

ALTERNATIVE QUESTIONS: FROM SURFACE TO MEANING

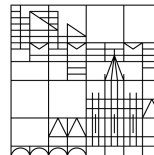
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Abstract (English)

In this dissertation, I explore the different surface strategies that languages rely on to compose alternative question (AltQ) meaning. An example of an AltQ, together with its polar question (PolQ) counterpart, is given in (1).

- (1) a. Did Ana write a POEM \uparrow or an ESSAY \downarrow ? [AltQ]
‘Which of the following two did Ana write: a poem or an essay?’
b. Did Ana write a [poem or an essay] \uparrow ? [PolQ]
‘Is it true that Ana wrote a poem or an essay?’

Across languages, we identify three, often co-occurring, surface strategies that are used to express AltQ meaning: (i) prosodic cues (multiple accent and final fall) in languages like English, (ii) morpho-syntactic cues (multiple Q-particles) in languages like Turkish and Sinhala, and (iii) lexical cues (specialized disjunction forms) in languages like Basque and Finnish. With respect to their meaning, AltQs give rise to *minimality*, *exclusivity*, and *exhaustivity* effects that are not found in *WhQs* and *PolQs*. The overarching goal of this dissertation is to understand and model the underlying mechanisms that take us from different surface strategies to the complex meaning of AltQs.

The dissertation consists of two parts. Part I is concerned with the universal semantic and syntactic structure of AltQs and is mostly informed by insights from the literature. Importantly, I derive the semantics of an AltQ from the association of disjunction with the Q-operator, while disjunctive PolQs are the result of association with the \exists -operator (Chapter 2) and take the disjuncts to be proposition-denoting, but not full PolQs (Chapter 3).

In Part II, I address the different surface strategies. Concerning prosody, I claim that the multiple accent and the final fall in English are equally important for AltQ composition and argue

that their contribution is to shape discourse structure, using Roberts's (1996) Questions Under Discussion (QUD) framework and Rooth's (1992) Alternative Semantics. I propose that the QUDs resulting from prosodic marking indirectly govern semantics via coherence requirements, which explains the disambiguating function of prosody in disjunctive questions. I demonstrate that this proposal successfully accounts for AltQs, PolQs, and Open Questions. I also introduce an unexplored disjunctive question type: Class Questions (Chapters 4 and 5). With respect to morphology in Turkish and Sinhala, important contributions are the claim that the narrow attachment of Q-particles does not contribute uniqueness per se. I put forward an analysis of the multiple Q-particles that mirrors the multiple accent in languages like English and argue their function is to shape the QUD. I show that an extension of the idea to *Wh* questions in languages like Sinhala circumvents problems within current accounts (Chapter 6 and 7). Regarding languages that rely on the lexicon, I argue that the standard disjunction forms force association with the \exists -operator, while specialized disjunction forms cannot associate with \exists , resulting in association with the Q-operator (Chapter 8).

Altogether, the main message is that though AltQs in different languages look very differently on the surface, their final interpretation is the result of the same underlying mechanisms.

Abstract (German)

In dieser Dissertation untersuche ich unterschiedliche Oberflächenstrategien, die in verschiedenen Sprachen angewendet werden, um Alternativfragen auszudrücken.

Beispiele einer Alternativfrage (AltQ) sowie der entsprechenden Entscheidungsfrage (PolQ) finden sich in (2).

- (2) a. Schreibt Ana ein GEDICHT \uparrow oder ein ESSAY \downarrow ? [AltQ]
‘Welches der beiden hat Ana geschrieben: ein Gedicht oder ein Essay?’
b. Schreibt Ana [ein Gedicht oder ein Essay] \uparrow ? [PolQ]
‘Stimmt es, dass Ana ein Gedicht oder ein Essay schreibt?’

Sprachübergreifend identifizieren wir drei, teils gleichzeitig auftretende Oberflächenstrategien, die zum Ausdruck von Alternativfragenbedeutungen genutzt werden: (i) Abhängigkeit von prosodischen Informationen (multipler Satzakzent und fallender Grenzton) in Sprachen wie Englisch, (ii) Abhängigkeit von morphosyntaktischen Informationen (multiple Verwendung von Q-Partikeln) in Sprachen wie Türkisch und Sinhala sowie (iii) Abhängigkeit von lexikalischen Informationen (spezialisierte Disjunktionsformen) in Sprachen wie Baskisch und Finnisch. In der Bedeutungskomposition von Alternativfragen kommt es zu Minimalitäts-, Exklusivitäts- und Exhaustivitätseffekten. Dadurch unterscheiden sich Alternativfragen von Konstituenten- und Entscheidungsfragen. Das übergeordnete Ziel der vorliegenden Dissertation ist es, die Mechanismen, die der Abbildung verschiedener Oberflächenstrategien auf die komplexe Alternativfragenbedeutung zugrundeliegen, zu verstehen und zu modellieren.

Die Arbeit besteht aus zwei Teilen. Teil I beschäftigt sich mit der universellen semantischen und syntaktischen Struktur von Alternativfragen und beruft sich dabei größtenteils auf die bestehende Literatur. Ich leite die Semantik von Alternativfragen von der Assoziation der Disjunktion

mit dem Q-Operator her, während disjunktive Entscheidungsfragen das Ergebnis von der Assoziation der Disjunktion mit dem Existenzoperator sind (Kapitel 1). Ich nehme weiterhin an, dass die Disjunkte Propositionen kennzeichnen, aber keine vollständigen Entscheidungsfragen (Kapitel 2).

In Teil II behandle ich die verschiedenen Oberflächenstrategien. Ich zeige, dass der multiple Satzakzent und der fallende Grenzton im Englischen eine gleichwertige Rolle in der Komposition von Alternativfragen spielen, und dass deren Beitrag auf der Ebene der Diskursstruktur zu verorten ist. Dafür nutze ich Roberts's (1996) Questions-Under-Discussion-Modell (QUD-Modell) und Rooth's (1992) Alternativensemantik für Fokusmarkierung. Ich schlage vor, dass die QUDs, die aus der prosodischen Markierung resultieren, via Kohärenz-Anforderungen indirekten Einfluss auf die Semantik nehmen, was die disambiguierende Funktion der Prosodie in disjunktiven Fragen erklärt. Ich zeige, dass diese Analyse für Alternativfragen, Entscheidungsfragen und Offene Fragen erfolgreich angewendet werden kann. Außerdem führe ich einen bisher noch unerforschten Fragentyp ein: die Klassen-Frage (Kapitel 4 und 5). Bezüglich der Sprachen, die die morphosyntaktische Strategie verfolgen, wie Türkisch und Sinhala, zeige ich auf, dass die lokale Verwengung von Q-Partikeln nicht unbedingt einen Einzigkeitseffekt hat. Ich stelle eine Analyse vor, die die multiple Verwendung von Q-Partikeln wie den multiplen Satzakzent in Sprachen wie Englisch behandelt: Beide Strategien dienen der Formung von QUDs. Ich zeige, dass eine Ausweitung dieser Idee auf Konstituentenfragen in Sprachen wie Sinhala Probleme bereits bestehender Analysen umgeht (Kapitel 6 und 7). Hinsichtlich der Sprachen, die die lexikalische Strategie verfolgen, argumentiere ich dafür, dass die gewöhnliche Disjunktionsform Assoziation mit dem Existenzoperator forciert, während die spezialisierte Disjunktionsform von der Assoziation mit dem Existenzoperator ausgeschlossen ist. Dieser Ausschluss führt schließlich zur Assoziation mit dem Q-Operator (Kapitel 8).

Die Hauptaussage dieser Dissertation besteht darin, dass Alternativfragen trotz ihrer unterschiedlichen Oberflächenerscheinungen in verschiedenen Sprachen eine gemeinsame Interpretation eint, die das Resultat derselben zugrundeliegenden Mechanismen ist.

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Chapter 1

Introduction

In order to understand the architecture of the interrogative system, the mapping from form to meaning of Alternative Questions (henceforth: AltQs) is a particularly interesting phenomenon. AltQs offer a choice between two alternatives (or more) and form a minimal pair with disjunctive polar questions (henceforth: PolQs). Consider example (1).

- (1) a. Did Ana write a POEM \uparrow or an ESSAY \downarrow ? [AltQ]
‘Which of the following two did Ana write: a poem or an essay?’
b. Did Ana write a [poem or an essay] \uparrow ? [PolQ]
‘Is it true that Ana wrote a poem or an essay?’

Crosslinguistically, AltQs are composed using surface strategies of a different nature: prosodic, morpho-syntactic, and lexical. The meaning of an AltQ is the same across languages: it asks an addressee to choose from the disjuncts, as illustrated in (1-a), and gives rise to a number of special semantic and pragmatic effects. This dissertation revolves around the question of how the complex meaning of AltQs is derived from seemingly different compositional strategies.

1.1 Surface strategies

Languages employ several, often co-occurring, surface strategies to compose AltQs. First, in languages like English and German, prosody is crucial. The interpretation of a disjunctive question string depends on its prosodic structure. When pronounced with an accent on each disjunct and a final falling boundary tone, a disjunctive question typically receives an AltQ interpretation, as

illustrated in (2-a). The polar question interpretation is typically associated with a block accent on the disjunctive phrase and a final rising boundary tone (Bartels 1999, Pruitt and Roelofsen 2013), as illustrated in (2-b).¹

- (2) a. Did Ana write a POEM_{L*H-H%} or an ESSAY_{H*L-L%}? [AltQ]
 ‘Which one of the following did Ana write: a poem or an essay?’
 b. Did Ana write [a poem or an essay]_{L*H-H%}? [PolQ]
 ‘Is it true that Ana wrote a poem or an essay?’

Second, there are languages in which the placement of so-called Q(uestion)-particles determines the final interpretation of a disjunctive question. Q-particles are particular morphemes that are used to compose questions in a wide array of languages (Cable 2010, Slade 2011, Kamali 2015, Szabolcsi 2018). Crucially, a set of languages constructs AltQs by the placement of a Q-particle in each disjunct, while PolQs are built using only one Q-particle. Consider the Turkish disjunctive questions in (3).

- (3) Turkish *mI* in disjunctive questions
 a. Ali iskambil **mi** (oynadi) yoksa futbol **mu** oynadi?
 Ali cards MI play.PST or_{alt} football MI play.PST
 ‘Which one did Ali play: cards or football?’ [AltQ]
 b. Ali iskambil veya futbol oynadi **mu**?
 Ali cards or_{stan} football play.PST MI?
 ‘Is it true that Ali played cards or football?’ [PolQ]

Third, languages like Finnish make use of special disjunction forms to disambiguate between AltQs and PolQs. In (4), the AltQ is generated using the interrogative disjunction form *vai*, while the PolQ is composed with the standard disjunction form *tai* (Haspelmath 2007, Kaiser 2003).²

- (4) Two disjunction forms in Finnish disjunctive questions (Henri Kauhanen, p.c.)

¹Instead of providing paraphrases, I will use the labels ‘AltQ’ and ‘PolQ’ in examples from now on.

²The utterance in (4-b) can only be understood as a PolQ and not as a declarative. This is due to the suffix *-ko* that serves as a question marker and is attached to the verb.

- a. Haluatko sokeiria **vai** kermaa?
 Want.2SG.Q sugar **or_{alt}** cream [AltQ]
 ‘Do you want sugar or cream?’
- b. Haluatko sokeiria **tai** kermaa?
 Want.2SG.Q sugar **or_{stan}** cream [PolQ]
 ‘Do you want sugar or cream?’

All three surface strategies result in the complex utterance meaning of AltQs, described in the next section.

1.2 Complex utterance meaning

AltQs crucially differ from *Wh*-questions (henceforth: *Wh*Qs) and PolQs in that they give rise to three special effects: **minimality**, **exclusivity**, and **exhaustivity** (Belnap and Steel 1978, Karttunen 1977, a.o.). Minimality and exclusivity are taken to be presuppositions and are defined in (5) and (6) respectively.

(5) **Minimality**: At least one of the disjuncts is true.

(6) **Exclusivity**: At most one of the disjuncts is true.

Minimality is reflected by the infelicity of the answer *neither*, as illustrated in (7-a). We observe a clear contrast with disjunctive PolQs that do not give rise to minimality, see (7-b).

- (7) a. A: Did Ana write a POEM \uparrow or an ESSAY \downarrow ? [AltQ]
 B: # Neither
- b. A: Did Ana write [a poem or an essay] \uparrow ? [PolQ]
 B: \checkmark No, neither

In the same vein, the infelicity of the answer *both* demonstrates that AltQs give rise to exclusivity, as shown in (9-a). Again, this effect is not attested in disjunctive PolQs, witness (9-b).³

³Note that there are contexts in which AltQs do not give rise to minimality and exclusivity. Such contexts typically involve a disbalance in power between speaker and addressee, that is, there is a strong social component. Consider for example (8)

- (9) a. A: Did Ana write a POEM \uparrow or an ESSAY \downarrow ? [AltQ]
 B: # Both
- b. A: Did Ana write [a poem or an essay] \uparrow ? [PolQ]
 B: \checkmark Yes, both

The label exhaustivity is used to describe the effect that AltQs give rise to when considered in a discourse structure (Biezma and Rawlins 2012). Again, there is a difference between AltQs and PolQs. This is best illustrated in sequences starting with a *WhQ*, as in (10). AltQs, on the one hand, exhaust the possible space that the *WhQ* is asked over. That is, an AltQ exhaustively lists all the alternatives that serve as an answer to the *WhQ*. As a result, other potential salient alternatives do not serve as an answer to the *WhQ*, which means (10-a) is infelicitous. PolQs, on the other hand, do not give rise to exhaustivity and simply mention one possible answer to the *WhQ*, leaving other, unmentioned alternatives, open. Witness (10-b).

- (10) a. A: What did Ana write? Did she write a POEM \uparrow or an ESSAY \downarrow ?
 B: # Ana wrote a letter.
- b. A: What did Ana write? Did she write a poem \uparrow ?
 B: \checkmark No, she wrote a letter.

Thus, in a *WhQ*-AltQ sequence, only the mentioned alternatives in the AltQ serve as answers to the *WhQ*.

1.3 Aims

Although AltQs have received considerably less attention in the literature than their siblings, *WhQs* and *PolQs*, recently progress has been made in understanding the different surface strategies used

-
- (8) A is a flight attendant and B a first class traveller:
 A: Do you want COFFEE \uparrow or TEA \downarrow ? [AltQ]
 B: \checkmark both/neither

There data relate to the much bigger question what the relation is between presupposition strength and power dynamics between speakers. This outscopes the goals of this dissertation and I will therefore not consider these types of utterances.

to generate AltQ meaning. The process of gaining a better understanding of the semantics and pragmatics of AltQs crosslinguistically involves three steps. The first concerns the investigation of one surface strategy in one single language. The majority of the research endeavors on AltQs in the literature are of this type. Let me list some examples here. Regarding the prosodic cues in English, Biezma and Rawlins (2012), and Westera (2017) modeled the final falling boundary tone and related it to exhaustivity. Another account concerned with the meaning contribution of the final fall comes from Roelofsen and van Gool (2010), who argue that the final fall signals exclusivity.

With respect to the literature on Q-particles in languages like Sinhala and Japanese, it is important to note that they do not only appear in AltQs, but also in PolQs and, in certain languages, in *Wh*Qs and disjunctive declaratives. Roughly, there are two bodies of work addressing Q-particles. The focus typically is on one main language, for example Sinhala (Slade 2011) or Japanese (Uegaki 2018). The first body of work is concerned with the meaning contribution of Q-particles, regardless of the environment they appear in, i.e., PolQs, disjunctive constructions, AltQs and *Wh*Qs (Szabolcsi 2015, Shimoyama 2006, Uegaki 2018). The second body of work mainly concentrates on structures where a Q-particle combines with a *wh*-word, aiming for an analysis that captures the link between Q-particles, focus and interrogativity (Hagstrom 1998, Kishimoto 2005, Cable 2010, Slade 2011, Morita 2019). As for the special disjunction forms, there are several proposals at hand, most of which focus on individual languages. Uegaki (2014a) proposes that interrogative disjunction forms obligatorily bear a syntactic feature and generate AltQ meaning as a result of a syntactic operation. Alternatively, Erlewine (2017), Winans (2019) and Lohiniva (2020) argue that interrogative disjunction forms lexically encode semantic properties resulting in an AltQ interpretation.

The second step is to investigate individual cues crosslinguistically. Within the existing operating lines of research on the different surface strategies, not all accounts focus on individual languages. There are accounts that strive for crosslinguistic validity, in the sense that the analysis of **one surface strategy** can be extended to languages that rely on the **same strategy**. For example, within the literature concerned with Q-particles, the crosslinguistic picture is often kept closely in sight (Szabolcsi 2015, Cable 2010, Slade 2011). Another good example is found in the

literature regarding interrogative disjunction forms, where Uegaki (2014b) explores the possibility of a universal analysis and compares disjunction forms in AltQs in multiple languages.

The challenge that this dissertation faces is the third step: how to bring the different surface strategies together **within** languages and **across** languages. In recent literature, promising efforts have been made towards integrating different surface cues in a unified analysis of AltQs. For example, Han and Romero (2004b) model both the multiple accent and the disjunction form in AltQs. Another attempt towards unifying cues can be found in Truckenbrodt (2013), where a link is established between the multiple accents and the Q-particles. Moreover, Roelofsen and van Gool (2010), Westera (2017) and Roelofsen (2015) propose accounts of English in which both the final fall and the multiple accent are modeled. Despite these developments, the underlying representation and the form to meaning mapping of AltQs is still an open issue in the field.

With this dissertation, I hope to make a step forward in the enterprise of developing a unified and crosslinguistically valid analysis of AltQs. The approach undertaken in this dissertation is to work from the idea that AltQs are composed using the same underlying components, but that languages differ on **whether** and **how** they express these components. The game plan for pursuing this path consists of gaining two types of insights. First, the surface cues that are crucial for AltQ composition are often employed outside of the domain of AltQs. For example, Q-particles play a role in various question types and non-interrogative disjunctive constructions (Szabolcsi 2015, Cable 2010, Slade 2011). Moreover, the falling boundary tone is known to also have a meaning effect in declarative lists (Zimmermann 2000). For each surface cue in a given language, I hypothesize that it has a core meaning that remains constant across different constructions. I examine the surface cues in various structures in the grammar and use these insights as a window into their function in AltQs. The second type of insight comes from surface strategies that, despite the differences in nature, reflect the same underlying pattern. For example, the Q-particles in languages like Turkish are mirrored by the multiple accents in languages like English. By investigating these recurrent patterns, I hope to make progress towards identifying the meaning components that, together, result in AltQ meaning. In order to gain these two types of insights, I examine data from English, Turkish, Macedonian, Sinhala, Tamil, Egyptian Arabic, Mandarin Chinese, Finnish,

Basque, Korean and Japanese. These data are partially taken from the literature and partially elicited and collected for the purpose of this dissertation. Building on the insights gained from the crosslinguistic investigation, I work towards a unified analysis of the form to meaning mapping in AltQs.

1.4 Outline of the dissertation

To tackle the surface cues that play a role in AltQ composition, we first need to nail down the basic interpretive tools assumed in this dissertation. This makes up part I of the dissertation and consists of two chapters.

We start with a depiction of the semantic background in chapter 2. I will go through the minimal assumptions from the literature that will serve as the basic interpretative mechanisms in the analyses of Part II of the dissertation. There are two main points. First, following Alonso-Ovalle (2006) and Shimoyama (2006), I assume that, semantically, AltQ meaning is derived from the association between the set of propositions projected from disjunction and the Q-operator. This association contrasts disjunctive PolQs, in which this set associates with the \exists -operator. Second, as will become clear in part II, focus marking plays an essential role in AltQ composition. I make use of Rooth's (1992) Alternative Semantics framework to model focus marking. Moreover, to model the contribution of focus in AltQs, I use Roberts's (1996) Questions under Discussion (henceforth: QUD) framework. I provide an overview of these ingredients and how they are combined.

In chapter 3, I proceed with the underlying syntactic representation of AltQs, in particular, the size of the disjuncts. The question is whether AltQs are derived from two (partially elided) full PolQs (Uegaki 2014b), two (partially elided) proposition-denoting disjuncts (Han and Romero 2004b), or two surface-identical disjuncts (Nicolae 2014). Based on insights from recent literature (Han and Romero 2004b, Gračanin-Yuksek 2016, a.o.) and novel observations, I argue that AltQs involve ellipsis and that the disjuncts are proposition-denoting, but not full PolQs.

With the insights from chapters 2 and 3 at hand, we are ready to turn to part II of the dissertation, in which I develop an analysis of the form to meaning mapping of AltQs. I first address prosody in chapters 4 and 5, concentrating on English. In chapter 4, I show that there is a

bias in the literature towards the final fall as the crucial ingredient for AltQ composition (Roelofsen and van Gool 2010, Biezma and Rawlins 2012, Pruitt and Roelofsen 2013). I provide arguments against this bias and argue that the multiple accent and the final fall are both essential in the composition of English AltQs. Concerning the contribution of the multiple accent and the final fall, I propose that both surface cues play a role in structuring discourse. The function of the multiple accent is to indicate the place of the *wh*-element in the overarching QUD (Roberts 1996) and the final fall signals that the speaker believes that no other alternatives than the expressed ones are relevant and possible (Biezma 2009, Biezma and Rawlins 2012, Westera 2017, ?, 2020). I then turn to the question of how these pragmatic effects result in an AltQ semantics. I propose that the syntax-semantics mapping on the one hand always has to be coherent with the prosody-discourse mapping on the other hand. I show that the proposed analysis successfully derives minimality, exclusivity and exhaustivity. While the analysis concentrates on English, an extension to German, Dutch, and potentially other languages looks promising

We stick with prosody in chapter 5, in which I address two types of disjunctive questions that have received little attention in the literature. Open Questions (henceforth: OpenQs) are realized by the placement of an accent on each disjunct and a final rise, and were first discussed by Roelofsen and van Gool (2010). Class Questions (henceforth: ClassQs) are characterized by a plateau rise on each disjunct as well as lengthening of each disjunct. These two question types display an interesting distribution when compared to PolQs and AltQs. I show that the meaning effects of OpenQs can be derived from the proposal in chapter 4. Regarding ClassQs, I build on Burdin and Tyler (2018), and propose that by using the plateau rise the speaker makes reference to the epistemic state of the addressee, signalling she already knows about unmentioned alternatives.

