been claimed to play an important role: prosody. In this section, I am addressing an issue that has already been raised by other researchers and that leads to one of the biggest complexities for accomplishing the present research.

Later, I will be demonstrating that a certain combination of NMMs affect the interpretation of a PQ, conveying specific biases (§11). Now, I am assuming that NMM is feasible to be paralleled with intonation, however, prosodic structure is most of the time aligned with syntactic constituency, and in SLs both are realized with the same articulators. Therefore, the same NMM could be potentially fulfilling a syntactic or a prosodic function, or both. As already exposed by Herrmann & Steinbach (2013), Pfau & Quer (2010:15) also remind us that "one nonmanual marker might play multiple roles in grammar". Moreover, it is true that when specific NMMs are associated with a syntactic construction, they are normally treated as a single marker, playing a role in the syntactic domain. However, it may be the case that each of the different NMMs features that are layered have a

specialized function. Sandler (1999), cited in Pfau & Quer (2010), calls this unique phenomenon of SLs superarticulation, and maintains that it is the SLs equivalent to suprasegmentals. Having in mind that in SpLs, intonation does not only serve to distinguish one sentence type from another, but also to guide in a decisive way how an utterance must be interpreted; I will be assuming that NMM behaves equally regarding these principles. Several researchers have already proclaimed that the complex layering of NMM is indeed providing prosodic information, directly related to pragmatics. For example, regarding interrogatives, Deuchar (cited in Sutton-Spence & Woll 1999:68) already mentioned that the facial expression is not so much a distinction between polar and content questions, rather between those questions that request a lot of information to those that don't. She considers that a NMM feature such as brow furrowing indicates that the signer genuinely does not know the answer to that question. In the following example from Sutton-Spence & Woll (1999:68), one has to imagine a context where a mother asks her toddler where the teddy bear is. In the first case (10.11a), the mom already knows where is it and is just trying to figure out whether the child knows it too. In the second case (10.11b), the mom is asking, because she genuinely does not know where the teddy bear is.

(10.11)   ASL:

a. $\overline{\text{TEDDY WHERE}}^{\text{br}}$

   'Where's Teddy?' (question with known answer)

b. $\overline{\text{TEDDY WHERE}}^{\text{bf}}$

   'Where's Teddy?' (questioner does not know the answer)

May the distinct NMM combinations be treated as different prosodic contours, prosody is enabling different pragmatic readings. Wilbur &

Patschke (1999) consider that NMM are usually covering a syntactic function, however, meaning can be added when varying the different layers of NMM, i.e. the suprasegmental features. Therefore, NMMs do play an important role in prosody, while at the same time, prosody interacts with the meaning of utterances.

10.3   Summary

This chapter has shown that, among other grammatical functions, one of the roles of NMMs is to provide an utterance with its right reading by means of prosody. Claiming that this is, indeed, an essential function of NMMs, and that they operate in an intricate complex layering method fulfilling different functions in different linguistic levels, the analysis in chapter 11 is reasonable to be proposed.

11. Biased questions in LSC

If SpLs display different mechanisms to let a speaker know when a PI is biased and in which way, it is reasonable to think that SLs would do that too. In previous sections, it has been proved that specific mechanisms, such as question particles and intonation, interact with the final interpretation a PI may have. Sudo's (2013) analysis includes question particles as a main element to convey biases in Japanese PIs. Indeed, his feature-based theory of biases demonstrates the role of question particles when marking a PI. This leaves the door open to include other strategies from languages to his analysis, such as intonation. Now, it is engaging to discover what happens with SLs, which devices these languages in the visual-gestural modality use to signal biased questions, and which biases they convey. Treating NMM as intonation, and taking into account the appearance of the already introduced YES-NO Q-sign, I will analyze these devices as potential bias triggers following the analysis of Sudo (2013). To date, no comprehensive studies have been conducted on the pragmatic function that NMM may have in specific structures in SLs, and even less regarding what role the NMM plays when it comes to mark a bias in a PI. In section 11.2, the methodological issues are presented to provide a broad picture of how the data for the analysis was collected; and in section 11.3, an analysis of PIs in LSC is introduced: a first glimpse at the meanings of its intricate markings through Sudo's (2013) fine-grained system.