Chapters 6 and 7 are devoted to Q-particles in Turkish, Macedonian, Sinhala and Tamil. Chapter 6 concentrates on the empirical picture. I provide a data overview of Q-particles in all four languages. Particularly striking is the observation that in all four languages, the Q-particle can be attached locally, inducing a focus effect (Kamali 2015, Hagstrom 1998, a.o.). This leads me to raise the question: What exactly is the pragmatic contribution of focussing a constituent in a question by locally attaching a Q-particle. Recent work on Turkish and novel data from Macedonian

show that the common denominator between languages is not a uniqueness presupposition. To be precise, in Turkish and Macedonian, there are also other context that license PolQs with locally attached Q-particles. In particular, these are contexts in which a speaker expresses surprise.

In chapter 7, I turn to the analysis that is parallel to what we saw in chapter 4 for the multiple accent: The contribution of the Q-particle is indicating the shape of the overarching QUD. This analysis makes the right predictions for AltQs and PolQs but cannot be straightforwardly extended to languages like Sinhala, that employ Q-particles in *Wh*Qs. I discuss a prominent line of work that mainly concentrates on the appearance of the Q-particles in *Wh*Qs, in which Q-particles are analyzed as variables over choice functions. The main idea is that the choice function establishes the link between the focus value provided by the *wh*-element and the Q-operator (Cable 2010, Slade 2011). I propose that it is not the choice function that establishes this link, but association between the focus alternatives and a higher operator. The conclusion is that in Turkish, Tamil and Macedonian, the Q-particle ensures association between the \sim -operator and the focus alternatives, while in Sinhala the focus alternatives can associate with both the \sim -operator and the Q-operator.

After wrapping up the Q-particles analysis, we turn to the final surface strategy, i.e., interrogative disjunction forms, in chapter 8. The languages considered are Egyptian Arabic, Mandarin Chinese, Finnish, Basque, and Turkish. In line with Erlewine (2017), Winans (2019) and Lohiniva (2020), I assume that the association properties of disjunction are governed by lexically encoded syntactic features. In particular, interrogative disjunction forms lack a $[\nu\exists]$ feature and therefore associate with the Q-operator. Notably, I merge these existing ideas with the proposal on the role of focus in the QUD-framework, presented in chapters 4 and 7.

In chapter 9, I conclude the dissertation by summarizing the main contributions and discuss topics for future work.

Part I

The underlying representation of AltQs

Chapter 2

Semantic background

2.1 Aims

This chapter serves as the semantic starting point for the compositional analysis of AltQs. I spell out the semantic tools that are needed to build the bridge between the various surface strategies on the one side and the complex utterance meaning of AltQs on the other. The goal is to give a clear overview of the semantic treatment of questions, disjunction and focus and to explain the rationale behind this treatment.

The chapter unfolds as follows. Section 2.2 describes the very general assumptions governing the reasoning in this dissertation. I proceed in section 2.3 with a description of the Hamblin/Karttunen framework of question semantics, showing that AltQs and disjunctive PolQs have a different semantic denotation. In section 2.4, I turn to Alonso-Ovalle's (2006) treatment of disjunction and propose that the semantic difference between an AltQ and a disjunctive PolQ is due to the association properties of disjunction. The final derivations of disjunctive PolQs and AltQs are given in section 2.5. Section 2.6 serves to give background on theories of focus marking and its relation to discourse and interrogativity, which will play a vital role throughout this dissertation. I conclude the chapter with a summary in section 2.7.

2.2 Assumptions

First and foremost, most of the essential observations, generalizations, and analyses put forward in this dissertation do not strongly depend on the adaptation of a certain formal framework. However, in developing the analyses of the surface strategies, a number of theoretical decisions had to be

made. The core assumption that lies at the heart of this dissertation is *Frege’s principle*, also known as the *principle of compositionality*. According to this principle, the final meaning of an expression can only be described according to the functional interdependency of the meaning of its parts. Typically, these *parts* are taken to be syntactic. Besides those syntactic parts, I assume prosodic parts. Specifically, I assume that intonation consists of categories (e.g., phrases, accents, etc.) that relate to each other compositionally (Ladd 2008). Furthermore, I assume that within compositionality, the *semantic type* of a lexical item plays a crucial role. I make use of the default types: *e* for entities, *t* for truth values, and *s* for worlds. As is standard in the literature, I assume that in order for two lexical items to compose, their types have to be compatible. In the traditional literature, this is implemented by employing the lambda calculus, and the two compositional mechanisms *Function Application* (henceforth: FA) and *Predicate Modification*.

(1) **Function Application** (Heim and Kratzer 1998)

If α is a branching node, and $\{\beta, \gamma\}$ is the set of α ’s daughters, then α is in the domain of $\llbracket \cdot \rrbracket$ if both β and γ are, and $\llbracket \beta \rrbracket$ is a function whose domain contains $\llbracket \gamma \rrbracket$. In this case, $\llbracket \alpha \rrbracket = \llbracket \beta \rrbracket (\llbracket \gamma \rrbracket)$

(2) **Predicate Modification** (Heim and Kratzer 1998)

If α is a branching node, and $\{\beta, \gamma\}$ is the set of α ’s daughters, and $\llbracket \beta \rrbracket$ and $\llbracket \gamma \rrbracket$ are both in $D_{\langle e, t \rangle}$, then $\llbracket \alpha \rrbracket = \lambda x \in D_e . \llbracket \beta \rrbracket(x) = \llbracket \gamma \rrbracket(x) = 1$.

In deriving the meaning of AltQs, we need a semantic framework that allows us to compute alternatives for multiple layers of meaning. Concerning the propositional, at-issue meaning, I am following Alonso-Ovalle (2006) and assume a Hamblin-style alternative semantics, in which expressions of type τ are mapped to sets of objects in D_τ . This means that most lexical items denote singletons containing their standard denotations. As we will see shortly, this is essential for deriving disjunctive declaratives (Alonso-Ovalle 2006) and interrogative meaning (Biezma and Rawlins 2012). For illustration, consider the lexical entries in (3) and (4).

(3) $\llbracket \text{Ana} \rrbracket^{w, g} = \{\text{ana}\}$

$$(4) \quad \llbracket \text{dances} \rrbracket^{w,g} = \{ \lambda x. \lambda. \text{dance}_w(x) \}$$

In Alonso-Ovalle’s (2006) Hamblin-style semantics, lexical items compose in a pointwise fashion. That means that, given a pair of expressions denoting a set of objects of type $\langle \sigma, \tau \rangle$ and a set of objects of type σ , every object of type $\langle \sigma, \tau \rangle$ applies to every object of type σ . The rule for *Pointwise Functional Application* (henceforth PFA) is defined in (5). This is the function application rule that will be used throughout the dissertation. *Pointwise Predicate Modification* is defined in (6).

(5) **Pointwise Function Application** (Kratzer and Shimoyama 2002)

- a. If α is a branching node with daughters β and γ , and $\llbracket \beta \rrbracket^{g,w} \subseteq D_\tau$ and $\llbracket \gamma \rrbracket^{g,w} \subseteq D_{\langle \sigma, \tau \rangle}$, then

$$\llbracket \alpha \rrbracket^{g,w} = \{ a \in D_\tau \mid \exists b \exists c (b \in \llbracket \beta \rrbracket^{g,w} \wedge c \in \llbracket \gamma \rrbracket^{g,w} \wedge a = c(b)) \}$$

(6) **Pointwise Predicate Modification**

If α is a branching node and $\{\beta, \gamma\}$ are its daughters, and $\llbracket \beta \rrbracket^{g,w}$ and $\llbracket \gamma \rrbracket^{g,w}$ are both in $D_{\langle \sigma, \tau \rangle}$,

$$\llbracket \alpha \rrbracket = \{ \lambda x_\sigma. b(x) \wedge c(x) \mid b \in \llbracket \beta \rrbracket \text{ and } c \in \llbracket \gamma \rrbracket \}$$

Consider the example in (7). Given the lexical entries in (3) and (4) and the rule for PFA in (5), the denotation of the simple declarative in (7) is a singleton containing a proposition, as illustrated in (8).

(7) Ana dances.

$$(8) \quad \{ \lambda w. \text{dance}_w(a) \}$$

Notably, I will be mixing two alternative-based accounts of meaning in this dissertation. On top of Alonso-Ovalle’s (2006) Hamblin-style analysis of propositional, at-issue meaning (as we will see in 2.6, the ordinary semantic value), I use Rooth’s (1992) Alternative Semantics framework to model the focus content (as we will see in 2.6, the focus semantic value). While both frameworks are uncontroversial, to say the least, I do not know of accounts in the literature that combine the

two.¹ In the cases that we will encounter in this dissertation, the two layers of alternatives never interfere and combining the frameworks is never problematic. This does not mean that I want to claim that combining the two frameworks outside of the domain of the cases presented in this dissertation is always a safe move. It is way beyond the scope of this dissertation to explore the possible consequences (positive or negative) of using the two frameworks side by side. Having said that, examining cases where the two systems interfere can be a profitable route to gain further insights in intervention effects (Beck 2006, Kotek and Erlewine 2016, Erlewine and Kotek 2018, a.o.).

Finally, I assume a difference between lexically encoded semantic meaning and pragmatically derived meaning. Note that I use the label *meaning* in this dissertation to describe both semantic and pragmatic meaning. Let us now proceed with the semantics of questions.

2.3 Question semantics

A widely accepted starting point for the semantic treatment of questions is the idea that the denotation of a question, in a world w , is a set containing the propositions that correspond to the possible or true answers to the question (Hamblin 1976, Karttunen 1977). Intuitively, an AltQ offers a choice between the two alternatives that are expressed in the disjuncts. The Hamblin denotation corresponding to that intuition is defined in (9).

- (9) Did Ana write a POEM \uparrow or an ESSAY \downarrow ? [AltQ]
 Hamblin set: {ana wrote a poem, ana wrote an essay}

Note that the semantic denotation in (9) in itself does not explain the complex utterance meaning of AltQs. In order to derive minimality, exclusivity and exhaustivity, additional ingredients are required.

Regarding PolQs, I adopt the view of Roberts (1996) and Biezma and Rawlins (2012), among others, and assume a singleton analysis, as exemplified in (10-a). Note that this is not the default

¹Note that there are systems in which an alternative-based semantics is used for both propositional content and focus content. See for example Erlewine (2017) and the Inquisitive Semantics framework (Ciardelli et al. 2018).

treatment of PolQs. In the literature, it is commonly assumed that a PolQ denotes a set containing the proposition it expresses (the content proposition) and its negation, as in (10-b). I refer to Biezma and Rawlins (2012), Roberts (1996), Pruitt and Roelofsen (2011), and Westera (2017) for independent motivations to assume a singleton denotation for PolQs.

(10) Did Ana write a poem[↑]?

Two possible Hamblin sets

- a. Hamblin-set: {ana wrote a poem} [chosen here]
- b. Hamblin-set: {ana write a poem, ¬ana write a poem} (Hamblin 1976, a.o.)

Concerning disjunctive PolQs, the singleton analysis results in the denotation in (11).

(11) Did Ana write a [poem or an essay][↑]?

Hamblin set: {ana wrote a poem \vee ana wrote an essay}

Hence, the semantic difference between the AltQ in (9) and the PolQ in (11) is that the former denotes a set containing two propositions, while the latter denotes a singleton proposition. This takes us to the main issue of this chapter: Which semantic mechanism leads to these different Hamblin sets?

2.4 The compositional ingredients for disjunctive questions

2.4.1 A Hamblin analysis of disjunction

In order to derive the distinct Hamblin sets for AltQs and disjunctive PolQs from the prosodic, morpho-syntactic and lexical surface, it is inevitable to understand how we can derive the different Hamblin sets syntactically and semantically. I propose that this difference is due to the association properties of disjunction that are ambiguous in English. To start with, I adapt Alonso-Ovalle's (2006) analysis and make use of a Hamblin semantics of disjunction. That is, I take the role of disjunction to be to introduce alternatives that are cycled into the semantic derivation. The set of

alternatives resulting from the union operation combines with other elements in the derivation via PFA. Disjunction is defined in (12).²

$$(12) \quad \llbracket \alpha \text{ or } \beta \rrbracket = \llbracket \alpha \rrbracket \cup \llbracket \beta \rrbracket = \{\alpha, \beta\} \quad (\text{Alonso-Ovalle 2006})$$

The resulting set of propositional alternatives can be ‘closed off’ by various propositional operators (Alonso-Ovalle 2006). In our case, the relevant operators are the existential operator (henceforth \exists -operator), and the Question operator (henceforth Q-operator).³ In what follows, I propose that the interpretation of a disjunctive question depends on the association properties of disjunction, provide the lexical entries for \exists and Q respectively and give the derivations that are the result of the composition with disjunction.

2.4.2 The association properties of disjunction

There are two available LFs for the disjunctive string *did Ana write a poem or an essay*. On the one hand, there is the LF that is the result of association with the \exists -operator. On the other hand, there is the LF in which the Hamblin set is not existentially bound. This is reminiscent of what Shimoyama (2006), and Kratzer and Shimoyama (2017) proposed for indeterminate pronouns in Japanese and German. The final meaning of an utterance containing an indeterminate pronoun is determined by the semantic operator it associates with. Consider the data from Japanese in (13). The pronoun *dare* ‘who’ can be bound by various operators. In Japanese, this becomes evident through the placement of particles. If *dare* is bound by *ka*, it associates with the \exists -operator, rendering the meaning ‘someone’ (see (13-a)). If *dare* appears together with *mo*, it associates with the \forall -operator, resulting in the meaning ‘everyone’ (see (13-b)) (Shimoyama 2006).

(13) *Japanese*

- a. Dare-ka-ga hon-o katta
 who-KA-NOM book-ACC bought
 ‘Someone bought books.’

(Hagstrom 1998, ex.6,p.17)

²Note that I take disjunction to be crosscategorical in general. But, for AltQs, I assume disjunction always conjoins IP-sized disjuncts. This is motivated by independent evidence that I will discuss in chapter 3.

³In chapter 8, I briefly discuss the association between the disjunctive set and a universal operator (\forall -operator).

- b. Dare-mo-ga kita.
 who-MO-NOM came
 ‘everyone came’

(Kawashima 1994, p.147)

The association properties of indeterminate phrases are not overtly expressed on the pronoun itself in Japanese but depend on the placement of the particles *mo* and *ka*. I propose that the same principle arises in the case of disjunctive questions. Although it is not overtly expressed in English, there are two possible LFs that are determined by association between the set of alternatives and either the \exists -operator or the Q-operator. I propose that the association properties of the disjunctive set are encoded in the lexical form in terms of a syntactic feature, as we will see later. The most important argument in favor of this analysis is the data from languages that employ interrogative disjunction forms, like Basque, that I will return to in chapter 8.

Let us now continue with the implementation of this idea and turn to the lexical entries for the \exists -operator and the Q-operator.

2.4.3 The \exists -operator

The set of propositional alternatives, as generated by disjunction, can be bound by the \exists -operator as defined in (14) (Kratzer and Shimoyama 2017, Shimoyama 2006) (see also (Rooth and Partee 1982)).⁴

$$(14) \quad \llbracket \exists \alpha \rrbracket = \{ \lambda w. \exists p \in \llbracket \alpha \rrbracket : p(w) = 1 \} \quad (\text{adapted from Shimoyama (2006)})$$

In line with Kratzer and Shimoyama (2017), I propose that the association of the Hamblin set with the \exists -operator is encoded via an unvalued syntactic feature $[\nu \exists]$ on disjunction and that \exists cannot be freely adjoined without $[\nu \exists]$. Disjunction forms sometimes bear such a $[\nu \exists]$ feature, and sometimes not. Given the definition of PFA, repeated below as (16), this yields the derivation of a declarative containing disjunction, in which the set of alternatives always associates with \exists . The result is given in (17).⁵

⁴Note that the definition from Shimoyama (2006) is modified such that it is compatible with Alonso-Ovalle’s (2006) Hamblin-style semantics.

⁵For presentational reasons, the denotations for *a poem* and *an essay* are simplified. The actual denotation of *a poem* is defined in (15).

(16) **Pointwise Function Application**

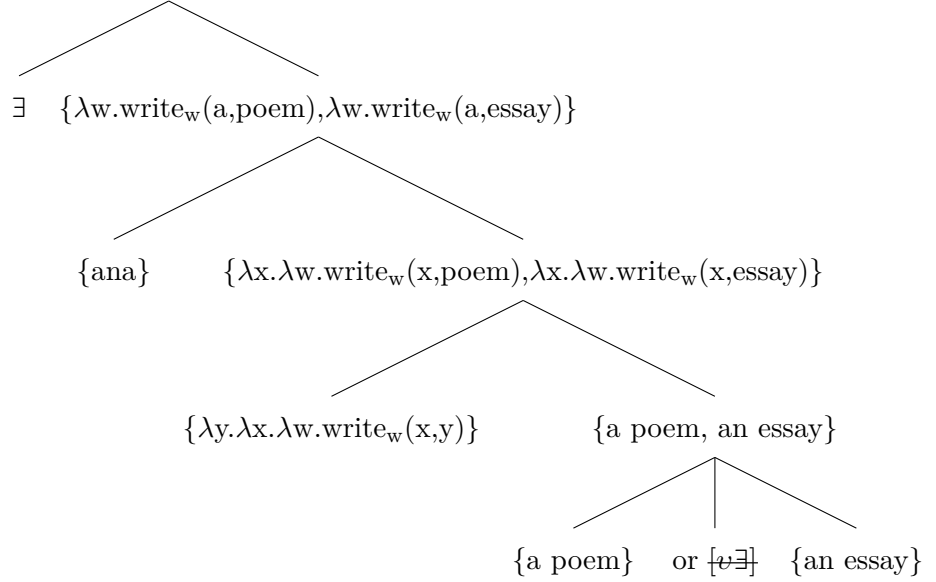
(Kratzer and Shimoyama 2002)

- a. If α is a branching node with daughters β and γ , and $\llbracket \beta \rrbracket^{g,w} \subseteq D_\tau$ and $\llbracket \gamma \rrbracket^{g,w} \subseteq D_{\langle \sigma, \tau \rangle}$, then

$$\llbracket \alpha \rrbracket^{g,w} = \{a \in D_\tau \mid \exists b \exists c (b \in \llbracket \beta \rrbracket^{g,w} \wedge c \in \llbracket \gamma \rrbracket^{g,w} \wedge a=c(b))\}$$

(17) Ana wrote a poem or an essay

$$\{\lambda w. \exists p [p \in \{\text{ana wrote a poem, ana wrote an essay}\} : p(w) = 1]\}$$



Hence, in declaratives the alternative set produced by disjunction must always be existentially bound. The result is a singleton, as is standard in Alonso-Ovalle's (2006) Hamblin-style semantics. Now, let us turn to the Q-operator.

2.4.4 The Q-operator

The set of alternatives produced by disjunction can also associate with the Q-operator. Before turning to the derivations in which there is a relation between disjunction and the Q-operator, let me first spell out my assumptions for Q-operator in general. I follow the line of Biezma and Rawlins (2012) and Roelofsen and van Gool (2010) in which there is a single Q-operator that is applied

$$(15) \quad \lambda Q_{\langle e, t \rangle} \lambda w. \exists x [\text{poem}_w(x) \wedge Q(x)(w)]$$

This does not play an essential role for the purposes of this dissertation. Note also, that I emitted the articles in the lower part of the derivation.

to AltQs, PolQs and *Wh*Qs. Regarding the syntax, the Q-operator is hosted by CP and is not spelled out in root contexts in languages like English. The function of the Q-operator is extremely simple: It takes a set of alternatives as its argument and keeps this set intact, i.e., it is the set of propositions that is the final question meaning. The Q-operator is defined in (18).

$$(18) \quad \mathbf{Q\text{-operator}} \qquad \qquad \qquad (\text{Biezma and Rawlins 2012})$$

$$\llbracket \mathbf{Q}\alpha \rrbracket = \llbracket \alpha \rrbracket$$

In the case of PolQs, the set of alternatives that the Q-operator associates with is a singleton set. This results in a singleton question denotation as the meaning for a PolQ, as we saw in section 2.3.

Now that we have the lexical entries for disjunction, the \exists -operator and the Q-operators at hand, let us turn to the semantic derivations of PolQs and AltQs.

2.5 The semantics of disjunctive questions

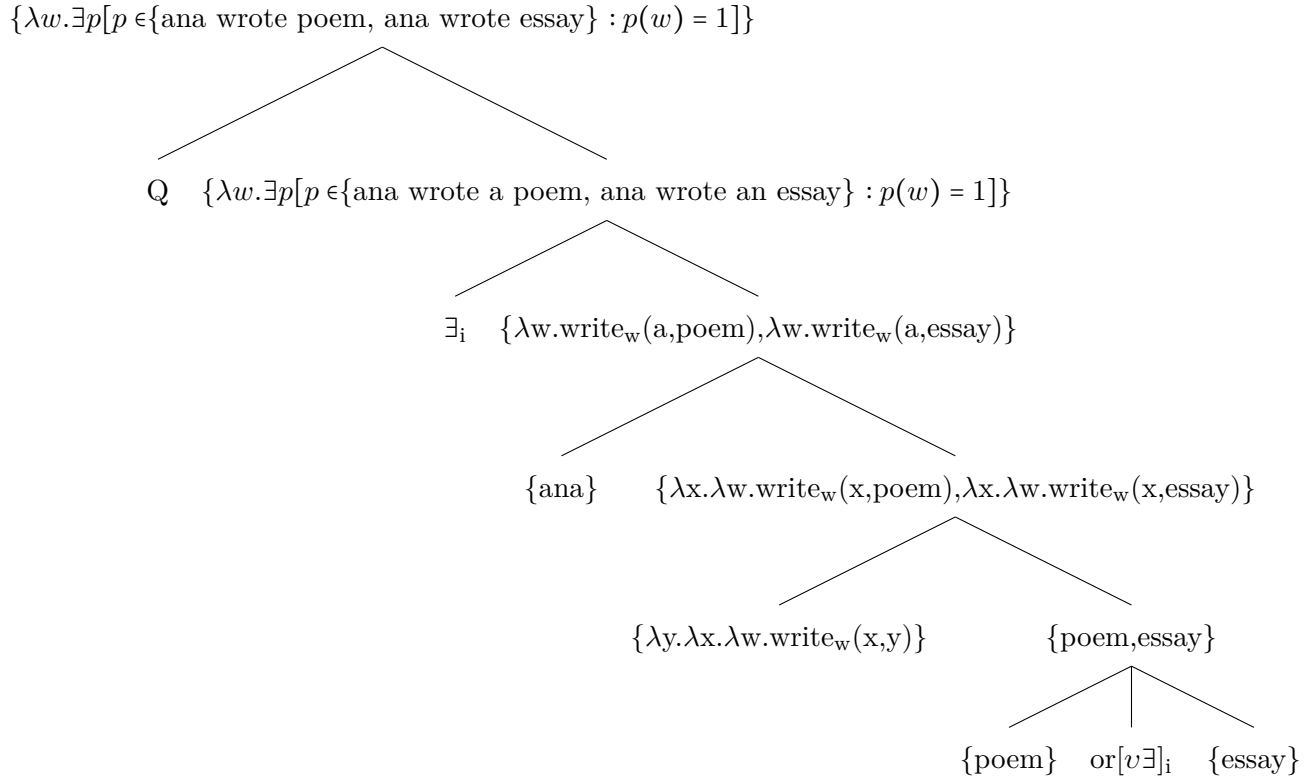
2.5.1 The semantics of PolQs

Let me begin with the derivation of PolQs, for which I propose the LF in (19).

$$(19) \quad [\mathbf{Q} [\exists [\text{Ana wrote a poem or}_{[\nu\exists]} \text{ an essay}]]]$$

The LF in (19) conveys that the Hamblin set that disjunction provides associates with the \exists -operator. This is the result of the $[\nu\exists]$ feature on disjunction. The Q-operator has high scope and takes the value of the resulting singleton set as its argument. The derivation, given the rule in (16), is presented in (20).

$$(20) \quad \text{PolQ: Did Ana write a poem or an essay?}$$



As pointed out above, the denotation of PolQs is a singleton set and thus identical to the denotation of the declarative sentence given in (17). This is not problematic as, in line with Biezma and Rawlins (2012), I do not take the difference between questions and declaratives to be the difference between sets containing multiple or single alternatives.⁶

2.5.2 The semantics of AltQs

We now come to the crucial case: the compositional semantic analysis of AltQs. Let us begin with the LF in (21). Following Han and Romero (2004b) and literature thereafter, I analyze the disjuncts as IP-sized and take the second disjunct to be partially elided. Note that the current proposal does not hinge on this decision. The exact same result could be obtained by assuming surface-sized disjuncts via the combination of a Hamblin semantics of disjunction and PFA. It is crucial though, that there is one single Q-operator involved in AltQ composition. I address this

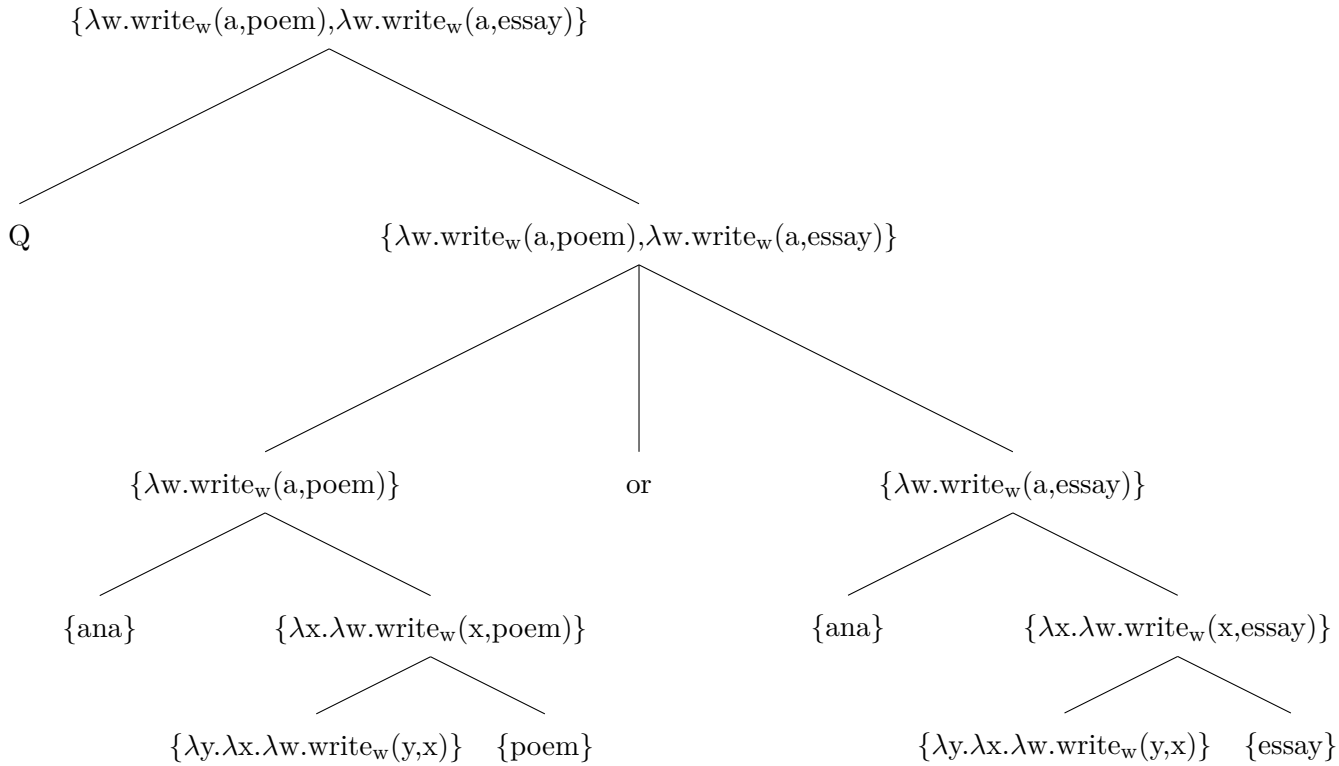
⁶There are various options to model the difference between questions and declaratives while assuming they have the exact same denotation. One option is to model declarative force in terms of Farkas and Bruce's (2010) table model. A second option is to derive declarative meaning from an Assert operator. I do not take a stance on this in this dissertation and refer to the literature on rising declaratives: Gunlogson (2004), Westera (2017) and Rudin (2018), among others.

issue in chapter 3.

(21) [Q [Did Ana write a poem or ~~Ana write~~ an essay]]

In the previous section, I proposed that the \exists -operator cannot be freely adjoined and that disjunction sometimes lacks the presence of a $[\nu\exists]$ feature. This is the case in AltQs. Given that disjunction is not carrying this unvalued $[\nu\exists]$ feature, the Hamblin set that is generated by disjunction cannot be existentially bound. This means that disjunction will percolate upwards till it hits the Q-operator that is defined above. The resulting derivation is given in (22).⁷

(22) AltQ: Did Ana write a poem or an essay?



Altogether, AltQ meaning is the result of association between the Q-operator that associates with alternatives generated by disjunction. We continue with the final semantic component that will play a key role throughout the analyses of the surface cues: focus.

⁷Again, articles are emitted in the lower parts of the derivation for formatting reasons.

2.6 Focus

As we will see throughout the dissertation, focus marking plays a key role in the composition of AltQs. First, focus plays an important role in structuring discourse (Bäuerle 1979, Roberts 1996, Biezma 2009). In section 2.6.2, I will show that the location of the foci indicates the shape of the Question Under Discussion (QUD). As will become clear in chapters 4, 5, and 7, this discourse-structuring property of focus is an important ingredient for my analysis of Q-particles and prosody as strategies leading to AltQ meaning. Second, there is a link between focus and interrogativity, as previously explored by Cable (2010) and Truckenbrodt (2013) among others. I will return to this in chapter 7.

Concerning the implementation of focus, the literature offers various possibilities. The most prominent options are (i) Structured Meanings (Von Stechow 1991), (ii) Rooth’s (1992) Alternative Semantics framework, (iii) Krifka’s (2006) hybrid account of focus, combining (i) and (ii), and (iv) an indexed analysis of focus (Kratzer 1991, Wold 1996, Beck 2006). As it is sufficient for the goals of the current dissertation, I make use of Alternative Semantics (à la Rooth (1992)).⁸ In what follows, I give an overview of the key components of the Alternative Semantics approach. I then proceed and introduce the Questions Under Discussion (QUD) framework (Roberts 1996, Büring 2003) that I will use to model discourse and the role of focus therein.

2.6.1 Alternative Semantics

Let us turn to Rooth’s (1992) Alternative Semantics. Within Rooth’s (1992) framework, every constituent has an ordinary semantic value $\llbracket \cdot \rrbracket^o$, and a focus semantic value $\llbracket \cdot \rrbracket^f$, that is built from substituting the denotation of the focus-marked element within the expression with alternative denotations of the same semantic type. Note that I depart from Rooth (1992) in my approach to the ordinary semantic value. Rooth (1992) uses the usual Montagovian semantics in the style of Heim and Kratzer (1998) and takes the ordinary semantic value of, for example, ‘Ana’ to be simply the individual *a*. Since I adopted Alonso-Ovalle’s (2006) Hamblin-style semantics for the ordinary

⁸In fact, in chapter 7, we hit a wall using Rooth’s (1992) Alternative Semantics. For that particular problem, the Kratzerian framework offers a way out. I refer to Romero and Meertens (2020) for details.

semantic value, the denotation of ‘Ana’ is the set containing the individual, thus a. The focus semantic value is derived according to the rule in (23).⁹ Consider the example in (24) in which the subscript F indicates focus marking, and the corresponding lexical entries in (25)-(28).

- (23) If $\llbracket \alpha \rrbracket^o$ is of type τ , then
 $\llbracket \alpha \rrbracket^f = \llbracket \alpha \rrbracket^o$ and
 $\llbracket \alpha_F \rrbracket^f = \{x \mid x \in D_\tau\}$ (adapted from Rooth (1992))
- (24) Ana introduced Boris_F to Osip.
- (25) a. $\llbracket \text{Ana} \rrbracket^o = \{\text{ana}\}$
b. $\llbracket \text{Ana} \rrbracket^f = \{\text{ana}\}$
- (26) a. $\llbracket \text{Boris}_F \rrbracket^o = \{\text{boris}\}$
b. $\llbracket \text{Boris}_F \rrbracket^f = \{\text{boris, marina, vladimir, ...}\}$
- (27) a. $\llbracket \text{Osip} \rrbracket^o = \{\text{osip}\}$
b. $\llbracket \text{Osip} \rrbracket^f = \{\text{osip}\}$
- (28) a. $\llbracket \text{introduce} \rrbracket^o = \{\lambda x. \lambda y. \lambda z. \lambda w. \text{INTR}_w(z, x, y)\}$
b. $\llbracket \text{introduce} \rrbracket^f = \{\lambda x. \lambda y. \lambda z. \lambda w. \text{INTR}_w(z, x, y)\}$

With regard to syntax, Rooth (1992) takes the focused element to remain in situ. A squiggle operator \sim is added that relates a free variable C and the scope of focus-sensitive operators. Essentially, the focus value $\llbracket . \rrbracket^f$ is used to constrain the value of this variable C via the focus felicity condition of the \sim -operator, as defined in (29).

- (29) $\llbracket \phi \sim C \rrbracket$ is felicitous only if $\llbracket C \rrbracket \subseteq \llbracket \phi \rrbracket^f$

Let us consider what this amounts to for a full expression containing a focus-marked element. The analysis of the example in (24) is given in (30).

⁹Note that the rule in (23) hinges on the assumption that if there are more elements in one set, for example in a set projected from disjunction, the elements are of the same type. Given that coordination can only conjoin objects of the same semantic type, this is not problematic (Partee and Rooth 1983).

- (30) a. $\llbracket \text{Ana introduced } [\text{Boris}]_F \text{ to Osip} \rrbracket^o = \{\lambda w.\text{INTR}_w(a,b,o)\}$
 b. $\llbracket \text{Ana introduced } [\text{Boris}]_F \text{ to Osip} \rrbracket^f = \{\lambda w.\text{INTR}_w(a,x,o): x \in D_e\}$
 $= \{\lambda w.\text{INTR}_w(a,b,o), \text{INTR}_w(a,m,o), \text{INTR}_w(a,v,o)\}$

For reasons of completeness, let me briefly explain how this account handles declaratives containing a focus-sensitive operator, e.g., ONLY. Consider the example in (31).

- (31) Ana only introduced Boris_F

Focus-sensitive operators (e.g. ONLY) semantically combine with the ordinary semantic value $\llbracket \cdot \rrbracket^0$ and the value of C . The effect of ONLY in the Roothian framework is defined in (32). This leads us to the result in (33). Note that the definition is modified to be compatible with Alonso-Ovalle's (2006) Hamblin-style denotation of the ordinary values.

- (32) *Only* combining with C and a clause ϕ yields
 $\llbracket \phi \rrbracket^o$ (adapted from Rooth (1992))
 For every p : if $p \in \llbracket C \rrbracket$ and p is true, then $p \in \llbracket \phi \rrbracket^o$
- (33) $\llbracket \text{Ana only introduces } [\text{BORIS}]_F \text{ to Osip} \rrbracket =$
 $\{\lambda w:\text{INTR}_w(a,b,o).\forall p [p \in \{\lambda w.\text{INTR}_w(a,x,o):x \in D_e\} \wedge p(w)=1$
 $\rightarrow p=\lambda w.\text{INTRO}_w(a,b,o)]\}$

Altogether, Rooth's (1992) Alternative Semantics allows us to compute the focus value of a sentence by assuming that (i) the focus-marked phrase stays in situ, (ii) focus marking introduces focus alternatives in the focus-semantic value of an expression, and (iii) the focus alternatives are restricting the value of C , via the \sim -operator.

2.6.2 Focus in Questions Under Discussion

Focus marking plays an essential role in the organization of discourse structure. To see this, let me first spell out the framework used in this dissertation to model discourse structure. I follow Roberts (1996) and take discourse structure to consist of a stack of, often implicit, Questions

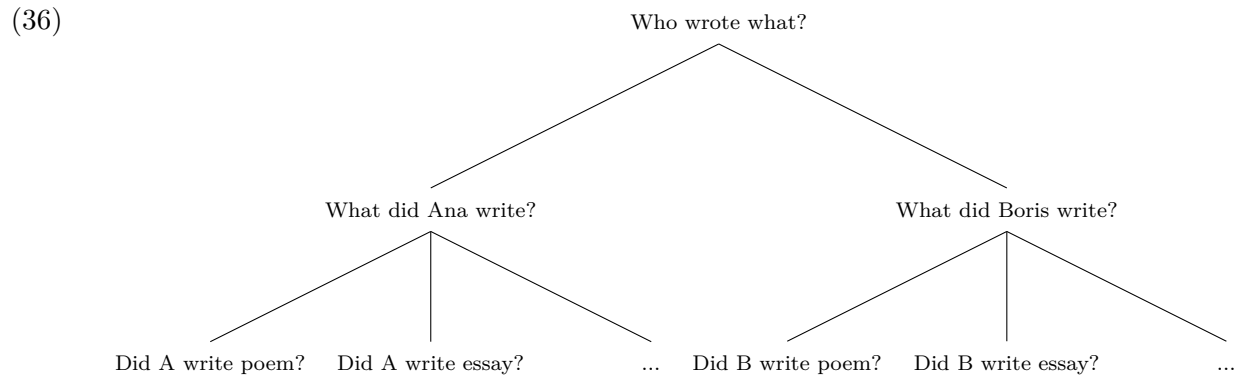
under Discussion (QUDs). After a move m at a given point in discourse, this produces a set of hierarchically ordered and yet-to-be-answered questions. The order of those questions is based on the contextual entailment relation $<$ relating mother questions (motherQs) Q to daughter questions (daughterQs) q , as defined in (34) and (35).

(34) For all Q and $q \in \text{QUD}(m)$, if $Q < q$, then the complete answer to q contextually entails a partial answer to Q .

(35) A question q_1 contextually entails another q_2 iff answering q_1 in a discourse context with common ground C is such that $C \cup \text{Ans}(q_1)$ (i.e., the answer to q_1) entails a complete answer to q_2 .

Unlike Roberts (1996), I do not take QUDs to be semantically *Wh*Qs. Instead, I consider QUDs to be *themes* or *attention sets*, i.e. sets containing alternatives that is drawn attention to.¹⁰ Both the positive and the negative evaluation of these alternatives advance the QUD and are ‘under discussion’.

This is exemplified in (36) where the question ‘Who wrote what?’ can be broken down into the daughterQs ‘What did Ana write?’ and ‘What did Boris write?’, which in turn have their own daughterQs.



It is an explicit requirement in Roberts (1996) that following moves must be congruent with the

¹⁰Later in this dissertation, I make use of Westera’s (2017) and Westera’s (2018) account of intonation and meaning. Within this account, ‘attention’ and ‘theme’ are technical terms. Note that here I do not refer to these technical terms, but rather the intuitive notions.

preceding QUD. Concerning focus, Roberts argues that a move m is congruent to a question q if and only if the focus-semantic value of m is identical to the Hamblin set of the question q . This can be illustrated by the question-answer sequences in (37). This congruence relation is secured by inserting the \sim -operator. I make use Rooth's (1992) \sim -operator to realize congruence. The effect of this congruence requirement is illustrated in the sequences in (37). On the one hand, the focus-semantic value of (37-a), in which *Ana* is focus-marked, corresponds to the Hamblin set of the *wh*-question. On the other hand, the focus-semantic value of the utterance with focus on *poem* in (37-b) is distinct from the Hamblin set of the preceding *wh*-question. This results in felicity for (37-a) and infelicity for (37-b).

(37) Q: Who wrote a poem?

Hamblin set: {ana wrote a poem, boris wrote a poem, osip wrote a poem,...}

a. A: \checkmark Ana_F wrote a poem =

{ana wrote a poem, boris wrote a poem, osip wrote a poem,...}

b. A: # Ana wrote a poem_F

{ana wrote a poem, ana wrote an essay, ana wrote a dissertation,...}

More formally put, the QUD corresponds to the free variable C . This is illustrated in (38) for the example in (24).

(38) [Ana introduced Boris_F to Osip] \sim C] is felicitous iff

$\llbracket C/QUD \rrbracket \subseteq \{\lambda w. \text{INTR}_w(\text{ana}, \text{boris}, \text{osip}),$

$\text{INTR}_w(\text{ana}, \text{marina}, \text{osip}),$

$\text{INTR}_w(\text{ana}, \text{vladimir}, \text{osip})\}$

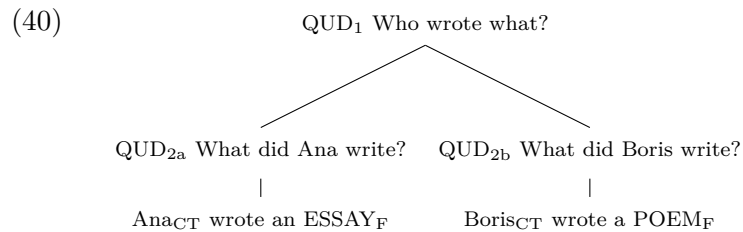
(via (29))

Thus, focus marking is crucial in the organization of the orderly structure of discourse: It indicates the shape of the direct motherQ of an utterance. Within a hierarchy, it is also possible to use prosody to indicate the presence of intermediate questions. This is what happens in utterances with contrastive topic marking (henceforth: CT marking). The topic accent is used to acknowledge

that there is an intermediate question (Büring 2003). Consider the utterance in (39) and the corresponding tree in (40).

(39) A: What about Ana, what did she write?

B: ANA_{CT} wrote a POEM_F



The particular CT marking in (39) - realized in English via a L+H* pitch accent which is followed by a L- H% boundary - signals that the utterance does not completely resolve the issue. It tells us what Ana did, but it does not inform us about all the other poets. CT marking indicates that the speaker is zooming in on the sub-question QUD₂ which is contained in a bigger QUD. In other words, the ‘Grandmother’ QUD (QUD₁) is answered via the ‘Mother’ QUD (QUD₂). CT accents are used to acknowledge that such an intermediate step is taken. Although CT will not play an important role in this dissertation, the underlying idea that prosody can be used as a device to indicate multiple layers in the QUD stack is crucial. We will see in part II of the dissertation how the relation between focus marking and QUDs relates to the composition of AltQs crosslinguistically.

2.7 Conclusion

Taking stock, I take the association properties of disjunction to be lexically encoded in terms of the presence or absence of an unvalued $[\nu\exists]$ feature. In PolQs, on the one hand, disjunction carries such a feature, resulting in association with \exists . Disjunction in AltQs, on the other hand, does not bear a $[\nu\exists]$ feature, which results in association with the Q-operator. This results in different association properties for AltQs and PolQs, something that is not visible on the surface in languages like English. As a result, a plain disjunction string has two possible semantic denotations, as summarized in (41).

- (41) a. Q associates with the disjunctive phrase: [Q Ana wrote a poem or an essay].
 Hamblin set: $\{\lambda w.\text{write}_w(a,\text{poem}),\lambda w.\text{write}_w(a,\text{essay})\}$
 Interpretation: **AltQ**
- b. \exists associates with the disjunctive phrase: [Q \exists_i [_{IP}Ana write poem or_i essay]]
 Hamblin set: $\{\lambda w.\exists p \in \{\lambda w.\text{write}_w(a,\text{poem}),\lambda w.\text{write}_w(a,\text{essay})\} : p(w) = 1\}$
 = $\{\lambda w'.\text{write}_{w'}(a,\text{poem}) \vee \text{write}_{w'}(a,\text{essay})\}$
 Interpretation: **PolQ**

In addition to the semantics of AltQs and disjunctive PolQs, I gave an overview of Rooth's (1992) Alternative Semantics framework. Furthermore, I introduced the QUD framework and showed that there has to be congruence between the location of focus marking and the location of the *wh*-phrase in the overarching QUD. With these building blocks at hand, we turn to the next chapter that discusses another component of the underlying representation of AltQs.