11.1   The LSC puzzle

As stated in chapter 6, LSC uses a specific combination of NMM features to encode a PI. NMM is an obligatory mechanism to mark this structure in LSC, and, in fact, it is the only marker that distinguishes a PI (11.1) from a declarative sentence (11.1).

(11.1)   a. $\overline{\text{IX}_2 \text{ BREAD EAT}}^{\text{pol-q}}$

         'Do you eat bread?'

      b.   IX$_2$ BREAD EAT

         'You eat bread.'

It has been claimed that the most prominent feature for marking polar interrogatives in LSC is eyebrow raise (br) (Quer et al. 2005). Further data examination shows, however, that the structure may be performed with a combination of NMM features with eyebrow furrowing (bf) as the most salient one, as can be seen in Fig. 6.2, repeated here in Fig. 11.1. Thus, the eyebrow position feature in PIs is not constant in LSC. Eyebrow furrowing, the most prominent feature to mark content questions in this language (11.2), can also be used to mark a PI.

(11.2) $\overline{\text{IX}_2 \text{ SLEEP WHERE}}^{\text{bf}}$

      'Where do you sleep?'

These findings go against some of the generalizations made so far: eyebrow furrowing is not specific to content questions, and, therefore, neither is eyebrow raise to PIs. Moreover, other NMMs listed neither in Zeshan (2004) nor in Cecchetto (2012) are found to be used to mark PIs in LSC, such as 'squinted eyes', 'tucked in chin', 'head nod' and 'backward body lean'. The final list of NMM features that can be combined to code the structure is, consequently, longer for LSC (11.3).

IX$_2$	HOLIDAY	GO

a. $\overline{\text{IX}_2 \text{ HOLIDAY GO}}^{\text{br}}$
    'Are you going on holiday?'

IX$_2$	HOLIDAY	GO

b. $\overline{\text{IX}_2 \text{ HOLIDAY GO}}^{\text{bf}}$
    'Are you going on holiday?'

Figure 11.1: Eyebrow movements in LSC PIs

(11.3) LSC NNM features for PIs

- eyebrow raise / eyebrow furrowing

- eyes wide open / squinted eyes

- eye contact with the addressee

- head forward / upward position

- forward / backward body lean

- tucked in chin

- head nod

In addition, LSC seems to optionally add a question particle, known as the YES-NO Q-sign, positioned at the very end of the utterance (11.4).

$$\overline{\text{INDEX}_2 \text{ PARTY GO (YES-NO)}}^{\text{pol-q}}$$

(11.4) $\overline{\text{INDEX}_2 \text{ PARTY GO (YES-NO)}}^{\text{pol-q}}$
        'Are you going to the party?'

Data already established that this sign is pragmatically marked as it is strongly demanding an answer while putting the interlocutor under pressure for getting her response as rapidly as possible. This goes in line with Zeshan (2004), who already claimed in her cross-linguistic research that interrogative particles added a meaning to the utterance, since they are pragmatically marked in most SLs. Therefore, interrogative particles are not used optionally, but in very constrained contexts. This is exactly what seems to be happening in LSC, since the informants rejected to place the Q-sign in some of the sentences, and even described the fact of placing the Q-sign in a specific utterance as "nonsense". Given that, the following question arises: in which situation is each combination of non-manual features used? And which are the possible combinations? When is it

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allowed to place the YES-NO Q-sign, since it seems to appear in very constrained contexts? The following pages try to provide a first analysis to solve this puzzle, while taking into consideration a research topic which is still largely unknown: the range of NMM functions.

11.2   Methodology - Biased questions in LSC

The analysis from this second part of the research relies on new elicited data obtained through three different tasks, conscientiously designed to control for the factors that can influence the informants' behavior. Such factors involved the amount of information that the informants have about the fact that is being questioned, the previous experience they could probably have in relation to that fact (which will be questioned), the kind of relation they share with their interlocutor and what they are able to observe and infer from the actual context of the conversation.

The informants were two deaf native LSC signers who are used to work in a linguistic research environment. All the elicitation tasks were presented in LSC, although our informants are proficient in Spanish. This decision was made to avoid any influence from the spoken language and to place the informants in a more realistic communicative situation, with the aim of eliciting more natural data. The informants undertook different tasks in order to contrast the resulting data: each result from each task was compared to each result from the other two tasks. Therefore, the results presented below are only those that appeared to be consistent in all the tasks. The informants completed a context elicitation task, a grammaticality and truth-value judgement task, and were later asked to discuss all the collected data.