Chapter 3

The size of the disjuncts

3.1 Aims

An outstanding puzzle concerning the underlying representation of AltQs is the size of the disjuncts. The question is whether the second disjunct in AltQs involves ellipsis and, if so, how much material precisely is elided. The literature offers the following three analytical possibilities, that are illustrated in (1) (Han and Romero 2004b, Uegaki 2014b, Nicolae 2013, a.o.).

small disjuncts	type <e> (NPs in the examples)	(1-a)
proposition-denoting disjuncts	type <s,t> (typically IPs)	(1-b)
PolQ disjuncts	type <s<st,t>> (CPs - hence two full PolQs)	(1-c)

- (1) a. Did Ana write [a poem] or [an essay]? [small disjuncts]
b. Did [Ana write a poem] or [~~Ana write~~ an essay]? [proposition disjuncts]
c. [Did Ana write a poem] or [~~did Ana write~~ an essay]? [PolQ disjuncts]

The size of the disjuncts has important consequences for the semantic composition of AltQs. Most importantly, the analysis of PolQ-sized disjuncts implies that in AltQ composition, there are two Q-operators, one in each disjunct. In this chapter, I argue that the disjuncts are proposition denoting, as in (1-b). Building on previous literature, I take the second disjunct in AltQs to be partially elided.¹ I then turn to the question of what the precise size of the elided material is,

¹This chapter concentrates on ‘default’ AltQs with accents on the object. Note that in cases with, for example, subject focus, it is the first disjunct that is elided. Consider (2).

- (2) Did ANA ~~write a poem~~ or BORIS write a poem↓?

proposition denoting or a full PolQ. As we will see, one prominent argument in favor of the analysis of AltQs as being the disjunction of two full PolQs is the observation that embedded AltQs can have multiple instances of *whether*, as illustrated in (3).

(3) I don't know whether I should write a poem or whether I should write an essay.

Based on novel data, I argue that these data do not show that the disjuncts are semantically PolQs. In a nutshell, I argue that there is one Q-operator in (3) and that the second *whether* is not interpreted. I demonstrate that the question of why the second instance of *whether* is not interpreted is part of a bigger puzzle and draw the parallel between *whether*, modal verbs and *because* in coordinate constructions.

The structure of this chapter is as follows. I begin with a review of the literature and discuss the three analytical possibilities in section 3.2. After an intermediate summary in section 3.3, I proceed with section 3.4, in which I draw the parallel between the double *whether* data, modal verbs and *because* in coordinate structures. In section 3.5, I turn to Meyer and Sauerland's (2016) account concerning the inference patterns of modal verbs in coordinate structures and argue this proposal is not viable. I conclude in section 3.6

3.2 Background

Let us start with an overview of previous work on the analytical possibilities concerning the size of the disjuncts. Following on from there, I discuss prominent accounts that address this issue and their most important arguments. I begin with the possibility of small disjuncts. I then turn to a number of convincing arguments in the literature showing that AltQs involve ellipsis. In addition, I review accounts that have proposed proposition denoting disjuncts and finally, accounts that argue for PolQ disjuncts.

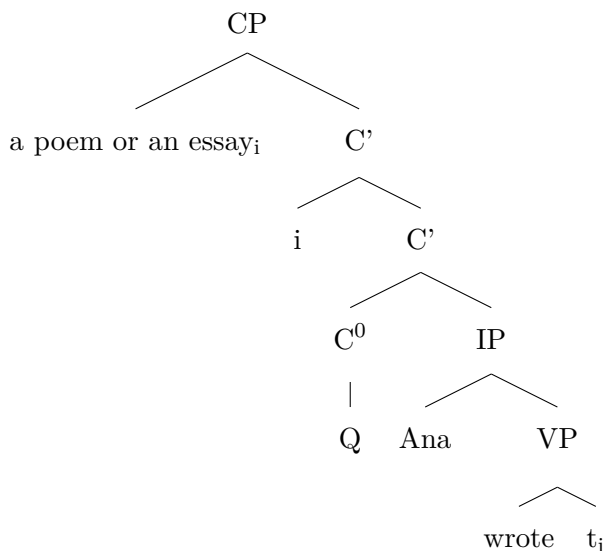
Thanks to Matthijs Westera for pointing this out.

3.2.1 Small disjuncts

We first consider the possibility of small disjuncts, as reflected in (1-a). A prominent account in which the disjunct size is taken to be surface identical is put forward by Nicolae (2013). I want to emphasize that I won't do justice to the intended purposes of Nicolae's (2013) proposal, which is to account for NPI licensing in questions. The goal here is to examine the theoretical decision concerning the size of the disjuncts. Within Nicolae's (2013) account, the disjunctive phrase is treated as a *wh*-phrase (*which out of poem or essay*) that undergoes movement and takes wide scope, via Karttunen's (1977) system, as exemplified in (4).

(4) $[[a \text{ poem or an essay}]_i \text{ Q Ana wrote } t_i]$

(5) Ana wrote a poem or an essay.



Nicolae assumes that disjunctive phrases involve an \exists -operator by default, which results in the denotation of *a poem or an essay* in (6).

(6) $[[a \text{ poem or an essay}] = \lambda Q. \exists x [x \in \{a \text{ poem, an essay}\} \wedge Q(x)]$ (Nicolae 2013)

At first sight, this analysis correctly derives the semantics of AltQs. That is, the final denotation of the AltQ is a set containing two propositions describing the expressed disjuncts, in our case

{ana wrote a poem, ana wrote an essay}. However, analyzing the disjunctive phrase as a *wh*-phrase wrongly predicts that AltQs and *Wh*Qs have the same licensing conditions. It is known that certain environments ban AltQs, but allow for *wh*-questions (Lahiri 1991, Han and Romero 2004b, Beck and Kim 2006, Romero 2015, a.o.). For the sake of illustration, let me turn to three examples of those environments.

First of all, *wh*-phrases are licensed under certain emotive predicates, such as *surprise*, while disjunctive phrases are not (Grimshaw 1979, Lahiri 1991, Guerzoni 2003, Romero 2015). This contrast is illustrated in (7).

- (7) a. Ana was surprised who wrote the poem.
 b. *Ana was surprised whether Boris or Osip wrote the poem.

Furthermore, it is known that *wh*-phrases can form multiple questions, as in (8-a). Beck and Kim (2006) point out that, if disjunctive phrases compositionally function as *wh*-phrases, we expect there to be (i) multiple AltQs, containing two disjunctive phrases, and (ii) mixed multiple questions containing a disjunctive phrase and a *wh*-phrase (Beck and Kim 2006). Compare the questions in (8)

- (8) a. Who taught what?
 b. Did Frits or Doris teach syntax or semantics?
 c. Who taught syntax or semantics?

The examples in (8) indeed display multiple AltQs (in (8-b)) and mixed multiple questions (in (8-c)). It is unclear however, whether they have the relevant interpretations. To simplify the empirical considerations, Beck and Kim (2006) consider the predicate *list* that is known to embed questions with multiple singular *wh*-phrases, but not questions with a singular *wh*-phrase. Contrary to what Nicolae (2013) predicts, the following examples show that *list* can neither embed multiple AltQs, nor the combination of an AltQ and a *Wh*Q (Beck and Kim 2006, Schwarz 1999).

- (9) a. *Arnim listed which linguist taught syntax last year.

- b. Arnim listed which linguist taught which class last year.
- c. *Arnim listed whether Fritz or Doris taught syntax last year.

(Beck and Kim 2006, ex. 91,p. 187)

- (10) a. *Arnim listed which linguist taught syntax or semantics last year.
- b. *Arnim listed whether Fritz or Doris taught syntax or semantics last year.

(Beck and Kim 2006, ex. 93,p. 188)

Finally, Beck and Kim (2006) point out that an analysis that treats disjunctive phrases as *wh*-phrases, predicts island sensitivity for AltQs. First, consider the data in (11), that were put forward by Larson (1985) to show that disjunctive phrases are island-sensitive and thus include covert movement.

- (11) a. The decision whether to believe that Bill resigned or retired [✓PolQ/✓AltQ]
- b. *The decision whether to believe the claim that Bill resigned or retired [✓PolQ/*AltQ]

Consider the data in (12).

(12) Complex DP island

- a. * Do you believe the claim that Bill reSIGNED ↑ or reTIRED ↓?

(Han and Romero 2004b, ex.15,p.532)

- b. Do you need a person that speaks DUTCH↑ or GERMAN↓?

(Beck and Kim 2006, ex.104,p.190)

Based on (12-a), Han and Romero (2004b) argue that AltQs are island sensitive. Beck and Kim (2006) put forward counterexamples, for example (12-b), and show that there are islands that allow for AltQs. Although it is not clear under what conditions AltQs can appear in islands, the point that *Wh*Qs differ from AltQs stands, as there are contexts that allow for AltQs but not for *Wh*Qs. The *wh*-equivalent of both (12-a) and (12-b) is ungrammatical because of island constraints.² Witness

²Note that the *wh*-phrases in (13) and (14) appear ex-situ, as always in English. This crucially differs from the AltQs, where the disjunctive phrase appears in its base position (in-situ if one assumes movement for AltQs). I leave a comparison between the island behavior of AltQs and in-situ *Wh*Qs for the future.

(13) and (14).

- (13) a. Who do you believe resigned?
b. Who do you believe the claim that resigned?
- (14) a. What language do you need?
b. What language do you need a person who speaks?

To sum up, the literature shows that not all linguistic environments that allow for *Wh*Qs, also allow for AltQs. This is something that cannot be straightforwardly derived from Nicolae’s (2013) account that analyzes disjunctive phrases in AltQs like *wh*-phrases.

Beck and Kim (2006) propose an alternative analysis in which the disjuncts are taken to be identical to their surface structure form. The authors take the meaning of an AltQ to be derived via Hamblin alternatives.³ While this analysis derives the right word order for English and is compatible with the observations described above, i.e., that AltQs are licensed in different linguistic contexts than *wh*-questions and the island data, its crosslinguistic extension is problematic, as we will see shortly.

Altogether, I conclude that pursuing a line that analyzes the disjunctive phrase in AltQs as a *wh*-phrase is problematic. This takes us to the next section in which I discuss accounts that argue for an ellipsis account of AltQs.

3.2.2 AltQs involve ellipsis

There is convincing evidence from various languages that AltQs with seemingly small disjuncts involve ellipsis (Han and Romero 2004b, Uegaki 2014b, Erschler 2018, a.o). Let us start with Hindi. Han and Romero (2004b) observe that, in Hindi, a $SO_1 V$ or O_2 word order, as in (15-a), on the one hand always results in an AltQ interpretation.⁴ Disjunctive questions with a SO_1 or $O_2 V$ word order, on the other hand, are always PolQs, witness (16).

³For a detailed description of this analysis, I refer to Beck & Kim (2006)

⁴Bhatt and Dayal (2020) mention that with a particular prosody, the AltQ reading for (16) is available. See footnote 19 on page 1134. I leave this for future work.

(15) *Hindi* (Han and Romero 2004b, ex. 33,p. 539)

a. (Kyaa) Chandra-ne coffee pii yaa chai?
 Q Chandra-ERG coffee drink.PFV or tea
 ‘Did Chandra drink coffee or tea?’ [AltQ]

b. (Kyaa) [Chandra-ne coffee pii] yaa [~~Chandra-ne~~ chai pii]?
 Q Chandra-ERG coffee drink.PFV or ~~Chandra-ERG~~ tea ~~drink.PFV~~
 ‘Did Chandra drink coffee or tea?’ [AltQ-LF]

(16) (Kyaa) Chandra-ne coffee yaa chai pii?
 Q Chandra-ERG coffee or tea drink.PFV
 ‘Did Chandra drink coffee or tea?’ [PolQ]

Given that Hindi is an SOV language, the surface position of the finite verb generally marks the right edge of a clause. If AltQs are constructed by disjoining two IPs, as schematized in (15-b), the prediction is that the second disjunct appears after the verb. We saw in (15-a) that this prediction is borne out. To put it more simply, unless we coordinate the two-place predicate *drink* with the noun *tea*, the surface structure in (15-a) can only be derived from ellipsis. Han and Romero (2004b) conclude that Hindi AltQs with seemingly small disjuncts involve ellipsis, or to be precise, verb deletion in the second disjunct.

Recent developments in the morphology and syntax literature revealed additional support in favor of an ellipsis account of AltQs. For example, Erschler (2018) argues that the placement of Wackernagel clitics in Digor Ossetic and Iron Ossetic shows that AltQs involve ellipsis. Wackernagel clitics are clitics that mandatorily appear in the second position of the clause. In the AltQ in (17) the Wackernagel clitic *ta* attaches to the disjunction *evi* ‘or’, which shows that the second disjunct forms a separate clause.

(17) *Iron Ossetic* (Erschler 2018, ex.20,p.11)

alan.en jɐ=mad fəččən škodta evi=ta kartofɬən?
 Alan.DAT his-mother meat.pie made or.Q-again potato.pie
 ‘Did Alan’s mother cook him a meat pie or [did she again cook him a potato pie]?’

If the disjuncts make up one clause, *ta* would encliticize to *alan.en jɐ*, in the second position of the

sentence (Erschler 2018).

Podobryaev (2017) presents additional arguments from Russian in favor of an ellipsis account of AltQs. The author shows that, normally, prepositions in AltQs need to be duplicated. That is, the disjunctive phrase cannot function as the complement of a preposition. This is illustrated in (18), in which the preposition *s* ‘with’ mandatorily appears in each disjunct.

(18) *Russian* (Podobryaev 2017)

a. [Ty govoril s Olej] ili ~~ty govoril~~ s Tonej
 you spoke with Olya or you spoke with Tonya
 ‘Did you talk to Olya or Tonya?’ [✓AltQ]

b. Ty govoril s Olej ili ~~ty govoril~~ Tonej
 you spoke with Olya or you spoke Tonya
 ‘Did you talk to Olya or Tonya?’ [*AltQ]

In Russian, there is a class of prepositions that can be freely stranded under sluicing, e.g., the preposition *naprotiv* ‘opposite to’. Crucially, Podobryaev (2017) observes that such prepositions do not have to be duplicated in AltQs. Witness (19).

(19) *Russian* (Podobryaev 2017)

a. On sidel naprotiv kogo.to, no ja ne mogu vspomnit ~~naprotiv~~ kogo
 He sat opposite.to someone but I NEG can remember ~~opposite.to~~ whom
 .
~~he sat opposite to~~
 ‘He sat opposite to someone, but I can’t remember who’

b. Ty sidel naprotiv Olej ili ~~naprotiv~~ Tonej?
 you sat opposite.to Olya or ~~opposite.to~~ Tonej
 ‘Did you sit opposite to Olya or Tonya?’ [✓AltQ]

LF: [you sat opposite.to Olya] or [you sat opposite to] Tonej]

This shows that Russian AltQs involve sluicing. The omission of a preposition requires preposition stranding under sluicing, which is independently prohibited for most prepositions. The other class of prepositions, like *s*, cannot be stranded. Omission is allowed with *naprotiv* ‘opposite to’, because

it can be stranded and, hence, is deleted under sluicing (Podobryaev 2017).

Let us turn to the next case. Uegaki (2014b) shows that Japanese AltQs are syntactically constrained in the same way as Hindi AltQs. If the disjunctive phrase is in object position, the AltQ reading is not available. When the disjuncts are VPs, the question is interpreted as an AltQ. Consider (20).⁵

- (20) *Japanese* (Uegaki 2014b, ex. 13, p. 48)
- a. [Taro-ga koohii ka ocha-o non-da-ka] (-ga mondai-da)
 Taro-NOM coffee Q tea-ACC drink-PST-Q (-NOM question-COP)
 ‘Is it true that Taro drank coffee or tea’ [*AltQ/√PolQ]
 LF: Taro [coffee or tea] drink
- b. [Taro-ga koohii-o non-da ka ocha-o non-da-ka]
 Taro-NOM coffee-ACC drink-PST Q tea-ACC drink-PST-Q
 ‘Did Taro drink coffee or tea’ [√ AltQ/?PolQ]
 LF: [Taro coffee drink] or [Taro tea drink]?

Uegaki (2014b) argues that the underlying structure of (20-b) is as in (21). Uegaki’s (2014b) reasoning hinges on the assumption that the first instance of the particle *ka* is a Q-marker rather than a disjunction. This assumption is supported by independent evidence.^{6 7}

- (21) *Japanese* (Uegaki 2014b, ex.14,p.48)
- [Taro-ga koohii-~~o~~ non-da-ka] (soretomo) [~~Taro-ga~~ ocha-o non-da-ka]
 Taro-NOM coffee-ACC drink-PST-Q Taro-NOM tea-ACC drink-PST-Q

I will turn to Uegaki’s (2014b) account in more detail in the next subsection.

Finally, Han and Romero (2004b) argue that English AltQs involve ellipsis. The authors take

⁵Note that I glossed the Q-particle *ka* as Q. In Uegaki (2014b), the author glosses the first instance of *ka* as ‘or’ and the second as a Q-marker. I choose to gloss both instances as Q, because I want to remain as neutral as possible with respect to *ka*’s function in AltQs.

⁶See Uegaki (2014b) for these independent arguments.

⁷Note that in subsequent work, Uegaki (2018) revises this assumption and takes both instances of *ka* to be Q-particles. Given what is currently known about Q-particles, this does not mean that the Q-particle is hosted by spec-CP. Cable (2010), for example, argues that the Q-particles occupy FocP. That is, it is not necessarily the case that *ka* is the same element as *whether* (*whether* does occupy the position in spec-CP). On top of that, if there were evidence showing that *ka* is an element akin to *whether*, this does not mean that AltQ meaning is derived from disjoining two PolQs, as we will see in section 3.4.

the focal accents in AltQs to be the focal accents that obligatorily appear on the remnant and the correlate in elided constructions, see (22).

(22) ANA wrote a POEM and BORis ~~wrote~~ an ESSAY.

Importantly, this argument is disputed by Truckenbrodt (2013). To see this, consider the utterances from German in (23), in which underlining refers to main sentence stress. In declaratives, on the one hand, main sentence stress must not fall on the last disjunct, see (23). In the corresponding AltQ, on the other hand, main sentence stress on the second disjunct is obligatory. This means that the focal accents in AltQs cannot be simply reduced to the contrastive foci that appear on the remnants and correlates of ellipsis.

(23) *German* (Truckenbrodt 2013, ex. 30, p. 9)

Er hat am DIENStag ~~ein papier geschrieben~~, und sie hat am MITTwoch ein paPIER
 He has on tuesday ~~a paper written~~, and she has on wednesday a paper
 geschrieben
 written

‘He wrote a paper on tuesday, and she on wednesday.’

Hat er am DIENStag oder hat sie am MITTwoch ein paPIER geschrieben?
 Has he on tuesday or has she on wednesday a paper written?

‘Did he write a paper on tuesday or she on wednesday?’ [*AltQ/√PolQ]

Based on the data in (23), Truckenbrodt (2013) concludes that the disjuncts inherently carry a focus feature. I will return to the mandatory status of the focal accents on the disjuncts in chapter 4. Based on the crosslinguistic evidence, I take English AltQs to involve ellipsis and take the typical accents on the remnants in most cases to coincide with the inherent focus feature on the disjuncts.

So far, we have seen convincing evidence showing that in AltQs, the second disjunct is partially elided. This leaves us with the question whether the disjuncts are propositions or full PolQs. In the remainder of this section, I examine accounts discussing this issue. We first discuss the analytical possibility that AltQs consist of proposition denoting disjuncts.

3.2.3 Proposition denoting disjuncts

Let me start with the prominent account by Han and Romero (2004b) in which the authors argue for proposition denoting, IP-sized disjuncts. Han and Romero (2004b) treat AltQs as the *wh*-counterpart of *either... or* constructions, building on Schwarz (1999). The analysis consists of two ingredients: (i) the disjunctive phrase undergoes movement (cf. Larson (1985)), and (ii) the second disjunct is partially elided through gapping (verb deletion) (cf. Schwarz (1999)). Witness (24).

(24) Q_i Did *t_i* [Ana see Boris or ~~Ana~~-see Osip]?

Within Han and Romero's (2004b) analysis, there is one single Q-operator that associates with the disjuncts via movement. An important argument in favor of this analysis, as opposed to analyses that take the disjuncts to be full PolQs, is the observation that AltQs do not license NPIs, whereas PolQs do (Nicolae 2013, Guerzoni and Sharvit 2007). Consider the data in (25).

- (25) a. Did anybody write a poem? ✓NPI (PolQ)
 b. Did anybody write a poem or an essay? *NPI under AltQ reading
 c. Did anybody write a poem or did anybody write an essay? *NPI under AltQ reading

Now, if AltQs are the disjunction of two PolQs, we expect them to license NPIs, an expectation that is not borne out.

Furthermore, Gračanin-Yukseš (2016) shows that in Croatian, AltQs involve ellipsis and argues that the disjuncts cannot be CPs. Croatian employs the Q-particle *li*, or its cliticized version *dali* to compose disjunctive questions. There are two default strategies to attach Croatian *li*: following the complementizer *da* or following the tensed verb of the clause. In disjunctive questions, both strategies are compatible with both AltQ and PolQ interpretations. Consider the data in (26).

- (26) *Croatian* (Gračanin-Yukseš 2016, ex. 13,p. 286)
- a. Da li Jan voli Hanu ili Doru?
 that Q Jan loves Hana.ACC or Dora.ACC
 'Does Jan love Hana or Dora?' [✓AltQ/✓PolQ]

- b. Voli li Jan Hani ili Doru?
 loves Q Jan Hani.ACC or Dora.ACC
 ‘Does Jan love Hana or Dora?’ [✓AltQ/✓PolQ]

Gračanin-Yuksek (2016) demonstrates that in Croatian, simply disjoining two PolQs with the clitic *(da)li* in each disjunct, leads to ungrammaticality. Hence, the underlying structure of AltQs cannot be that of two PolQs, because this structure is not available on surface level.

(27) *Croatian* (Gračanin-Yuksek 2016, ex. 23, p. 289)

- a. *Da li Jan piše knjigu ili da li Vid radi na scenariju?
 that Q Jan writes book or that Q Vid works on script
 ‘Is Jan writing a book or Vid working on a script?’
- b. *Piše li Jan knjigu ili radi li Vid na scenariju?
 writes Q Jan book or works Q Vid on script
 ‘Is Jan writing a book or Vid working on a script?’

Based on the data in (27), Gračanin-Yuksek (2016) argues that the disjuncts in Croatian AltQs are smaller than CPs. Let us now turn to previous literature that argues in favor of a full PolQ analysis.

3.2.4 PolQ sized disjuncts

There are various accounts that explicitly argue that AltQs consist of PolQ-sized disjuncts (Uegaki 2014b, 2018, Pruitt and Roelofsen 2011, a.o.).⁸ Such analyses imply that no movement is involved in AltQ composition and that each disjunct contains a Q-operator. AltQ meaning is then derived in the following way. Uegaki (2014b) takes PolQs to denote the singleton set of their preajacent proposition using Karttunen’s (1977) Q-operator (see (29)). According to Uegaki (2014b), disjoining two singletons using Partee and Rooth’s (1983) Generalized Disjunction, as defined in (30), results in AltQ meaning.

(28) [[_{CP} Q [Ana wrote a poem]] *soretomo* [_{CP} Q [Ana wrote an essay]]]

⁸Note that Uegaki’s (2014b) claim only targets Japanese and Korean. Concerning languages like English, the author remains neutral.

- (29) Uegaki's (2014b) Q-operator (ex.30,p.55)
 $\llbracket Q \rrbracket = \lambda p[\lambda q.q=p]$
- (30) Uegaki's (2014b) Generalized Disjunction
 $\llbracket \text{soretomo} \rrbracket = \lambda Q_{\langle st,t \rangle} \lambda Q'_{\langle st,t \rangle} \lambda p.Q(p) \vee Q'(p)$
- (31) $\llbracket [\text{CP } Q [\text{Ana wrote a poem}]] \rrbracket = \lambda q.[q = \lambda w.\text{wrote}(a,\text{poem},w)]$
- (32) $\llbracket [\text{CP } Q [\text{Ana wrote a poem}]] \text{ soretomo } [\text{CP } Q [\text{Ana wrote an essay}]] \rrbracket =$
 $\{\lambda w.\text{wrote}(a,\text{poem},w), \lambda w.\text{wrote}(a,\text{poem},w)\}$

Let us consider two prominent arguments in favor of PolQ sized disjuncts. First, Uegaki (2014b) argues that no movement can be involved in Japanese AltQs. A movement analysis, as put forward by Nicolae (2013), and Han and Romero (2004b) predicts that it is possible for an operator α to appear somewhere in CP between in the base position of disjunction and the Q-operator. In such constructions, the interpretation would be that α scopes over both disjuncts. Uegaki (2014b) shows that if an operator α , for example the epistemic modal *hazu* or the politeness marker *desu*, appears in said position, the relevant AltQ interpretation, in which both disjuncts share modal/politeness meaning, is unavailable. Consider (33)

- (33) *Japanese* (Uegaki 2014b, ex. 18,p. 50)
- Taro-ga koohii-o nomu ka ~~Taro-wa~~ ocha-o nomu-hazu-ka?
 Taro-NOM coffee-ACC drink Q ~~Taro-NOM~~ tea-ACC drink-must-Q ?
- (i) *‘Which is true: Taro must drink coffee or he must drink tea?’ [relevant AltQ]
 (ii) ✓‘Is it true that Taro must drink coffee or tea?’ [PolQ]
 (iii) ✓‘Which is true: Taro drinks coffee or he must drink tea?’ [AltQ]

This leads Uegaki (2014b) to conclude that Japanese AltQs are the disjunction of two full PolQs. The author himself mentions that there are two possible responses to his argument. The first one is to say that the fact, that the AltQ reading in (33) is unavailable, is due to intervention effects. Uegaki (2014b) shows that this argument is not viable (see page 51). The second possible response is

to say that the structure in (33) is ruled out by positing a syntactic restriction on the minimum size of the disjuncts, for example, that it has to include projections of modals. Uegaki (2014b) argues that positing such a restriction would be stipulative and that a principled explanation is preferred. I will not address this in depth but want to tentatively suggest that this second option could be explored further and that the problem is not insurmountable. A possible explanation, along the lines of Uegaki’s (2014b) second option, is to argue that the unavailability of the relevant AltQ reading is due to the semantic principle of parallelism in disjunction. We know that disjunction can only coordinate elements that are of the same semantic type (Heim and Kratzer 1998). We also have evidence that semantic types involve more layers than we would typically assume. For example, events denote a higher type $\langle v \rangle$ that is fed into the semantic representation by the lexical meaning of predicates, introducing an event argument next to their standard arguments (Davidson 1967, a.o.). Similarly, modals have been argued to select functions of a higher type than propositions (Santorio 2010). I very tentatively suggest that the modal in (33) occupies a ‘modal’ slot that changes the semantic type of the second disjunct. Given the parallelism principle for disjunction, the first disjunct must be of the same semantic type, including that ‘modal’ slot. Since nothing is pronounced, the slot must be empty, rendering the AltQ reading in (33)(iii). I leave this suggestion for the future.

A second argument put forward in favor of a PolQ disjunct size analysis of AltQs is the availability of embedded AltQs with two occurrences of *whether* (Pruitt and Roelofsen 2011). Consider the example in (3), repeated below as (34).

(34) I don’t know whether I should write a poem or whether I should write an essay.

Since *whether* occupies a position in CP, these data suggest that the syntactic build-up of AltQs consists of two full CPs, hence two PolQs. This pattern can be attested crosslinguistically. In contrast to what we saw for Croatian in (27) (Gračanin-Yuksek 2016), there are languages that have overt interrogative disjunctions. This is illustrated for Hausa in (35) (Haida 2009).

(35) *Hausa* (Haida 2009, as cited in Pruitt and Roelofsen (2011))

Ko: za: kà ta:shì ko: kò: za: kà zaunà: gida:?
 Q FUT 2SG.M.SBJV go.up or Q FUT 2SG.M.SBJV remain home
 ‘Are you going to get up or are you going to stay at home?’

The data in (35) support the idea that the disjuncts in Hausa AltQs are full PolQs.

3.3 Intermediate summary: a mixed picture

To summarize, we have seen convincing evidence that in AltQs, the second disjunct is partially elided. However, there is no consensus in the literature on whether the disjuncts are proposition-denoting or full PolQs. In fact, the literature provides conflicting evidence: Languages like Japanese and Hausa seem to compose AltQs by disjoining two PolQs, but this option is not available in Croatian. This leads me to conclude that, syntactically, the size of the disjuncts is probably language dependent, a suggestion also made by Erschler (2018).

Crucially, I make a distinction between syntax on the one hand and semantics on the other hand. Semantically, AltQs cannot be boiled down to the disjunction of two PolQs. Thus, even though AltQs in languages like Japanese and Hausa syntactically consist of PolQ-sized disjuncts, their semantics is not derived from the semantics of two PolQs. The main problem with deriving AltQ meaning from the disjunction of two PolQs, is that each PolQ contains a Q-operator. This leads to an analysis of AltQs containing two Q-operators. In fact, this might look like a tempting analysis with the double *whether* data in embedded questions in mind. *Whether* has often been analyzed as an overt instance of the Q-operator. Yet, I show that such an analysis does not make the right predictions and argue that the second occurrence of *whether* is not interpreted. See also Hoeks and Roelofsen (2020) who make a similar point about constructions with double auxiliary inversion, as in (36).

(36) Did Ana see Boris or did Ana see Osip?

I continue in the next section with a close examination of the double *whether* utterances and their interpretation.

3.4 A novel observation: the non-interpretation of *whether*

3.4.1 The scopal interaction between *whether* and disjunction

In order to understand the interaction between *whether* and disjunction, let us take a look at *either*. Larson (1985) has pointed out that a narrow scope interpretation of disjunction disappears in constructions with displaced *either*. This is illustrated for declaratives in (37).

- (37) (Marina thinks that) Either Ana saw Boris or Osip.
* (Marina thinks that) Ana saw [[Boris] or [Osip]]
[narrow scope]
✓(Marina thinks that) [Ana saw Boris] or (Marina thinks that) [Ana saw Osip]
[wide scope]

The main observation in this section hinges on the assumption that *or* and *either...or* (with local *either*) share the same propositional, at-issue content. While there are debates ongoing in the literature about the nature of the exclusivity effects both disjunction forms give rise to, it is generally agreed upon that the proposition content of the two disjunction forms is the same (Fox 2007, Nicolae and Sauerland 2016, a.o.). If we keep this in mind and take a look at disjunctive questions, we end up with a clear prediction for the PolQ disjunct size analysis. We expect an AltQ interpretation to be available for disjunctive questions with *either*. However, this prediction is not borne out. Consider the data in (38). While the PolQ interpretation, paraphrased in (38-a) is available, the AltQ in (38-b) is not.

- (38) Marina wonders either whether Boris is coming to the party or whether Osip is coming to the party
- a. Context: *Marina is ambivalent about her romantic interests. She is interested in both Boris and Osip, but it changes by the day. One day she's into Boris, the other day she's into Osip.*
- ✓Marina is wondering about one of the two things: whether Boris is coming to the

party or whether Osip is coming to the party. [PolQ]

- b. Context: *Boris and Osip are both invited to the party, but they recently got divorced, so it is very unlikely that they both will show up at the party.*

Marina wonders which one of the two will show up, Boris or Osip. [AltQ]

These data show that AltQs are, unsurprisingly, associated with a narrow scope interpretation of disjunction. This raises the question of how this can be derived from the double *whether* construction in (34), in which disjunction overtly scopes over *whether*. I argue that *whether* is not interpreted in the second disjunct and that the second occurrence of *whether* is, in fact, an ‘empty copy’. Consequently, *whether* does not scope over the second disjunct, but over the disjunctive phrase in its entirety. This idea is supported by the fact that we find other instances of ‘empty copies’ in different types of coordinate constructions. As a result, the double *whether* data cannot be considered as an argument in favor of the semantic analysis of AltQs as the disjunction of two full PolQs as we will see in the remainder of this chapter.

3.4.2 The single interpretation of multiple operators

There are other examples in the grammar of operators that appear twice in a coordinate structure but are interpreted once. Overtly, these operators appear in the scope of disjunction. Yet, only a wide-scope interpretation is available for these operators. In this subsection, I discuss two examples of such operators: modal verbs and *because*.⁹

3.4.2.1 Coordinating *because*

To start with, consider the utterance in (39) that contains one instance of *because*. The default interpretation is that the conjunction of passing courses and successfully finishing an internship has led to graduation. In other words, *because* (\because) scopes over conjunction.

- (39) John graduated **because** he passed his courses and successfully finished his internship.

✓LF: $\because > \wedge$

⁹I will only discuss data consisting of two conjuncts or disjuncts. The number of coordinated phrases does not affect the intuitions.

The utterance in (40) with two occurrences of *because* can be interpreted with a narrow scope for *because*. That is, a reading in which both passing courses and successfully finishing an internship would have led to graduation independently of each other, as is illustrated in (40-b). Crucially, (40) can also be interpreted with the scope over disjunction, as reflected in (40-a). This is the reading in which the conjunction of passing courses and successfully finishing an internship has led to graduation. Thus, the wide scope reading of *because* is available even though *because* overtly scopes under conjunction.

- (40) John graduated **because** he passed courses and **because** he did an internship.
- a. \checkmark LF: $:: > \wedge$
- b. \checkmark LF: $\wedge > ::$

Now, let us turn to data from Dutch. First, consider the example in (41) with the Dutch standard disjunction *en*. Parallel to the English example with double *whether* in (40), both LFs are available.

- (41) Jan is geslaagd omdat hij zijn vakken heeft gehaald en omdat hij een stage afgerond heeft
 Jan is graduated because he his courses has passed and because he an internship finished
 has
 ‘Jan graduated **because** he passed courses and **because** he did an internship.’
- a. \checkmark LF: $:: > \wedge$
- b. \checkmark LF: $\wedge > ::$

Dutch has access to the discontinuous conjunction item *zowel...als* that forces wide scope for conjunction, parallel to English *either...or*. If we apply *zowel...als* in the same way as we did with local *either* in (38) above, we observe a pattern with the AltQ in (38): The narrow scope reading of *because* crashes. Overtly *because* appears under disjunction and, in this case, it cannot take wide scope. The interpretation of (42) is that both taking courses and doing an internship would have independently led to graduation. The reading with narrow scope for conjunction is not available.

(42) Jan is zowel geslaagd **omdat** hij zijn vakken heeft gehaald, als **omdat** een stage afgerond heeft.

Jan is and graduated **because** he his courses has passed, and **because** he an internship finished has .

‘John graduated because he took courses and John graduated because he did an internship’

*LF: $\cdot > \wedge$

✓LF: $\wedge > \cdot$

So, even though the reading in which *because* gets wide scope is in principle available for utterances with two *because*s, as shown in (41), this reading gets destroyed by the discontinuous conjunction item *zowel...als*, as illustrated in (42). The observed pattern is identical to what we saw for *whether* in AltQs. We proceed with yet another case of constructions with multiple operators.

3.4.2.2 Inferences for coordinated modal verbs

Similar to *whether* and *because*, modal verbs are not interpreted in their surface position in coordinate constructions (Simons 2005, Meyer and Sauerland 2016). To see this, consider (43). It is known that sentences like (43) give rise to so called Free Choice (FC) effects: The addressee is required to eat or drink, but free to choose which one of the two.

(43) You **must** eat or drink.

FC: $\text{must}[\text{eat} \vee \text{drink}] \Rightarrow \Box(\text{eat} \vee \text{drink}) \wedge \Diamond\text{eat} \wedge \Diamond\text{drink}$

✓LF: $\Box > \vee$ (FC)

✓LF: $\vee > \Box$

Parallel to the AltQ interpretation, FC is associated with a narrow scope of disjunction (Fox 2007). Again, this is illustrated in examples like (44), in which wide scope for disjunction is determined by displaced *either*.

(44) Either you **must** eat or drink.

*LF: $\Box > \vee$ (FC)

✓LF: $\vee > \square$

Crucially, FC effects are available if *must* appears in the second disjunct, overtly scoping under the scope of disjunction (Meyer and Sauerland 2016). This is illustrated in (45).

(45) You **must** eat or you **must** drink.

✓LF: $\square(\text{eat} \vee \text{drink}) \wedge \diamond \text{eat} \wedge \diamond \text{drink}$ (FC)

✓LF: $\square > \vee$

Again, we observe that the second *must* is not interpreted in its surface position.

Ultimately, there are various constructions in which operators, that appear twice in coordinate constructions, are interpreted only once. This suggests that the non-interpretation of the second occurrence of *whether* in embedded AltQs is part of a puzzle that outscopes the domain of AltQs. In the following section, I explore a possible explanation for the described facts that was proposed by Meyer and Sauerland (2016): covert across the board movement (henceforth: ATB movement).

3.5 Covert ATB movement

This section serves to examine a recent proposal by Meyer and Sauerland (2016) to account for the availability of FC effects for modals in coordinate structures. I provide a summary of their account and explore a possible extension to the *whether* and *because* data. I show that Meyer and Sauerland’s (2016) account faces serious syntactic problems and conclude that this is not a viable route to take. This is in line with observations by Cremers et al. (2017), who argue that ATB movement cannot be the full story.¹⁰

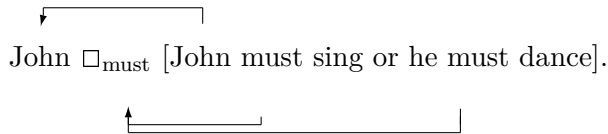
3.5.1 Meyer and Sauerland (2016)

Meyer and Sauerland (2016) provide an account for the scopal behavior of modal verbs in coordinate constructions. The key idea is, building on Simons (2005), that the scopal interaction between modals and disjunction is the result of covert ATB movement. Each occurrence of *must* undergoes

¹⁰See also Bar-Lev and Fox (2020) for a recent account of free choice.

movement and they end up in the same position, taking high scope. This is illustrated in (46).¹¹

- (46) a. S-Structure: John must sing or he must dance
 b. LF:



Meyer and Sauerland (2016) propose that the only elements, that have the ability to scope out of a coordination when occurring in both disjuncts, are finite modals. The authors support this claim with two arguments. First, a surface wide-scope disjunction [Mod A or Mod B] is predicted to lack an FC reading if the modal is a non-auxiliary modal expression in English, which is borne out (Meyer and Sauerland 2016).

- (47) It's ok for John to sing or it's ok for John to dance (*FC)

Second, negation can never scope over a coordination if it occurs in both disjuncts (Meyer and Sauerland 2016).

- (48) John didn't sing or he didn't dance (* \neg [sing or dance]), \checkmark [\neg sing or \neg dance])

Based on these arguments, Meyer and Sauerland (2016) argue for an ATB movement account of FC effects for modals in coordinate constructions. Before continuing with the problems that arise for Meyer and Sauerland's (2016) account, let me sketch the possibility of an extension to the embedded AltQ data.

¹¹Note that I did not adapt Meyer and Sauerland's (2016) syntactic assumptions. In presenting the LF of (46), the authors indicate, by using strikethrough, that the second *must* is deleted while the second moves overtly. For reasons of convenience, I decided for a slightly different representation. Nothing hinges on this.

3.5.2 A tempting avenue: ATB movement for AltQs

At this point, a tempting route would be to extend Meyer and Sauerland's (2016) analysis to the double *whether* data in AltQs and the double *because* data. Clearly, Meyer and Sauerland's (2016) generalization that ATB movement is only available for modal auxiliary verbs would have to be revised. Nevertheless, the core idea would be that each instance of *whether* undergoes movement and ends up in a position from where it can scope over disjunction, as exemplified in (49).

- (49) a. S-Structure: Ana knows whether Boris wrote a poem or whether Osip wrote an essay
 b. LF:

Ana knows whether [whether Boris wrote a poem or whether Osip wrote an essay].



The hypothetical analysis in (49) would account for the wide scope of *whether* in double *whether* constructions. Concerning matrix AltQs or embedded AltQs with only one instance of *whether*, one could argue that a covert *whether* is always present, heading the second disjunct. However, as we will see in the next section, the covert ATB movement analysis is syntactically not viable. It can neither be applied to coordinate structures with modals, nor to those with multiple occurrences of *because* or *whether*.

3.5.3 There is no covert ATB movement for modals, *because* and *whether*

There are two complications that arise with the hypothesized analysis. First, Bošković and Franks (2000) convincingly argue that covert ATB movement is not available in the grammar to begin with. Second, even if a point could be made against Bošković and Franks (2000), it is not clear what the trigger for movement is in the case of modal verbs and *because*.

3.5.3.1 Bošković and Franks (2000)

Let us start with the arguments of Bošković and Franks (2000) against covert ATB movement. The main point is that constructions, that potentially involve covert ATB movement, do not pattern with overt ATB movement. Consider the example of overt ATB movement in (50).

- (50) Who_i should Ana hate *e_i* and Boris love *e_i*? (Bošković and Franks 2000, ex.1,p.3)

Normally, movement is subject to the Coordinate Structure Constraint (CSC): movement out of a coordinate structure is prohibited, as illustrated in (51-a). A well-known characteristic of overt ATB movement is that it can rescue CSC constraints, as in (51-b). If an element is present in each conjunct, it can move out of the coordinate structure, as long as it moves out of every conjunct.

(51) (Bošković and Franks 2000, ex.10,p.6)

- a. *What_{*i*} did you say [that John bought a house] and [that Peter sold *e_i*]?
- b. What_{*i*} did you say [that John bought *e_i*] and [that Peter sold *e_i*]?

If covert ATB movement is part of the grammar, we expect it to pattern with overt ATB movement. However, Bošković and Franks (2000) observe that constructions that have received a covert ATB movement analysis cannot be rescued from CSC violations.

(52) *Who said [that Ana wrote what] and [that Boris wrote what]?

(Bošković and Franks 2000, ex.11,p.6)

The *wh*-element targeted for movement in (52) is *what*. Hypothetically, it could covertly move out of each conjunct, in the same way as we saw for *who* in (50). However, the utterance is ungrammatical, which is unexpected if one assumes covert ATB movement to be available.

Additionally, Bošković and Franks (2000) examine the status of ATB for quantifier raising (QR), see (53).

(53) Some boy hugged every girl

$\exists > \forall$ 'There is a specific boy who hugged every girl'

$\forall > \exists$ 'For every girl there's a boy who hugged her'

The general assumption is that in order for one of the NPs to take wide scope, it must adjoin at LF to IP, as in (54)

(54) [TP every girl _{*i*} [TP some boy hugged *e_i*]] (Bošković and Franks 2000, ex.17,p.9)

With this in mind, Bošković and Franks (2000) discuss constructions involving NPs containing a quantifier in coordinate structures. In such constructions, the only available interpretation is the one in which the universal quantifier has narrow scope. This shows that covert ATB movement is not possible in these constructions, witness (55)

(55) Some boy hugged Susie and kissed every girl. (Bošković and Franks 2000, ex.19,p.9)

The crucial observation is given in (56), in which the NP seems an appropriate candidate for covert ATB movement. The potential element moving up is identical in each conjunct, and if covert ATB movement exists, we would expect this to rescue CSC violations. However, the only possible reading is the one in which the existential quantifier scopes over the universal quantifier.