- FIRST TASK: CONTEXT ELICITATION TASK

During the first task, slightly different contexts, regarding different levels of knowledge of the informant about some fact and the evidence in the communicative situation suggesting the negative or the positive answer (evidential and epistemic bias), were proposed. The informants were asked to perform a PI as a continuation of the situation, taking into account the particularities of the context (11.5–11.6). The contexts were constructed and based on the classification of Sudo's proposal and, at least, three contexts were proposed and examined for each combination of values of evidential and epistemic biases. The manual signs of the outcome were provided to the informants in this task: they were supposed to add only the NMMs to accommodate the utterance to the communicative situation.[1]

(11.5)   [Context: Your friend loves travelling. He is always looking forward to the summer. He has visited more than forty countries in the past fifteen years. Ask him if he is going to go on holidays this summer.]

Outcome:

$$\overline{\text{IX}_2 \text{ HOLIDAY GO}}^{\text{br}}$$

'Are you going on holiday?'

(11.6)   [Context: Your friend is always working. He also works in the summer. He has not gone on holidays for more than fifteen years. Ask him if he is going to go on holidays this summer.]

Outcome:

---

[1]In examples (11.5–11.6), the informants were provided with the signs we see at the outcomes. This was done for the purpose of having a better control over the contexts and eliciting data that later on were more likely to be compared in terms of the NMMs. This helped to also control the factors, previously described, that could influence the informants' behavior.

$$\overline{\text{IX}_2 \text{ HOLIDAY GO}}^{\text{bf}}$$

'Are you going on holiday?'

This task was bidirectional, since it was considered useful to also present a PI and ask for a real context in which it could be used. In this case, at least, three different PIs with the same specific combination of NMMs were provided and were asked to be placed in a context. This provided a qualitative corpus to work with.

- SECOND TASK: GRAMMATICALITY & TRUTH-VALUE JUDGEMENT TASK

A grammaticality and truth-value judgement task was later designed, using the same contexts and PIs as in the first task, in order to compare the outcomes of both tasks and have more accurate results. This task was presented to the informants one month after the first task was completed. This amount of time was given to the informants to avoid remembering the exact items that were used in the first task and the outcomes they provided. In this grammaticality and truth-value judgement task, a conversational context was provided, followed by a PI with a specific combination of NMMs. The informants were asked to spot whether that PI was 'good', 'strange' or 'bad' in the given context. All the contexts and PIs that appeared in this task were extracted from the first task: both the contexts based on Sudo's proposal and the ones provided by the informants were included. The task was designed in a way that each context (one for each combination of values of evidential and epistemic biases, according to Sudo (2013)) was paired at least once with a PI that was considered 'good', once with a PI that was considered 'strange' and once with a PI that was considered 'bad' (in accordance with the outcomes of the first task). The contexts were randomly paired with a PI with a specific combination of non-manual features for the 'bad' cases. The results obtained in this task

were compared to the ones obtained in task two. This was a helpful device to distinguish those combinations of NMMs that appeared consistently in very restrictive and constrained contexts from those that did not. This leads us to the third task, which consisted of a discussion with the informants.

- THIRD TASK: DISCUSSION OF THE DATA

The last task consisted in a discussion of the data with the informants to verify all the results found. The discussion was carried out in several sessions. Each session lasted two hours approximately and the idea was to jointly discuss the results in a participatory and not controlled dialogue. The discussion started one month after the second task. This was considered to be a reasonable amount of time for the informants to be fresh again about the topic and not to be biased towards the previous results. The first session was devoted to verify the most consistent results. The next four sessions were devoted to analyze the weakest results. During the sessions, I would provide the results and ask about their opinion: they would tell me whether they agree or not. Discussions started as they brought up other examples and connected the results to their language experience and intuitions. During the last sessions, both informants confirmed that every single construction presented in this work truly represents LSC.

11.3   Analysis

Preliminary data collected during the first part of this research suggests that the availability of information that a signer may have is what seems to influence how a PI is marked through NMM features in LSC. Yet this is not sufficient to explain when a specific combination of NMMs appears or when the signer decides to use the YES-NO Q-sign.

I would innovatively suggest that NMM is the mechanism that SLs, and LSC specifically, have to add a bias to a PI. Since the interpretation of intonation cues in SpLs depends on contextual factors, I claim that for NMM in SLs does as well, and I will define the function of this suprasegmental element in this case as essentially pragmatic. Sudo's (2013) feature-based theory of biases can potentially explain why LSC displays different NMMs or why the YES-NO Q-sign occurs only occasionally when forming PIs. Moreover, it can predict when to use those markers. To provide the following results, Sudo's methodology was applied: playing with distinct PIs with different combinations of NMM features and then embedding them in real conversational contexts to gather their possible interpretations, and, therefore, their meanings.

11.3.1 Solving the puzzle

All the LSC PIs presented in this research share the same truth-conditional meaning (they are used to ask about the same thing), yet the natives of this sign language clearly perceived interpretive differences among them. The combinations of markers on which I focus are those that consistently arise in constrained contexts with the same specific biases, so it is more likely that they are, in fact, conveying a specific pragmatic meaning. The analysis focuses specifically on the eyebrow position feature, since it has been claimed to be the most salient feature for this structure and the one that distinguishes PIs from other structures, such as content questions. Other features are also analyzed and proved to influence on the biases encoded in the question. The combinations analyzed in this research contained the following features:

- eyebrow raise (br) / eyebrow furrowing (bf)

- forward body lean (fb) / backward body lean (bb)

- head forward lean (hf)

- YES-NO Q-sign

11.3.1.1 'eyebrow furrowing'+'backward body lean'

The combination of eyebrow furrowing (bf) and backward body lean (bb) (Fig. 11.2) encodes two different kind of biases at the same time. First of all, it carries a strong [negative] epistemic bias, meaning that the signer has an expectation towards the negative answer. Moreover, examples (11.7–11.9) show that another bias must be associated with this combination of nonmanual markers, as this PI appears to be felicitous only in a context that provides positive evidence. This PI is not accepted in a context like the one in (11.7), that presents a neutral context for either answer. It is neither accepted in a context providing negative evidence (11.9). Therefore, this polar interrogative encodes a [+positive] evidential bias.[2]

(11.7)   [Context: You have never seen me playing cards and you wonder if I ever do.]

$$\# \overline{\text{INDEX}_2 \text{ PLAY CARDS}}^{\text{bf+bb}}$$

'Do you play cards?'

(11.8)   [Context: You enter home and find me playing cards in the dining room. You thought I did not like playing cards and I did not even know how to play.]

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[2]Note that the English translations of the LSC examples provided from this point on are very approximate since the biases involved in LSC PIs do not correspond to the ones involved in English PIs.
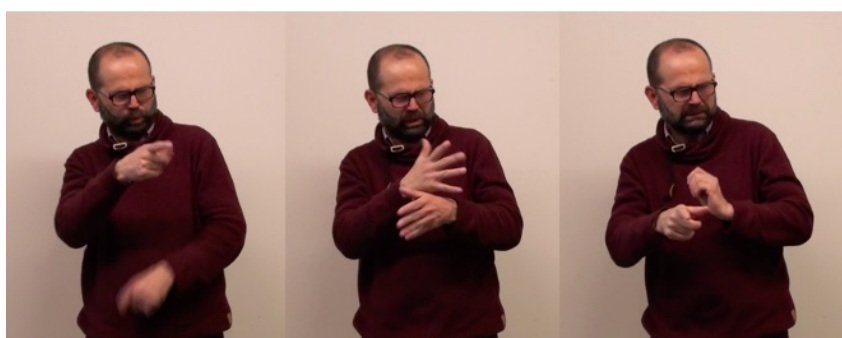
$$\overline{\text{INDEX}_2 \text{ PLAY CARDS}}^{\text{bf+bb}}$$

'Do you play cards?'

(11.9)   [Context: I have just told you that I have never played cards because I do not like it. You already thought that: I do not like playing any board game.]

$$\# \overline{\text{INDEX}_2 \text{ PLAY CARDS}}^{\text{bf+bb}}$$

'Do you play cards?'

| IX$_2$ | PLAY | CARDS |

Figure 11.2: Eyebrow furrowing + backward body lean combination

11.3.1.2 'eyebrow raise'+'backward body lean'

A polar interrogative marked with eyebrow raise (br) and backward body lean (bb) (Fig. 11.3) does also carry a [negative] epistemic bias. Examples (11.10–11.12) suggest that the questioner is expecting the negative answer to be true. In this sense, both combinations presented so far, encode the same epistemic bias. However, the contrast between example (11.8) and example (11.11) tells us that, in fact, both combinations do carry an

evidential inference, but it is not the same one. In this case, the [–positive] and [–negative] values stem from 'eyebrow raise'+'backward body lean' features, since a polar interrogative marked with this combination is infelicitous in the presence of any contextual evidence. Note that [–positive] and [–negative] biases are not incompatible: having both of them means that the polar interrogative is only licensed in neutral contexts, when there is no evidence for either of the answers.