(56) Some boy hugged every girl and kissed every girl. (Bošković and Franks 2000, ex.21,p.10)

$\checkmark \exists > \forall$ ‘There is a specific boy who hugged every girl’

$*\forall > \exists$ ‘For every girl there’s a boy who hugged her’

In short, constructions that are candidates for covert ATB movement do not show the expected syntactic characteristics. This poses a problem for Meyer and Sauerland (2016) and for the possible extension of their account to AltQs.

3.5.3.2 Triggers for movement

In addition to the concerns of Bošković and Franks (2000) about ATB movement in general, Meyer and Sauerland’s (2016) account raises the question of what it is that triggers movement. Within any framework that assumes syntactic movement, it is assumed that a phrase requires a trigger in order to move; phrases cannot just freely float around without a good reason. For AltQs, the moving element is *whether*. Assuming that *whether* can move is uncontroversial, as it is a *wh*-phrase and it is commonly assumed that the CP hosts a trigger for *wh*-movement. It is not so clear what the trigger for movement would be for modal verbs and *because*. Concerning modal verbs, Meyer and Sauerland (2016) build on Iatridou and Zeijlstra (2013) who put forward independent evidence showing that modal verbs involve movement. However, closer examination of Iatridou and Zeijlstra (2013) reveals that this evidence is not compatible with Meyer and Sauerland’s (2016) account of ATB movement.

In short, Iatridou and Zeijlstra (2013) argue that there are modal verbs that undergo movement at LF to escape the scope of negation (see also Homer (2015)). The authors refer to these modal

verbs as mobile PPIs. The details and arguments of their analysis are not relevant for my purposes here. What is relevant is that the authors do not analyze all modal verbs as mobile PPIs. While *must* is a mobile PPI, *have to* is not, which means that *have to* does not undergo LF movement. This difference in PPI-hood between *must* and *have to* explains the difference in scopal behavior towards negation, as exemplified in (57).

- (57) a. You mustn't smoke.
 $\square > \neg$ 'You are not allowed to smoke.'
 $*\neg > \square$ 'It's not the case that you must smoke.'
- b. You don't have to smoke.
 $*\square > \neg$ 'You are not allowed to smoke.'
 $\neg > \square$ 'It's not the case that you must smoke.'

Since *must* is a PPI, moving at LF, it is always interpreted as taking wide scope (see (57-a)). In contrast, *have to* is not a PPI and can remain in the scope of negation at LF. Therefore, *have to* is always interpreted as scoping under negation (see (57-b)). Considering the fact that Meyer and Sauerland (2016) build on Iatridou and Zeijlstra (2013) and take their data as independent evidence showing that modal verbs undergo movement, we expect no covert ATB movement for *have to*. This is in contrast with *must*, which is a mobile PPI. Nothing triggers movement of *have to*. Nevertheless, in coordinate constructions, we find that *have to* is identical to *must* and that FC is available if there are multiple occurrences of *have to*. Witness (58).

- (58) You **have to** eat or you **have to** drink.
 FC: $\square(\text{eat} \vee \text{drink}) \wedge \diamond\text{eat} \wedge \diamond\text{drink}$
 \checkmark LF: $\square > \vee$ (FC)

We face the same issue for *because*: There is no independent evidence that *because* undergoes covert movement.

Based on (i) Bošković and Franks (2000) arguments against the idea of covert ATB movement in general, and (ii) the fact that there are no triggers for movement for modal verbs and *because*, I

conclude that ATB is not the solution to the issue sketched in this chapter. This puzzle outscopes the goals of this dissertation and I leave it for further research.

3.6 Concluding remarks

Let us rewind and go back to the main issue of this chapter: the size of the disjuncts. We learned from previous literature that AltQs involve ellipsis in the second disjunct. The debate that is still ongoing is whether the disjuncts are proposition-denoting, and thus IP-sized, or full PolQs, hence CP-sized. I have remained neutral about the underlying syntactic structure, and kept both possibilities open, as well as the possibility that this is language-specific. Concerning the semantic composition, I argued that whatever the syntax gives us, there is always only one Q-operator involved in AltQ-composition, even in cases where it looks like we have two Q-operators, i.e., when we have two instances of *whether*. Ultimately, I showed that the second instance of *whether* is not interpreted and that this issue is part of a bigger puzzle concerning scope in coordinate constructions. I drew the parallel with modal verbs and *because*, and showed that covert ATB-movement analysis is not desirable. The theoretical implications of this chapter are that one major argument of the semantic analysis of AltQs as the disjunction of two PolQs is dismantled. In part II of the dissertation, I will assume the underlying structure for AltQs as given in (59).

(59) [Q Did [_{IP}Ana see Boris] or [_{IP}~~Ana~~ see Osip]]

With the semantic tools presented in chapter 2 and the insights from the current chapter, we are now set to go Part II of this dissertation.

Part II

Compositional analysis of the surface strategies

Chapter 4

Prosody I: AltQs and PolQs

4.1 Aims

Since Bartels (1999), the relation between prosody and AltQ meaning has received considerable attention in the literature (Han and Romero 2004a, Roelofsen and van Gool 2010, Biezma and Rawlins 2012, Westera 2017, a.o.). In English, the interpretation of a disjunctive question is dependent on its prosodic structure. AltQs are typically associated with a final fall and an accent on each disjunct (Bartels 1999). The aim of this chapter is to tease apart these prosodic cues and to allocate each of them a role in AltQ composition. At the heart of the analysis lies the claim that the final fall and the multiple accent are of equal importance and that they both operate on discourse-level. We will begin with a description of the prosodic characteristics of alternative and PolQs in section 4.2. Next, I review two prominent theoretical accounts, Biezma and Rawlins (2012) and Roelofsen and van Gool (2010), and an experimental paper, Pruitt and Roelofsen (2013) in 4.3. The conclusion of the literature review is that there is a strong tendency towards analyzing the final fall as the dominant cue in AltQs. In 4.4, I argue against this bias and show that the multiple accent is a crucial surface cue for AltQ composition. I propose that the role of the accents is to indicate the structure of a Question Under Discussion (QUD) and the utterance’s pragmatic relationship to this QUD, via Roothian (1992) focus marking (cf. (Meertens et al. 2019)). In section 4.5, I analyze the final fall and implement the account by Westera (2017) and Westera (2018), in which the contribution of the final fall is to exhaust the set of relevant and possible alternatives in the QUD. Hence, the final fall signals that the QUD solely contains the mentioned alternatives. In section 4.6, I show what the combination of these two ingredients amounts to for various question

types and their corresponding QUDs. With this analysis for prosody-discourse mapping at hand, I turn to the core proposal of this chapter, previously published in Meertens (2019a), in section 4.7. The issue of this section is the disambiguating effect of prosody in disjunctive questions. I propose that the prosody-discourse mapping has to be coherent with the syntax semantics mapping and that violating the defined coherence requirements results in unavailable semantic interpretations for specific discourse structures. I end the chapter with section 4.8, in which I show how the complex utterance meaning of AltQs can be derived from my proposal.¹

Before I start, I want to emphasize that the set of languages that rely on prosody for AltQ composition is extensive and includes Germanic languages (German, Dutch, Danish), Romance languages (Spanish, Italian, French, Romanian), Slavic languages (Russian, Bulgarian), and many more. The analysis presented in this chapter is primarily intended to explain the English data. However, crucial components of the analysis can potentially be extended to other languages.

4.2 Prosody and disjunctive questions

4.2.1 Assumptions about prosody

Before turning to the description of AltQs and PolQs, let me lay out the basic assumptions about prosody used in this dissertation.² As briefly mentioned in chapter 2, I follow Ladd (2008), among others, assuming that prosody is linguistically structured, by which I mean that it consists of categories (e.g. phrases, accents) that relate to each other compositionally, and has gradient features (e.g. duration and f0 scaling). In such a system, each category carries parts of ‘meaning’, and within categories, meaning differences can be expressed. Different categories come together compositionally and carry (chunks of) non-lexical information. I make use of the Autosegmental Metrical framework (Bruce 1977, Pierrehumbert 1980, Ladd 2008), in which intonation is approached as a sequence of low (L) and high (H) tone targets.

¹Crucial parts of this chapter rely on the judgements and recordings of native speakers of English. I am very thankful for everybody who took time to help me with this. In particular, I thank Ryan Bochnak, Lachlan Dow, Kelsey Kraus, Anika Lloyd-Smith, and Jan Teschabai-Oglu.

²Many thanks to Farhat Jabeen for many helpful discussions on phonology and feedback on this section.

4.2.1.1 Phonological categories

In this dissertation, the most important categories are (i) pitch accents and (ii) edge tones. Pitch accents are a local feature of a pitch contour, typically a *pitch change* (Ladd 2008). Furthermore, pitch accents align with the lexically stressed syllables in a phrase. This is indicated by a ‘*’ following the label of the tone: L* (low pitch accent) and H* (high pitch accent). Pitch accents can be monotonal, but can also consist of a combination of tones. Fully aware that the empirical picture is a very complex one, I only focus on the bitonal pitch accents that have been associated with disjunctive questions in the literature: L*H and H*L (Pruitt 2008). L*H is an F0 valley on the stressed syllable followed by a rise and an F0 peak after the stressed syllable. H*L is used to label a pitch accent in which the H tone aligns with the stressed syllable followed by lowering F0.³ Concerning edgetones, there are two categories: phrase accents, indicated by a -, and boundary tones marking the edge of an intonational phrase (see below), annotated with % (Pierrehumbert 1980). Again, tones can be high (H) and low (L), as well as monotonal and multitonal. The phrase accent L- is realized as a low F0 target after the final pitch accent in a phrase, while H- is realized as an F0 peak after the last pitch accent in a phrase or a plateau where high a F0 is sustained. The boundary tone L% is characterized by lowering the F0 and H% is realized by a rise in F0. It is important to point out here that the precise alignment of these tones is language specific.

4.2.1.2 The hierarchical structure of prosody

The idea that prosody is organized hierarchically is a vital component of the Autosegmental Metrical framework. While the notion of hierarchy in prosody does not play an important role in this dissertation, we will see later in this chapter that there are disjunctive questions for which I tentatively propose this hierarchical approach to be essential. Above the prosodic word level, three layers of phrasing are distinguished: accentual phrases, intermediate phrases, and intonational phrases.

(1) Prosodic Word - Accentual Phrase - Intermediate Phrase - Intonational Phrase

³Note that the realization, categorization and annotation of these tones are subject to debate. I refer to Ladd (2008) for an overview.

At this stage, it is important to point out that not all languages phonologically employ each level of phrasing. For Japanese, for example, there is no evidence for phonological processes that use intermediate phrases as their target domain, but there is strong evidence for the existence of accentual phrases (Beckman and Pierrehumbert 1986). In English, intonational phrases consist of one or more intermediate phrases.⁴ The structure of an English intonational phrase, consisting of one intermediate phrase, is then as illustrated in (2).

(2) [boundary tone][prenuclear field][nuclear accent][boundary tone]

An English intonational phrase is characterized by particular phonological cues, such as phrase-final lengthening, glottalization and pause duration. Intermediate phrases are indicated by pitch reset, the presence of a nuclear accent and, again, pause duration. Distinguishing between intonational phrases and intermediate phrases is not always straightforward and requires careful phonological examination. Even then, as pointed out by Féry and Schubö (2010), it is difficult to identify discrete cues for each level in the prosodic hierarchy. For example, pause duration is used to characterize both intonational phrases and intermediate phrases, but the exact length of the pauses in both levels is variable and speaker dependent. Moreover, Ladd (2008) remarks on the difficulty of annotating tones. On top of that, ? and ? argue that the idea that intonational phrases are always composed of intermediate phrases with mandatory boundary tones is not always phonologically relevant.

As pointed out above, languages differ with respect to what phonological layers they use and how they mark them (see, for example, Prieto (2006) for Spanish, Jabeen (2019) for Urdu/Hindi, and Jun (2005) for Korean). It is therefore important to point out that any strong claims I make about prosody in this dissertation only concern English. Although an extension to many of the discussed languages in the dissertation seems viable, a careful phonological examination is required to pursue this. The prosody chapters thus provide an analysis of English disjunctive questions and serve, at the same time, as a starting point for crosslinguistic examination. In the coming sections, I present a description of the prosodic features of AltQs and PolQs.⁵

⁴The terms ‘intermediate phrase’ and ‘phonological phrase’ are used interchangeably depending on the theoretical framework that is used (Frota 2012)

⁵Unless indicated otherwise, the English recordings are of a 29 year old, male speaker of British English

4.2.2 The prosodic characteristics of AltQs

Consider the AltQ in (3) and the corresponding pitch contour in 4.1.

- (3) Did Ana write a POEM_{L*H-H%} or an ESSAY_{H*L-L%}? [AltQ]
 ‘Which one of the following did Ana write: a poem or an essay?’

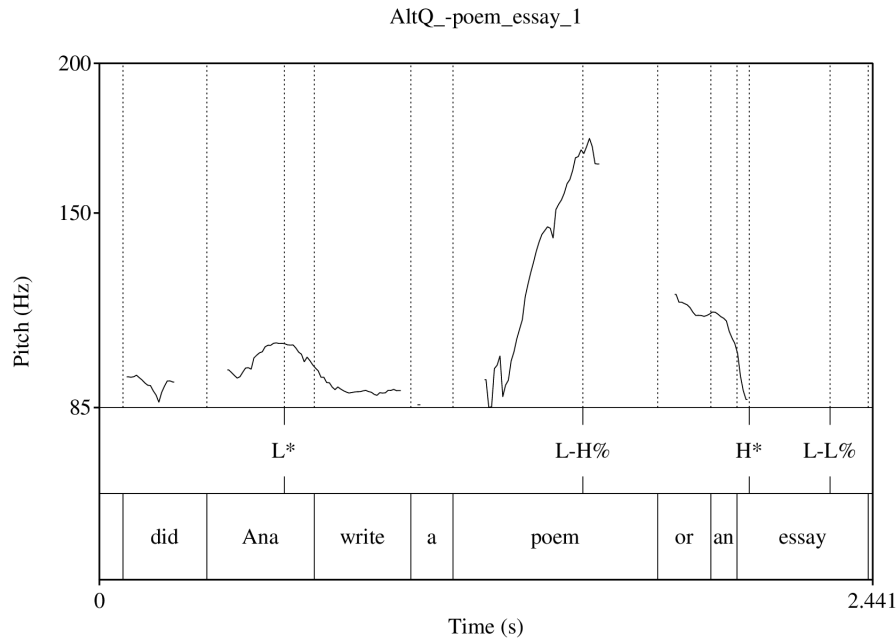


Figure 4.1: Pitch contour of an AltQ (3).

The question is characterized by three prosodic cues.⁶ First, the question ends with a final falling boundary tone (-L%) on *Osip*. Second, both disjuncts receive a pitch accent. The first accent, on *poem*, is low, followed by a high boundary (L*H). The second accent, on *essay*, is falling (H*L) (Bartels 1999, Rando 1980, a.o.). Typically, these two features coincide - the last disjunct is often the last part of the utterance. However, the cues can be teased apart. In cases in which the disjunctive phrase does not appear sentence-finally, there is a falling accent (H*L-) on the second disjunct, and a final falling boundary tone. This is shown in (4) and 4.2.⁷

⁶Note that the precise phonological realization of these cues differs. I refer to Bartels (1999, p.85-86) for more examples.

⁷Note that the annotation of the disjuncts is different here. The first disjunct is not an L*H-H%, but instead L*L-H%. In reality, there is a lot of variation in the precise realization of the tones in AltQs. I refer to Bartels (1999)

(4) Did ANA_{L**L*-H%} or BORIS_{H**L*-L%} write a poem_{L**L*-L%}? [AltQ]

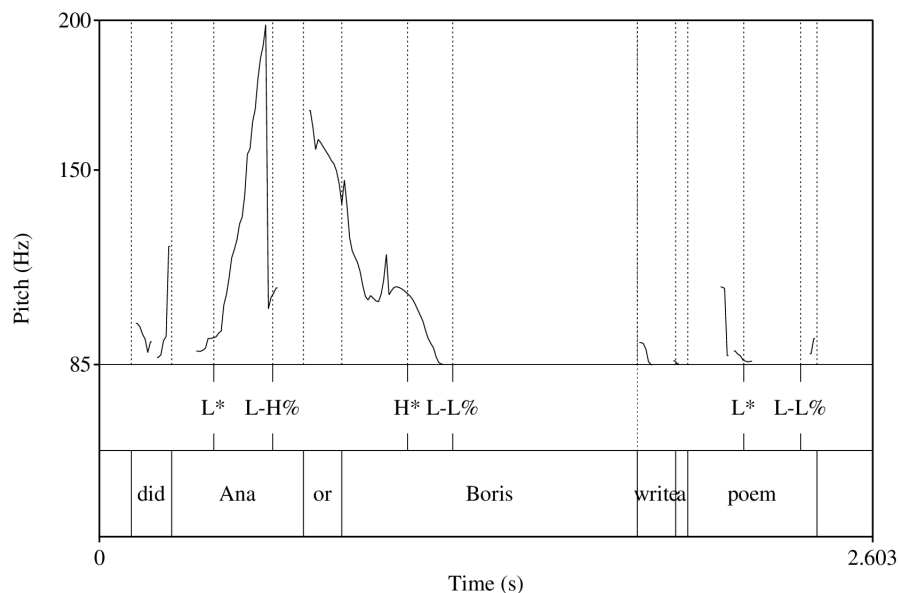


Figure 4.2: Pitch contour of an AltQ (4).

For those cases, I assume that the final boundary tone repeats the accent of the last disjunct. That is, if the last accent is high, the final boundary tone will also be high.

Third and finally, each disjunct is an independent intermediate or intonational phrase. As explained in the previous section, it is not always straightforward to distinguish between phonological and intonational phrases. In the literature, the disjuncts in AltQs have been annotated with both edgetones (phrase accents (-) and boundary tones (%)).⁸ Given that each intonational phrase consists of at least one intermediate phrase, I assume that the disjuncts in AltQs are intermediate phrases. I will return to this when we get to the data for which this difference might be relevant. Now, concerning pitch accents and intermediate phrases in AltQs, it could be that they are com-

⁸In Bartels (1999, p.85-86), there are various examples. Some AltQs are annotated as consisting of two intonational phrases, and others as two intermediate phrases. Pruitt (2008) also considers both possibilities and annotates AltQs as in (5), where the boundary tone after the first disjunct is optional.

(5) Did Sally bring wine_{L**H*-(H%)} or bake a dessert_{H**L*-L%}

positionally two sides of the same coin. It is known that each intermediate phrase has to bear a pitch accent (Pierrehumbert 1980). Throughout this dissertation, I use the label **multiple accent** as a cover term that includes the multiple accents and the multiple intermediate phrases, unless indicated otherwise.

4.2.3 The prosodic characteristics of PolQs

Plain, non-disjunctive PolQs are typically pronounced with a final rise (L*H-H%) (Bartels 1999), as illustrated in (6).

(6) Did Ana write a poem_{L*H-H%}?

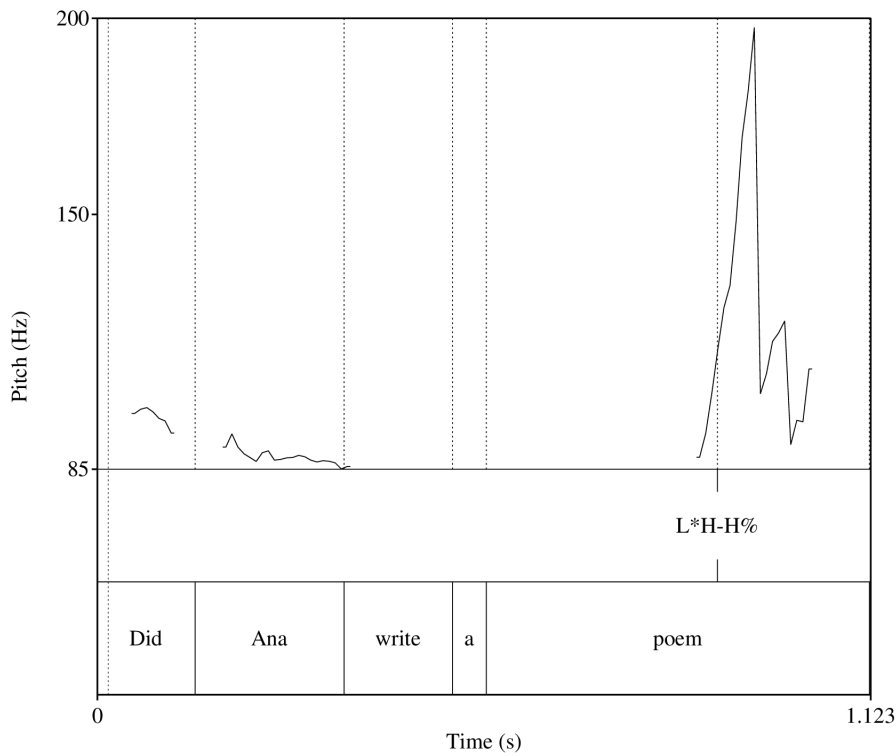


Figure 4.3: Pitch contour of a plain PolQ (6).

Disjunctive PolQs are no different and typically end with a final rising boundary tone (Bartels 1999). An example is given in (7) and 4.4.

(7) Did Ana_{L*} write a poem or an essay_{L*-H%}?

[PolQ]

‘Is it true that Ana wrote a poem or an essay?’