(11.10)   [Context: You have never seen me playing cards and you wonder if I ever do.]

$$\overline{\hspace{3.3cm}}^{\text{br+bb}}$$
INDEX$_2$ PLAY CARDS
'Do you play cards?'

(11.11)   [Context: You enter home and find me playing cards in the dining room. You thought I did not like playing cards and that I did not even know how to play.]

$$\overline{\hspace{3.3cm}}^{\text{br+bb}}$$
INDEX$_2$ PLAY CARDS
'Do you play cards?'

(11.12)   [Context: I have just told you that I have never played cards because I do not like it. You already thought that: I do not like playing any board game.]

$$\overline{\hspace{3.3cm}}^{\text{br+bb}}$$
INDEX$_2$ PLAY CARDS
'Do you play cards?'

| IX$_2$ | PLAY | CARDS |

Figure 11.3: Eyebrow raise + backward body lean combination

11.3.1.3 'eyebrow furrowing'+'head forward'+'forward body lean'

Contrary to what we have seen so far, a combination of NMM containing eyebrow furrowing (bf), head forward (hf) and forward body lean (fb) (Fig. 11.4), obligatorily carries a [positive] epistemic bias: the polar interrogative is only felicitous if the signer expects the positive answer to be true. Given the examples (11.13–11.15), this combination of nonmanual markers does also encode a [+positive] evidential bias: the polar interrogative is only felicitous in a context with positive evidence. Whenever there is a context that suggests evidence for the negative answer (11.15) or a context that does not provide evidence for either of the answers (11.13), this combination of NMMs is not used.

(11.13)   [Context: We meet some days ago and you do not know a lot about me. You would like to know whether I travel or I am staying in town during summer.]

$$\# \overline{\text{INDEX}_2 \; \text{TRAVEL}}^{\text{bf+hf+fb}}$$

'Are you going to travel?'

(11.14)   [Context: You know I was travelling with the whole family this month.
            You met me at the bus station, I have my suitcase and the bus ticket
            prepared, all my family is also there.]

$$\overline{\text{INDEX}_2\ \text{TRAVEL}}^{\text{bf+hf+fb}}$$

            'Are you going to travel?'

(11.15)   [Context: You know I was travelling with the whole family this month.
            You met me at the bus station, but I do not have my suitcase and my bus
            ticket either, all my family is also there.]

$$\#\ \overline{\text{INDEX}_2\ \text{TRAVEL}}^{\text{bf+hf+fb}}$$

            'Are you going to travel?'

IX$_2$ TRAVEL

Figure 11.4: eyebrow furrowing + head forward
+ forward body lean combination

11.3.1.4   'eyebrow raise'+'head forward'+'forward body lean'

In LSC, a polar interrogative signaled with eyebrow raise (br), head for-
ward (hf) and forward body lean (fb) (Fig. 11.5) is obligatorily associated

with a [positive] epistemic bias. If the signer expects to get an answer with a negation, this combination of nonmanual markers is not licensed. In order to be able to use this interrogative, the signer can also decide to ask in accordance to what s/he beliefs in. So, in example (11.16), if the signer is more inclined to belief that the interlocutor is staying in town during summer, the signer will ask about that. This combination of nonmanual features also encodes a [–negative], since the polar interrogative is not allowed in contexts providing negative evidence.

(11.16)   [Context: We meet some days ago and you do not know a lot about me. You would like to know whether I travel or I am staying in town during summer.]

$$\overline{\text{INDEX}_2 \ \text{TRAVEL}}^{\text{br+hf+fb}}$$
'Are you going to travel?'

(11.17)   [Context: You know I was travelling with the whole family this month. You met me at the bus station, I have my suitcase and the bus ticket prepared, all my family is also there.]

$$\overline{\text{INDEX}_2 \ \text{TRAVEL}}^{\text{br+hf+fb}}$$
'Are you going to travel?'

(11.18)   [Context: You know I was travelling with the whole family this month. You met me at the bus station, but I do not have my suitcase and my bus ticket either, all my family is also there.]

$$\# \ \overline{\text{INDEX}_2 \ \text{TRAVEL}}^{\text{br+hf+fb}}$$
'Are you going to travel?'

IX$_2$ TRAVEL

Figure 11.5: eyebrow raise + head forward
+ forward body lean combination

11.3.1.5 'eyebrow furrowing'+ YES-NO Q-sign

A polar interrogative marked with eyebrow furrowing (bf) but also with the manual YES-NO Q-sign (Fig. 11.6) is associated with [–positive] and [–negative] evidential bias. That means that the combination would only be felicitous in absence of contextual evidence, as one can conclude from examples (11.19–11.21). This bias was also encoded in the 'eyebrow raise'+'backward body posture' combination, but contrary to that one, this combination does not carry any epistemic bias. That is why in a context like (11.19) is irrelevant asking about (11.19a) or (11.19b). That is not possible in contexts like the ones in examples (11.20–11.21), where asking (11.19b) would also not be allowed.

(11.19)   [Context: Your best friend has planned a trip for both of you to celebrate your birthday, but the country you will be visiting is a surprise. However, you need to prepare your suitcase and you would like to know whether it is a cold or a warm place.]

$$\overline{\text{COUNTRY COLD YES-NO}}^{\text{bf}}$$

a. COUNTRY COLD YES-NO
   'Is it cold in that country?'

b. $\overline{\text{COUNTRY WARM YES-NO}}^{\text{bf}}$
   'Is it warm in that country?'

(11.20) [Context: Your best friend is travelling around the world. Today you are making a video call with him. You can see from the video that he is sitting somewhere outside and he is wearing a T-shirt.]

$\overline{\text{COUNTRY COLD YES-NO}}^{\text{bf}}$
'Is it cold in that country?'

(11.21) [Context: Your best friend is travelling around the world. Today you are making a video call with him. You can see from the video that he is sitting somewhere outside and he is wearing a coat and a scarf.]

$\overline{\text{COUNTRY COLD YES-NO}}^{\text{bf}}$
'Is it cold in that country?'

YES-NO

Figure 11.6: Eyebrow furrowing + YES-NO Q-sign combination

11.3.2 Discussion

The outcomes resulting from the contexts presented in the tasks, previously manipulated to control the different biases that they encode, as it has been done in examples (11.7–11.21), showed evidence that prove the signers use consistently the specific combinations of markers that I have presented in very specific and constrained contexts. Therefore I can claim that different combinations of markers exist in LSC to provide different kind of biases. The evidential and epistemic biases proposed in Sudo's (2013) analysis for English and Japanese PIs are sufficient to explain the different kinds of biases that are encoded in LSC PIs too. The biases that are triggered by each of the combinations of NMMs that have been analyzed are summarized in Table 11.1.

Combination of markers	EVIDENTIAL BIAS	EPISTEMIC BIAS
bf + bb	+positive	negative
br + bb	–positive & –negative	negative
bf + hf + fb	+positive	positive
br + hf + fb	–negative	positive
bf + YES-NO Q-sign	–positive & –negative	none

Table 11.1: Summary of biases enconded in
NMMs combinations for LSC PIs

It would have been appealing to find that each marker is actually providing a specific bias to a PI. By looking at Table 11.1, one may consider that some NMMs are clearly associated with a specific bias. Body leans seem to be related with the epistemic bias. A backward body lean (bb) could trigger a [negative] epistemic bias, and a forward body lean (fb), for instance, a [positive] epistemic bias. However, if we focus on another marker, such as eyebrow position, it seems that this association

cannot be straightforwardly determined. Eyebrow furrowing could be encoding a [+positive] evidential bias, but when it comes to eyebrow raise, there is no clear association between this marker and a bias. Since it has been hypothesized that the epistemic bias is triggered by the body lean, eyebrow raise could be encoding a [–negative] evidential bias, but also a [–positive] one. Moreover, the last combination presented is also encoding a [–positive] and [–negative] evidential bias and, unexpectedly (if we assume that meaning is compositional), the eyebrow position that includes this combination is eyebrow furrowing. Therefore there is no one-to-one correspondence between markers and biases.