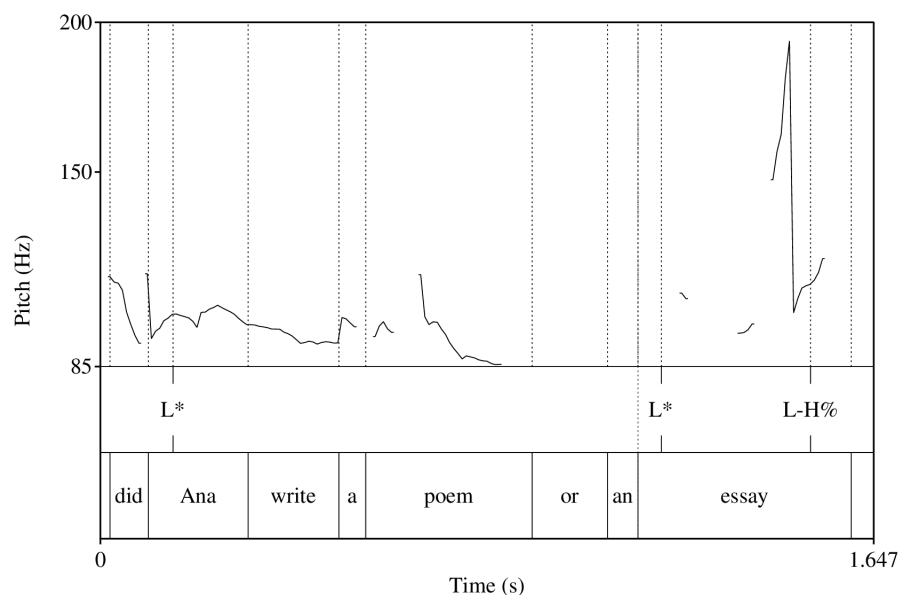


Figure 4.4: Pitch contour of a disjunctive PolQ (7).

The disjunctive phrase in PolQs is always one intermediate phrase. Phonologically, this can be identified, among other cues, because there cannot be a pause between the disjuncts. I refer to this using the labels **block intonation** or **block accent**. Each of the disjuncts can receive a pitch accent, but this is, in contrast to what we saw for AltQs, optional.

Let me conclude the subsections concerning the prosodic characteristics of AltQs and PolQs. Throughout this dissertation, I use arrows ($\uparrow\downarrow$) to reflect the shape of the accents and boundary tones and CAPS in examples to indicate pitch accents. I use square brackets ([]) to indicate the placement of a block accent. Note that pitch accents and focus marking coincide in most cases, but have to be treated as separate notions (Selkirk 1996, Schwarzschild 1999). In derivations and more formal descriptions of the data, I use the subscript _F to indicate focus marking. For English AltQs, the intended prosodic pattern always corresponds to the transcript given in (3). Similarly, the transcript for rising PolQs always corresponds to the one in (7).

4.3 Previous accounts

This section serves to review three prominent papers that focus on the relation between prosody and meaning and AltQs. The accounts by Roelofsen and van Gool (2010) and Biezma and Rawlins (2012) both have a theoretical nature and provide a semantic-pragmatic analysis of AltQs. Following on from the work in Pruitt (2007) and Pruitt (2008), Pruitt and Roelofsen (2013) present an experimental study that investigates the relevance of the cues for interpreting disjunctive questions.

4.3.1 Roelofsen and van Gool (2010)

Roelofsen and van Gool (2010) model the difference between AltQs and PolQs within the Inquisitive Semantics framework, in which they distinguish three semantic layers: the set of possibilities $\llbracket \cdot \rrbracket_P$, the set of highlighted possibilities $\llbracket \cdot \rrbracket_H$, and the set of possible updates $\llbracket \cdot \rrbracket_S$. To see this, consider the AltQ and PolQ in (8).

- (8) a. Did Ana write a [poem]_F or an [essay]_F↓ ?
 b. Did Ana write [a poem or an essay]_F↑?

The first semantic layer is the set of possibilities $\llbracket \cdot \rrbracket_P$. The formal role of disjunction is to introduce alternatives. For the examples (8-b) and (8-a) above, this means that the set of possibilities at the level of the IP α is {ana wrote a poem, ana wrote an essay}. The set of possibilities of the entire question, $\llbracket [Q \ \alpha] \rrbracket_P$, consists of the possibilities of α itself and the possibilities that α excludes, both for PolQs and AltQs, as in (9-b) and (9-a). Thus, at the level of the set of possibilities, the denotations of AltQs and PolQs are identical.

- (9) a. $\llbracket (8-a) \rrbracket_P = \{a \text{ wrote poem, } a \text{ wrote essay}\} \cup \{\neg a \text{ wrote poem, } \neg a \text{ wrote essay}\}$
 b. $\llbracket (8-b) \rrbracket_P = \{a \text{ wrote poem, } a \text{ wrote essay}\} \cup \{\neg \text{wrote}(a, \text{poem}), \neg \text{wrote}(a, \text{essay})\}$

The second semantic layer is the set of highlighted possibilities $\llbracket \cdot \rrbracket_H$. This level of meaning is affected by the focal structure of a question, and thus by the placement of two accents, or a block accent. As a result, AltQs diverge from PolQs on the level of highlighted possibilities. Concerning

the role of focus, Roelofsen and van Gool (2010) propose that in computing the set of highlighted possibilities $\llbracket \cdot \rrbracket_H$ of a given constituent with focus, all the original alternatives of that constituent (but not the alternatives that this constituent excludes) are merged via a union operation \cup i.e. the alternatives collapse. For PolQs that are pronounced with a block accent (one intermediate phrase), this means that the original set $\{\text{ana wrote a poem, ana wrote an essay}\}$ collapses into $\{\text{ana wrote a poem} \vee \text{ana wrote an essay}\}$, as in (10-b). Since AltQs place focus on each disjunct, the original singleton set of alternatives arising from the first disjunct, namely $\{\text{ana wrote a poem}\}$, vacuously collapses into $\{\text{ana wrote a poem}\}$. The same applies to the second disjunct $\{\text{ana wrote an essay}\}$. The final denotation of the set of highlighted possibilities is then as in (10-a). Hence, the net effect of multiple accents in AltQs is simply to leave the original set of alternatives untouched. Witness (10)

- (10) a. $\llbracket (8\text{-a}) \rrbracket_H = \{\text{a wrote poem, a wrote essay}\}$
 b. $\llbracket (8\text{-b}) \rrbracket_H = \{\text{a wrote poem} \vee \text{a wrote essay}\}$

The third and final layer of meaning is the set of possible updates $\llbracket \cdot \rrbracket_S$. Within Roelofsen and van Gool's (2010) proposal, this is the level in which the final falling boundary tone plays a role. The authors propose that the final fall signals the presence of an exclusive strengthening operator. For any set of possibilities Φ , and for any possibility $\phi \in \Phi$, the exclusive strengthening of ϕ relative to Φ is defined in (11). For the examples in (8), this yields the sets of possible updates given in (12-b) and (12-a).

- (11) $\text{EXH}(\phi, \Phi) := \phi \cup \{p \mid p \in \Phi \text{ and } \phi \not\subseteq p\}$
- (12) a. $\llbracket (8\text{-a}) \rrbracket_S = \{\text{a wrote poem} \wedge \neg \text{a wrote essay, } \neg \text{a wrote poem} \wedge \text{a wrote essay}\}$
 b. $\llbracket (8\text{-b}) \rrbracket_S = \{\text{a wrote poem} \vee \text{a wrote essay}\}$

In short, according to Roelofsen and van Gool (2010) the role of the multiple accents in AltQs is to make each of two singleton sets vacuously collapse. The function of the final fall is to signal the presence of an exclusive strengthening operator. There are three points of critique. First, the

function of the final fall is restricted to the domain of questions. It is not clear what the role of the final fall is in declaratives. Second, the modelling of the multiple accent cannot be straightforwardly unified with existing theories of the role of focus in declaratives (Rooth 1992, Schwarzschild 1999, a.o.). In other words, within Roelofsen and van Gool's (2010) account, both the final fall and the multiple accent have a special job that they do not carry out in other domains of the grammar. Third and finally, the authors take the semantic contribution of the accents to be semantically vacuous. As we will see shortly, such an analysis fails to make the right predictions.

4.3.2 Biezma and Rawlins (2012)

Building on Biezma (2009), Biezma and Rawlins (2012) argue that the crucial difference between AltQs and (run-of-the-mill) PolQs lies in the presence or absence of a closure operator, signalled by the final fall. AltQs come with a final fall and the corresponding closure operator, while PolQs do not. The main idea, due to Zimmermann (2000), is that a falling contour in English signals closure in list constructions in general, i.e., it indicates that nothing but the listed items has the property at hand, as in (32-a). A rising contour, instead, signals lack of closure, i.e., it suggests that objects other than the listed items have the relevant property, as in (32-b).

(13) A: Which tube stations are one stop from Oxford Circus?

a. B: Piccadilly Circus, Bond Street, Tottenham Court Road, Green Park↓.

b. B: Piccadilly Circus, Bond Street, Tottenham Court Road, Green Park↑.

(Zimmermann 2000, p. 261, ex. 12)

Biezma and Rawlins (2012) point out that AltQs and PolQs provide a parallel contrast, making use of the QUD framework. On the one hand, the AltQ in (14) - with a final fall - indicates that only the listed alternatives are part of the current QUD. On the other hand, the PolQ in (15) - with a final rise - allows for other alternatives to be part of the current QUD. This explains the different felicity status for the answer *risotto* in AltQs and PolQs.

(14) A: Hey, have you heard about Ana's writing? Has she written a poem↑ or an essay↓?

- a. B: She has written a poem.
- b. B: # She has written a dissertation, I think.

(15) A: Hey, have you heard about Ana’s writing? Has she written a poem or an essay↑?

- a. B: She has written a poem.
- b. B: She has written a dissertation, I think.

Biezma and Rawlins (2012) implement this idea by proposing that the final fall signals the presence of a closure operator, as defined in (16).

(16) **Closure operator** (Biezma and Rawlins 2012)

$$\llbracket \llbracket [Q]\alpha \rrbracket_{H*L-L\%} \rrbracket^c =_{\text{def}} \llbracket \llbracket [Q]\alpha \rrbracket \rrbracket^c, \text{ defined only if SalientAlts}(c) = \text{def} \llbracket \llbracket [Q]\alpha \rrbracket \rrbracket^c.$$

This means that the final fall on a question $\llbracket [Q]\alpha \rrbracket$ introduces the presupposition that the set of alternatives generated by $\llbracket [Q]\alpha \rrbracket$ equals the set of salient alternatives in a given context, i.e., the QUD of that context. Accommodating this presupposition amounts to inferring what the questioner assumes the complete QUD to be. For AltQs, since a final fall is produced, alternatives other than the ones mentioned are eliminated from the QUD, as in (17). For PolQs, unmentioned alternatives are allowed in the QUD, as in (18).

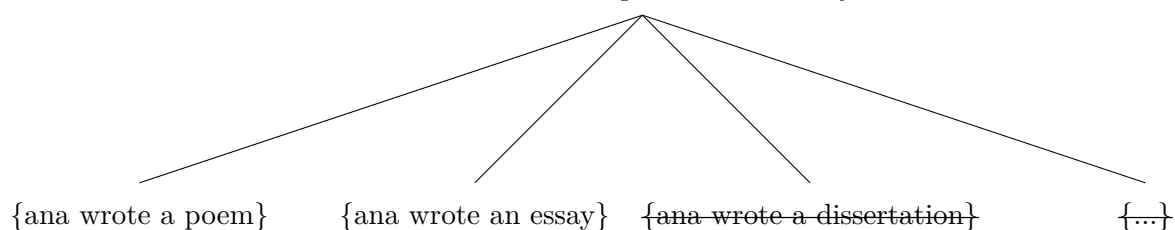
(17) QUD / SalientAlts(c) for (14):

{ana wrote a poem, ana wrote an essay, ~~ana wrote a dissertation, ...~~ }

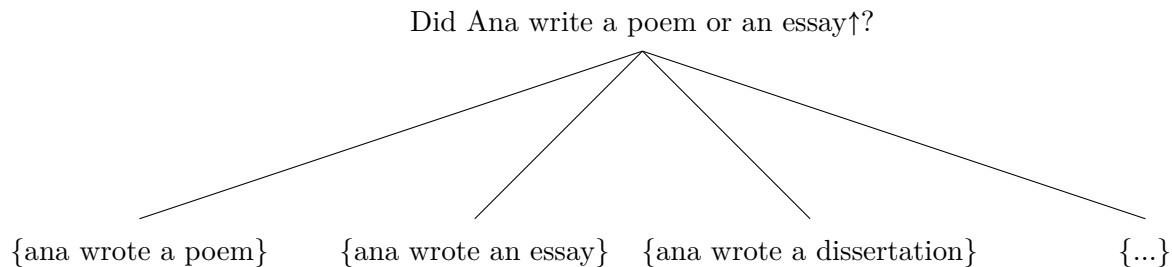
(18) QUD / SalientAlts(c) for (15):

{ana wrote a poem, ana wrote an essay, ana wrote a dissertation, ... }

(19) Did Ana write a poem↑ or an essay↓?



(20)



In sum, Biezma and Rawlins (2012) connect closure to the final fall via a semantic operator. The authors do not model the multiple accent as an ingredient of AltQ composition.

4.3.3 Pruitt and Roelofsen (2013)

Let me now turn to an experimental study by Pruitt and Roelofsen (2013) that builds on the findings in Pruitt (2007) and Pruitt (2008). The results of this study suggest that the final fall is the crucial ingredient for AltQ composition. The goal of the experiment was to investigate the effect of the intonation contour (number of accents and final boundary tone) on the interpretation of disjunctive questions. The authors conducted a perception experiment with the following four conditions: Multiple Accent+Final Fall, Single Accent+Final Rise, Single Accent+Final Fall, Multiple Accent+Final Rise. Two of the conditions were original productions by a female native speaker of American English, namely, Multiple Accent+Final Fall (original AltQ) and Single Accent+Final Rise (original PolQ). The other two, Multiple Accent+Final Rise and Single Accent+Final Fall, were resynthesized as a result of splicing the initial part of one original recording with the final contour of the other recording in Praat (Boersma and Weenink 2018). See Fig. 4.5.

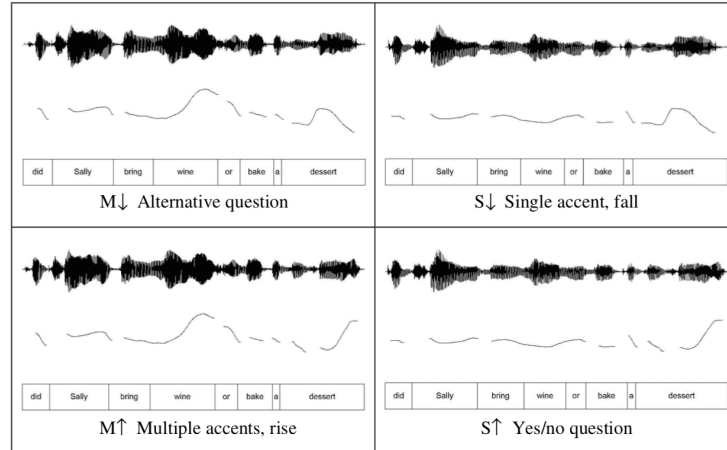


Figure 4.5: Intonation contours of one question in each of the four conditions used in the experiment. Upper left and lower right panels show original recordings, and upper right and lower left panels show the spliced versions, respectively (from (Pruitt and Roelofsen 2013, p.639)).

Participants were presented with the auditory stimuli in all four conditions and had to choose the best paraphrase from the provided choices for each question on an answer sheet, as in (21):

- (21) Did Sally bring wine or bake a dessert [4 conditions]. (Pruitt and Roelofsen 2013)
- a. Which of these things did Sally do: bring wine or bake a dessert? [AltQ]
 - b. Did Sally do any of these things: bring wine or bake a dessert? [PolQ]
 - c. Other:...

For the two conditions based on original recordings (Multiple Accent+Final Fall, Single Accent+Final Rise), Pruitt and Roelofsen (2013) found that participants chose the expected paraphrases: Interrogatives with a multiple accent and a final fall were predominantly interpreted as AltQs, whereas recordings with a single accent and a final rise most often led to the perception of a PolQ, as shown in Fig. 4.6.

In the spliced condition based on the first part of an AltQ and the final contour of a PolQ (Multiple Accent+Final Rise), participants predominantly chose the PolQ paraphrase. The second spliced condition, resynthesized from the first part of a PolQ and the final contour of an AltQ (Single Accent+Final Fall), was more often interpreted as an AltQ. In other words, participants

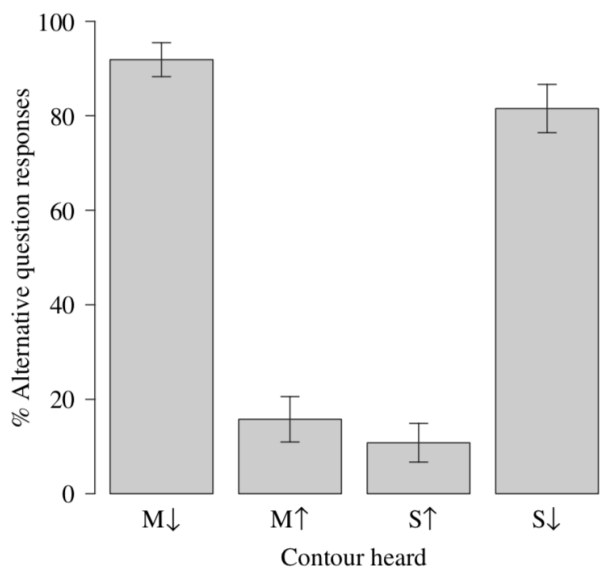


Figure 4.6: Proportion of AltQ responses for each presented contour, whiskers represent 95% confidence interval (from (Pruitt and Roelofsen 2013, p.642)).

tend to judge a question with no multiple accent but with a final fall as an AltQ, based on which the authors concluded that the final fall is the crucial ingredient for AltQ composition.

4.4 The multiple accent

In the previous section, I showed that the literature is biased towards the final fall as the crucial cue for AltQ composition on both a theoretical and an empirical level.⁹ The aim of this section is to vindicate the role of the multiple accents within AltQ composition. I argue that the interpretation of a disjunctive question does not only rely on the final fall, contrary to dominant views in the literature. Instead, there is a division of labor between the final falling intonation and the multiple accents on the disjuncts and both cues are equally constitutive parts of AltQ meaning. I start with section 4.4.1 in which I make evident that there are disjunctive PolQs with a falling final boundary tone. In sections 4.4.1.1 and 4.4.1.2, I will put forward two possible explanations for the result of Pruitt and Roelofsen’s (2013) experiment in which the final fall appeared to be the

⁹This section is heavily based on previously published work with Maribel Romero and Sophie Kutscheid (née Egger). See (Meertens et al. 2019).

dominant cue. There are two independent observations that show that the multiple accents need to be modelled: (i) default embedded questions are falling (section 4.4.2) and (ii) various languages mirror the multiple accent by multiple occurrences of Q-particles (section 4.4.3). In section 4.4.4, I arrive at my analysis of the multiple accent that is based on a combination of ingredients from the literature.

4.4.1 Falling questions

It has long been known that PolQs can be produced with a fall from any high nuclear tone (H*) to an L-L% boundary tone Bartels (1999, a.o.), as shown in (22) and Fig. 4.7.¹⁰

(22) *Context:* An immigration officer at the border

Are you from New York ↓?

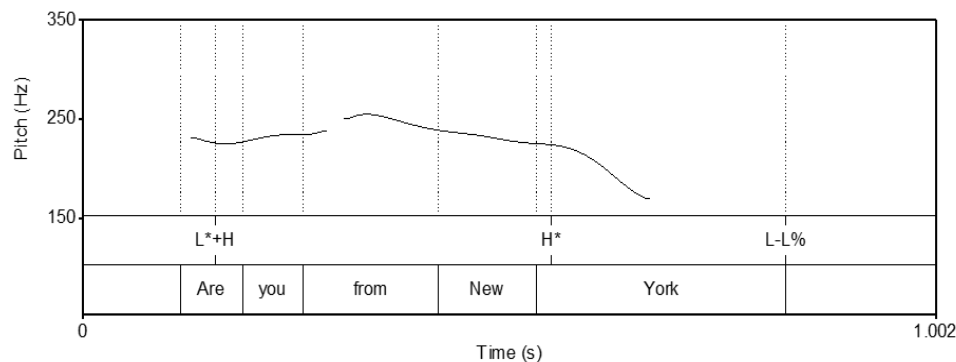


Figure 4.7: Pitch contour of a falling PolQ.

There is no reason why disjunctive PolQs should be different from non-disjunctive PolQs in this respect. Indeed, falling disjunctive PolQs are licensed in certain contexts. See, for example, (23) and Fig. 4.8.¹¹

(23) *Context:* *You are teaching a class on popular culture and want to discuss a film. For the next discussion point, you need a student who has seen Kill Bill or Reservoir Dogs; it does*

¹⁰Recording of a female native speaker of American English

¹¹Recording of a female native speaker of American English

not matter which one of them. To make sure this is the case, you ask every student before they start speaking:

Did you see Kill Bill or Reservoir Dogs ↓?

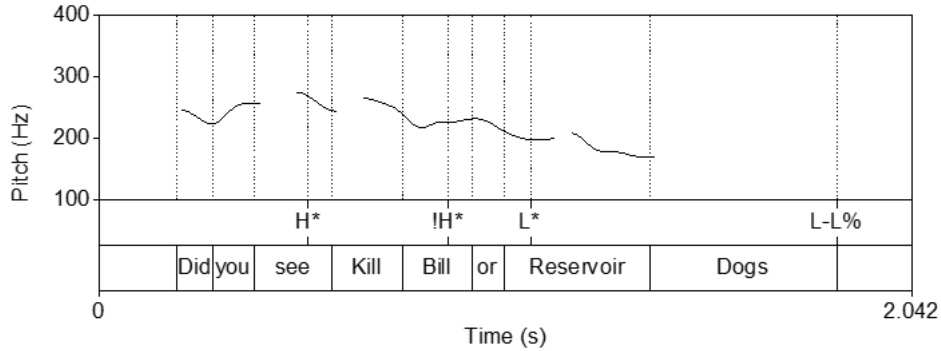


Figure 4.8: Pitch contour falling disjunctive PolQ.

Pruitt and Roelofsen (2013) included a comparable intonation condition in their perception experiment (Multiple Accent+Final Fall) and participants predominantly interpreted questions with that intonation contour as an AltQ. This raises the question why the recordings in that condition were not interpreted as PolQs in their study. In what follows, I discuss two possible explanations for their experimental findings.