As it can be drawn from this very first analysis is that results point towards the assumption that the meaning added by the combinations of NMMs is not compositional and, thus, it is the whole combination of features that conveys the biases. Yet, all possible combinations of markers have not been examined, since only the ones that consistently proved to encode biases were included in the thesis, with the aim to provide a reliable analysis. By this, I mean to say that the big picture is still not completed and only further studies could answer the question about how the meaning regarding the biases is built in LSC polar interrogation.

11.4   Summary

In this chapter, empirical evidence supported an analysis in which each combination of NMM, as well as the appearance of the YES-NO Q-sign were conveying a different bias. Sudo's (2013) feature-based description system explains and predicts those. Therefore, each combination of non-manuals, as well as the appearance of the question particle, is shown to not only mark sentence type but also to encode specific pragmatic meanings.

12. PART III: Summary

This third part of the thesis, called "PART III: ANALYSIS", is divided in four chapters: "Biased questions", "A theory of biases", "Linguistic levels of NMM" and "Biased questions in LSC".

Chapter 8 addressed those questions that are not considered neutral, the biased questions, since the speaker has an expectation towards a particular answer. Biased questions are defined as a sub-type of PIs. Assuming that the abstract representations of neutral questions and biased questions is not the same, their structure should not be either. Therefore, the chapter focused on those syntactic structures and intonation contours in SpLs that trigger the biases. Tag questions and negative polar questions, as well as positive polar questions, convey a bias and are only uttered in contexts where the speaker has a preference towards one of the answers. This syntactic structures have been reviewed in detail and illustrated with English examples. First, negative polar questions were disambiguated between inner (INPQs) and outer (ONPQs) negation polar questions, since Ladd (1981) exposed that both types of questions are not interchangeable and, therefore, must encode different kinds of biases. While INPQs are looking for a confirmation of the proposition expressed, ONPQs are used to check on new an unexpected inferences. Positive polar questions (PPQs) are neither neutral. Sometimes the evidence that is provided in the conversational situation is enough to prevent us from uttering a particular PPQ, therefore,

it must trigger some kind of bias. Tag questions are also approached and associated with specific biases, otherwise they would be able to be used in any context. Moreover, we have seen that intonation interacts with these structures, giving rise to different biased readings from a same structure. With this precedent, different studies from Spanish and Catalan regarding intonation and its interaction with pragmatics have been reviewed. Intonation has been considered to also have a fundamental role in sentence interpretation. Both Catalan and Spanish realized different contours to let the addressee know that the question contains a bias and to inform the addressee which are those.

In chapter 9, the theory of biases in which the analysis proposed is based is explained. The analysis relies on Sudo's (2013) feature-based description system, which, trough specific examples of two unrelated languages (English and Japanese) proves that the notions of epistemic and evidential bias are sufficient to explain the different flavors of biases a question may convey. With the help of some values that are assigned to each question, regarding the epistemic and evidential bias it conveys, he identifies the different flavors of biases that each type of question triggers. Moreover, he brings on fore a new ingredient to the formula: interrogative particles. By placing different Japanese biased interrogatives, some of them containing a question particle, into different contexts, he reveals why a question is not neutral and which biases are encoded in that question. And this is what I consider to be a fundamental key for the versatility of the proposal: other strategies not treated in truth-conditional semantics, such as intonation, may be also conveying biases to PQs, and Sudo's (2013) analysis can account form them.

Chapter **??** explains the functions that NMMs can fulfill in different domains of language. We have seen that NMMs are an essential part

of SLs grammars and that they are distinguished from purely affective markers. Due to the property of simultaneity that SLs exhibit, NMMs can occur with manual signs or with other NMMs. The interactions between these components will inevitably generate an effect over the final interpretation of utterances. Moreover, Pfau & Quer (2010) and Herrmann & Steinbach (2013) have already reported the multifunctionality of NMMs, meaning that one NMM can express various grammatical functions at the same time, or one grammatical functional may be realized by different NMMs. The chapter is divided in two sections; section 10.1 reviews the variety of grammatical functions that NMMs can fulfill; different lexical, morphological, syntactic and pragmatic functions from NMMs have been discussed and illustrated. Section 10.2 reflects on the role that NMMs have in prosody, considering (as it has been observed in SpLs) that it can affect the pragmatic meaning of a sentence.

Chapter 11 has provided an analysis for PIs in LSC that explains why this SL displays different combinations of NMM features (as well as uses a question particle) to mark this structure. Sudo's proposal provides the basics to analyze this structure as containing different biases according to the features displayed. If question particles from Japanese can be added to this analysis, NMMs can be added too. Results show that this innovative perspective from which NMMs can be analyzed procures a solution to the puzzle presented in LSC.

FINAL REMARKS

Conclusions and contributions

This thesis provides a comprehensive grammatical analysis of polar interrogatives (PIs) in Catalan Sign Language (LSC). The goal of the thesis is two-fold. First, to provide a morphosyntactic description of PIs in LSC and, second, to explain and predict when and why the specific grammatical strategies that this SL has are used.

PIs in LSC are obligatorily marked with a specific combination of non-manual marking (NMM) features and optionally marked with a question particle. LSC displays different NMM features to mark the structure under study. The most prominent marker is eyebrow position, but contrary to what has been claimed for SLs, it is not the exclusiver marker of the structure. Other NMM features such as body leans or head movement occur in PIs too. This presents a puzzle that needs to be solved. In terms of scope, NMM usually extends over the whole sentence, minus any topicalized constituents, and NMM in non-final position renders the PI ungrammatical. The YES-NO Q-sign has been defined as a question particle. It usually appears in sentence-final position and there are very few appearances of this question particle in sentence-initial position. As it has been reported for other SLs, the YES-NO Q-sign appeared in restricted contexts, adding some meaning to the final interpretation of the PI. No other syntactic mechanism has been described for LSC; however, as in other SLs, the pronominal subject is frequently placed in final position or

doubled in its base position and again sentence-finally.

Given that, at least, the eyebrow position feature is not the exclusive marker, LSC shows different combinations of NMMs to flag this structure. This thesis provides an analysis in which each combination of NMMs, as well as the appearance of the YES-NO Q-sign conveys a different pragmatic bias. Therefore, these devices do not only mark sentence type but also encode pragmatic meaning. Sudo's (2013) feature-based theory of biases provides the theoretical background to carry out this analysis. He addressed question particles as a feasible strategy for languages to code biases. The fact that they do not operate in a truth-conditional dimension is what leaves the door open to include in his analysis other strategies that could serve languages to convey biases. Therefore, NMM, as a counterpart to intonation, has been included in the analysis, providing promising results. I can currently assure that specific NMM features are directly related to specific values within Sudo's (2013) feature-based theory of biases. Therefore, specific combinations of NMM features in LSC, as well as the appearance of the YES-NO Q-sign, occur in different contexts to fulfill the requirements of the conversational situation

The research I present does, therefore, envisage work across prosody, syntax, semantics and pragmatics. By decoding the pragmatic meaning of NMM in SLs, this research contributes to a better understanding of the intrinsic meanings of prosody in the visual-manual modality. Also by studying how this modality-specific device can mark sentence types I contribute to bridge the gap between syntax and prosody by delimiting its role in each domain. This thesis is, thence, a meaningful contribution to different linguistic areas. The completion of the morphosyntactic description of polar interrogatives in LSC also contributes to the understanding of the grammar of this SL, but also to the grammar of SL interrogation.

Moreover, this research contributes to the discussion of typological variation between SpLs and SLs, since it a modality-specific mechanism has been analyzed that SLs have in their grammar to mark sentence types: the NMM features. The study of the role and function of this modality-specific device, in fact, contributes to another current debate in the literature: what is the function of NMM? NMMs in LSC PIs are more than just a device to mark this sentence type, they are helping us to encode distinctive pragmatic traits such as our expectations towards a particular answer or our previous thoughts about a proposition. Therefore, NMMs are not only fulfilling a syntactic function but also a pragmatic one. Moreover, my research gives support to the idea that the pragmatic meaning resulting from the use of NMM features in PIs may be compositional, although further research is needed. I am aware that this could be a notable result and a significant addition to the analysis of NMM, since that means one could decompose the cluster of layers of NMM features and be able to know which is exactly the contribution of each of them to the final meaning of the proposition. My study, consequently, provides relevant information about how discourse meaning may be encoded in sign languages, since specific NMMs bestow on sentences the singularity and peculiarity that characterize human communication.

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