4.4.1.1 Acoustic properties

One possible reason why the participants in Pruitt and Roelofsen’s (2013) experiment perceived and interpreted questions produced with no multiple accent and a final fall mostly as AltQs may lie in an acoustic difference between the exact shape of the final fall in AltQs vs. PolQs.¹² Since Pruitt and Roelofsen (2013) used original recordings of falling AltQs and rising PolQs, and digitally spliced the two recordings for the Multiple Accent+Final Fall condition, the final fall in this condition might be slightly different from the one English speakers would actually produce in a falling PolQ. One could hypothesize that the phonetic realization of the final fall in AltQs is different from the one in PolQs. While the abstract phonemic notion of the final fall is the same in both question types,

¹²I thank Sophie Kutscheid for many fruitful discussions on this topic.

the exact phonetic features might differ due to the presence of other phonological characteristics, such as the accents in AltQs. In other words, it could be the case that it is not the final fall that triggers an AltQ interpretation, but that the interpretation depends on the exact shape of the fall towards the low boundary tone. In some preliminary production data by a female native speaker of American English, we do see slight differences in the nuclear contour of falling PolQs and AltQs: In PolQs the nuclear accent tends to be a low tone (L^*) combined with an $L-L\%$ boundary tone, whereas for the AltQ, we do find a high nuclear accent (H^*) and thus a steeper fall into the $L-L\%$ configuration. This can be seen if one compares the final nuclear accent (on *REservoir dogs*) of Fig. 4.8 with the corresponding final part of Fig. 4.9.¹³

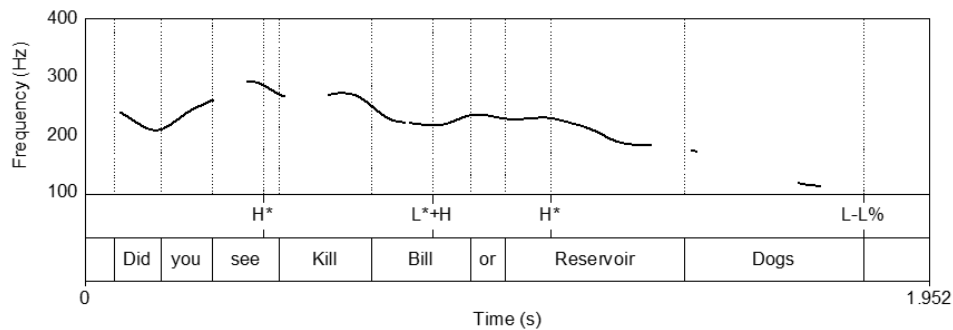


Figure 4.9: Pitch contour of an AltQ.

To validate whether this indeed explains the results in Pruitt and Roelofsen (2013), future research is required.

4.4.1.2 Pragmatic licensing

An alternative hypothetical explanation of the experimental results in Pruitt and Roelofsen (2013) is the fact that falling PolQs only appear in a very restricted set of contexts. Schubiger (1958) already observed that falling PolQs are more restricted than their rising counterparts. The author argued that rising PolQs are the default and that falling ones require special pragmatic contexts outside of which they are infelicitous. Such contexts are, for instance, contexts in which the speaker is only interested in the proposition denoted by the question, and not in any alternative proposition,

¹³Recording of a female native speaker of American English

as illustrated in (24).¹⁴

- (24) a. *In a guessing game*
Is it green↓? Does it grow here↓?
- b. *To spouse who is unpacking the suitcase:*
Did you find my camera↓? Did you leave it in Edinburgh↓?

(Bartels 1999, p. 127)

In the experiment by Pruitt and Roelofsen (2013), the test items were presented in isolation, with no supportive context licensing the falling intonation. Hence, the likeliness that participants would get a falling PolQ interpretation decreased.

4.4.2 Embedded AltQs

In the previous two subsections, I presented two possible explanations for the findings by Pruitt and Roelofsen (2013). There is one additional relevant observation concerning the importance of the multiple accent in AltQs. When embedded within a declarative sentence, as in (25), both AltQs and PolQs are produced with a final fall, as can be seen in Fig. 4.10 and Fig. 4.11.^{15 1617}

- (25) John is wondering whether you saw Kill Bill or Reservoir Dogs ↓.

Thus, the main cue distinguishing an AltQ from a PolQ in embedded position is not the final fall, but the obligatory multiple accent concomitant to the multiple intermediate phrases.¹⁸ I fail to see how this can be derived from an account that takes the final fall as the crucial ingredient for

¹⁴See Bartels (1999) for other uses of falling PolQs, for example Quiz Questions.

¹⁵The data presented here are preliminary and collected in the following fashion. A native speaker of American English and a native speaker of Canadian English were presented with a list of context-question combinations and asked to ask the question in a way that was natural in the context. Contexts either forced a PolQ reading or an AltQ reading. All questions in PolQ contexts were pronounced with a block accent and a final fall. All questions in AltQ contexts were pronounced with an accent on each disjunct and a final fall. I thank Sophie Kutscheid (née Egger) for helping me with the data collection.

¹⁶Arguably, the utterance in 4.11 is ambiguous between a PolQ interpretation and an AltQ interpretation. I leave a closer examination of these facts for the phonologists among us. The point remains that the utterance in 4.10 is unambiguously an AltQ and that this is determined by the placement of the multiple accents on the disjuncts.

¹⁷Recording of a native speaker of Canadian English

¹⁸Note that *Kill Bill* bears an accent with an intermediate phrase boundary in Fig. 4.10 and an accent without intermediate phrase boundary in Fig. 4.11.

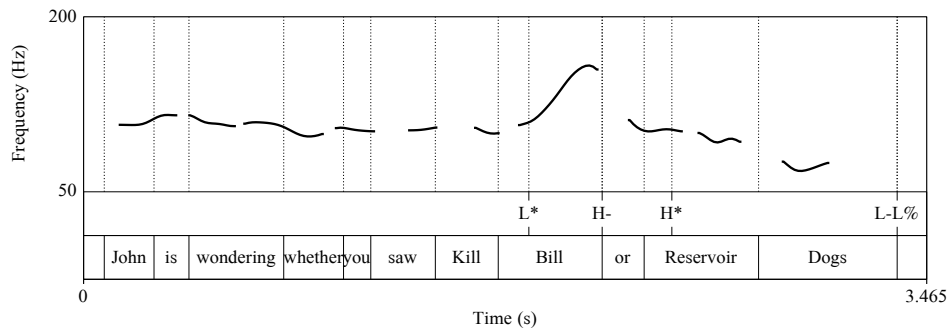


Figure 4.10: Pitch contour of an embedded AltQ.

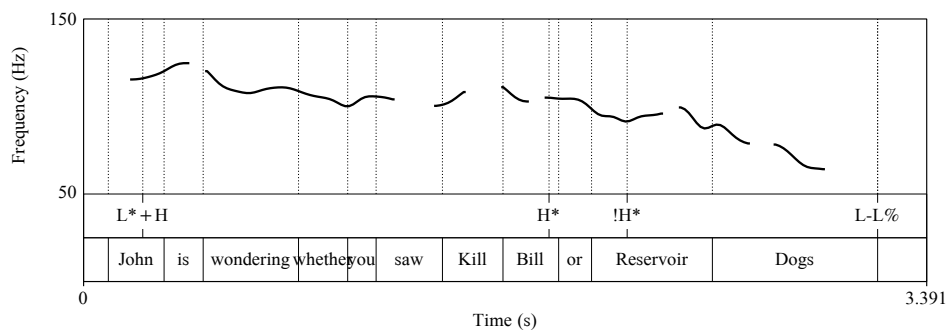


Figure 4.11: Pitch contour of an embedded PolQ.

AltQ composition.

4.4.3 The multiple accent and multiple Q-particles

A final observation supporting the essential status of the multiple accent is that in languages that employ Q-particles, the distribution of accents in AltQs and PolQs parallels English. Furthermore, the multiple accent is mirrored by occurrences of the Q-particle. There is a robust crosslinguistic pattern in languages like Turkish, Sinhala and Tamil: If an occurrence of the Q-particle accompanies each disjunct, the question receives an AltQ interpretation; if there is one single occurrence of the Q-particle, the intended interpretation is that of a PolQ. Consider the data from Turkish in (26).

- (26) a. Ali iskambil **mi** (oynadi) yoksa futbol **mu** oynadi?
 Ali cards MI play.PST or_{alt} football MI play.PST
 ‘Did Ali play cards or football?’ [AltQ]

- b. Ali iskambil veya futbol oynadi **mu**?
 Ali cards or_{stan} football play.PST MI?
 ‘Did Ali play cards or football?’ [PolQ]

The composition of Turkish AltQs makes two important points. First, it shows that, crosslinguistically, multiple marking on the disjuncts is of great importance in AltQ composition. Without the Q-particle *mI* in each disjunct in (26-a), the sentence cannot be interpreted as an AltQ.

Secondly, Turkish opens a window into the semantic contribution of the multiple marking on the disjuncts. It is known that *mI* also appears in PolQs, signalling that the constituent it attaches to is focused (Kamali 2015), as illustrated in (27). Thus, the placement of the particle in PolQs has a direct impact on the meaning of a question.

- (27) a. Ali iskambil oynadi **mi**?
 Ali cards play.PST MI
 ‘Did Ali play cards?’ [neutral]
- b. Ali **mi** iskambil oynadi?
 Ali MI cards play
 ‘Was it Ali who played cards?’ [focus on Subject]
- c. Ali iskambil **mi** oynadi?
 Ali cards MI playPST
 ‘Was it cards what Ali played?’ [focus on Direct Object]

To sum up, *mI* makes a non-null contribution in PolQs. Assuming parsimoniously that *mI*’s contribution remains constant throughout the grammar, I conclude that *mI* has a non-null semantic contribution in AltQs as well.

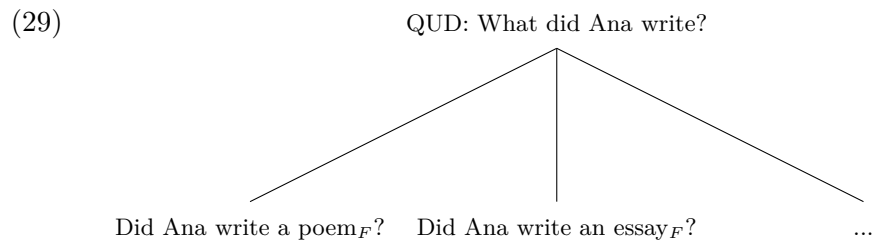
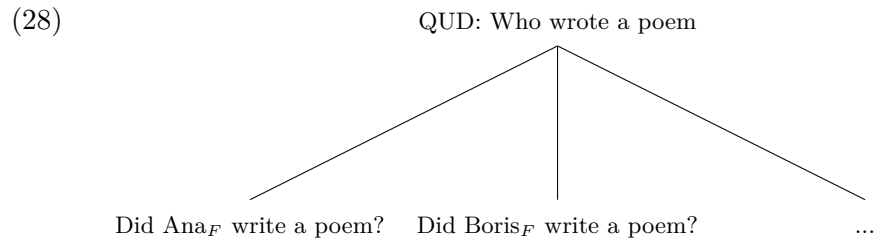
I will return to the issue of the meaning of *mI* and Q-particles displaying the same pattern in other languages in chapters 6 and 7. Here, the importance lies in the observations that (i) there is a clear pattern between the placement of Q-particles in languages like Turkish, and the focal accent in languages like English, and (ii) that in PolQs, the placement of *mI* induces a focal effect.

4.4.4 The contribution of the multiple accents

We now come to the analysis of the role of the multiple accents. I am aiming at an analysis that accounts for the mandatory status of the multiple accent in English. Nevertheless, the core idea here can be extended to languages employing multiple Q-particles. We will see in chapter 7 that an extension of the analysis of the multiple accent explains (i) the semantic effect of Q-particles in PolQs, and (ii) the mandatory status of the occurrence of the Q-particles in each disjunct in AltQs in languages like Turkish. Take a second to consider that this possible extension is also the strength of the proposal and ties in with the more general aims of this dissertation: to provide a unified analysis of varying surface cues, in this case the focal accents and the Q-particles.

The proposal consists of two ingredients that are available in the literature. The first ingredient is the QUD framework, as explained in chapter 2. I follow Roberts (1996) and take discourse structure to consist of a stack of often implicit QUDs. For the second ingredient, I follow Rooth's (1992) analysis of focus. As described in chapter 2, section 2.6, an expression ϕ has, besides its (ordinary) semantic value, a focus-semantic value $\llbracket \phi \rrbracket^f$ built from substituting the denotation of the focus-marked element(s) within ϕ with alternative denotations of the same semantic type. Following Bäuerle (1979, p.69)¹⁹, Roberts (1996), and Biezma (2009) the location of focus will be used to constrain the general shape of the immediate mother question (henceforth: motherQ) in the QUD stack. This is in line with the congruence requirement we saw for Question-Answer sequences in chapter 2. For example, the same string *Did Ana write a poem?* will function as the daughter question (henceforth: daughterQ) of different motherQs depending on what element bears focus: If the focus is on the subject, the immediately higher question will be *Who wrote a poem?*, as in (28); if the focus is on the direct object, the immediately higher question will be *What did Ana write?*, as in (29).

¹⁹I thank Daniel Büring for pointing out this reference to me.



Altogether, I take the contribution of the multiple accents to be focus marking in the sense of Rooth (1992) and follow Roberts (1996) in assuming that the role of focus marking in questions is to indicate the shape of the QUD. This can be straightforwardly extended to languages like Turkish, as I will show in chapter 7.

4.4.4.1 Multiple intermediate phrases

So far, I have used the label ‘multiple accent’ to describe both the multiple pitch accents and multiple intermediate phrases. For most relevant parts in this dissertation, i.e. the distinction between AltQs and ‘standard’ disjunctive PolQs, the multiple accent and multiple intermediate phrases coincide and there is no need to consider their compositional function separately. Yet, there are very specific cases in which it is important to separate the multiple pitch accents and the multiple intermediate phrases. We will turn to the relevant data in 4.6.1.

Concerning the importance of the position of the edgetones, I tentatively propose that an edgetone (- or %), marking the edge of an intermediate or intonational phrase, signals the presence of a \sim -operator.²⁰ Crucial here is that the possibility of multiple \sim -operators is available. In those cases, the boundary tone of the intermediate phrase indicates the position of the **highest**

²⁰At this point, I remain neutral about whether this applies to intermediate phrases, intonational phrases, or maybe even a particular phonological cue that both have in common, like pause duration, pitch reset, or a more general notion like prominence marking. Needless to say, investigating this requires substantial phonological expertise and outscopes the goals of this dissertation.

~. An independent argument in favor of this analysis is the availability of distributive readings in coordinate constructions with multiple intermediate phrases. Consider the utterances in (30) and (31), and their corresponding pitch tracks in Fig. 4.12 - Fig. 4.15.²¹

- (30) a. Boris, a marriage officiant, married [Ana and Lev]_{L-L%}. [✓cumulative]
 b. Boris, a marriage officiant, married Ana_{H-} and Lev_{L-L%}. [# cumulative]

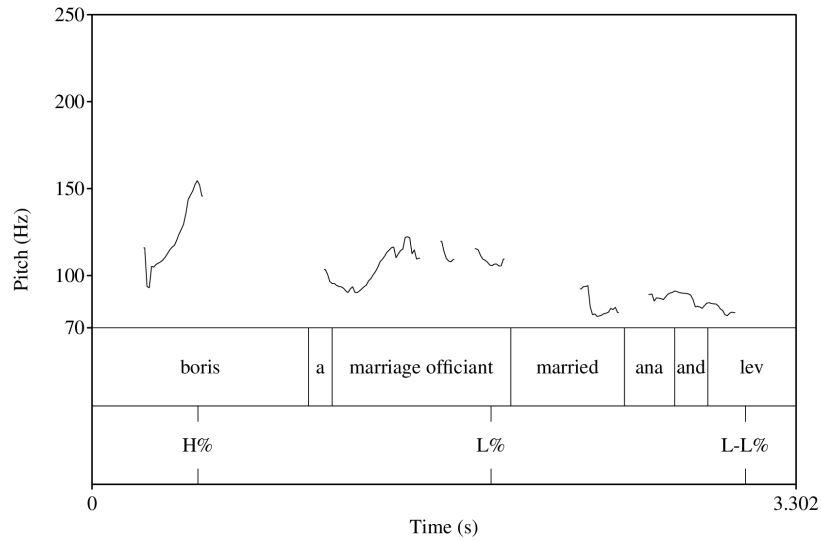


Figure 4.12: Pitch contour of (30-a).

²¹Thanks a lot to Farhat Jabeen for her valuable input on this issue.

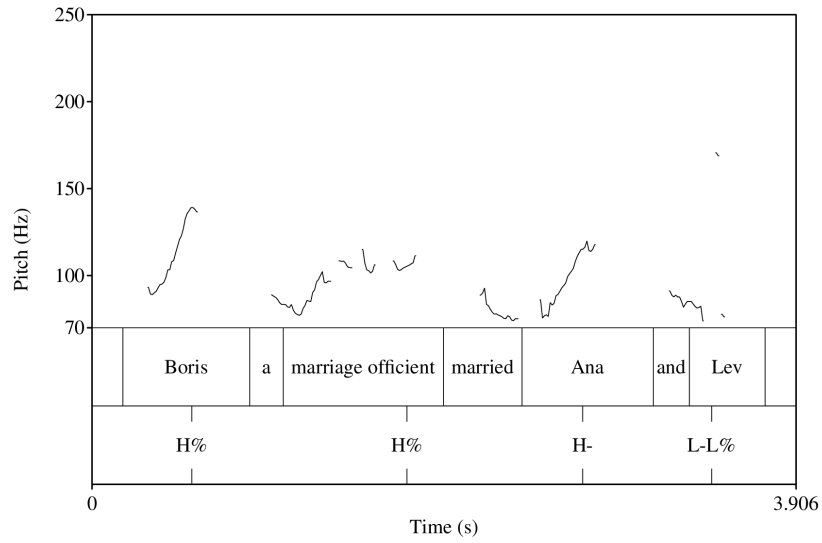


Figure 4.13: Pitch contour of (30-b).

- (31) a. [Boris and Osip] wrote an essay. [✓ cumulative]
- b. [Boris]_{H%} and [Osip]_{H%} wrote an essay. [# cumulative]

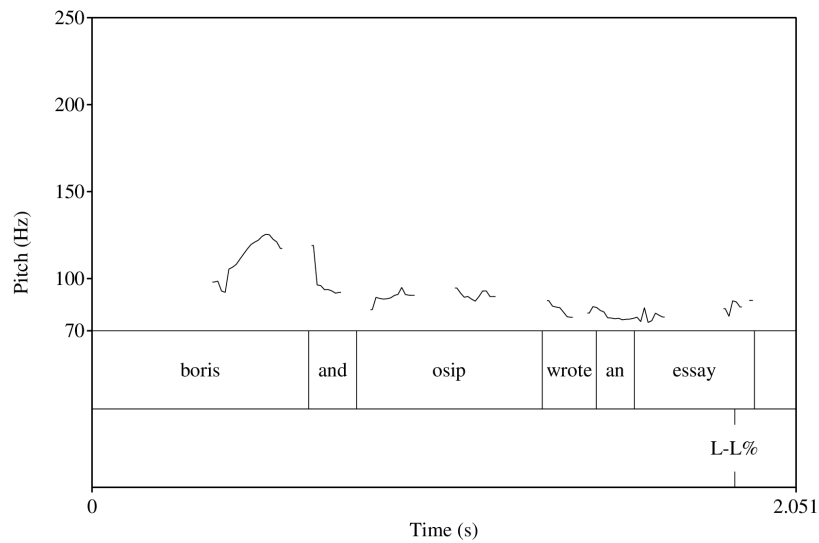


Figure 4.14: Pitch contour of (31-a).

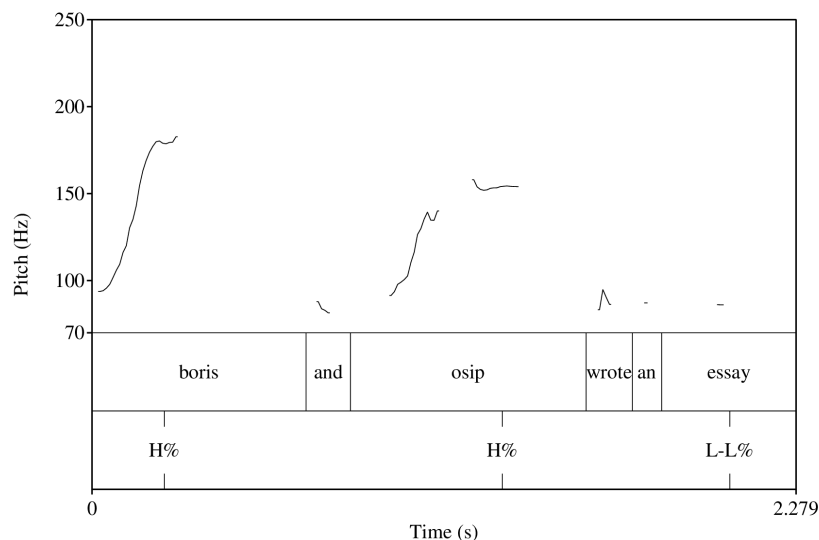


Figure 4.15: Pitch contour of (31-b).

The utterances with multiple intermediate phrases in (30-b) and multiple intonational phrases (31-b) do not allow for the cumulative readings that Ana and Lev got married to each other or that Boris and Osip joined forces to write an essay together. In those cases, \sim is attached to each phrase, in the case of (31-a) to Ana_F and to Lev_F . This means that there are two instances of checking Question-Answer congruence, ruling out the cumulative answer. In contrast, in the case of (31-b), there is one big intermediate phrase that \sim associates with. As a result, the cumulative answer is available.

The data in (30) and (31) need to be examined experimentally in order to make strong claims. Most importantly, it is key to identify whether these are intermediate or intonational phrases. At this point, I tentatively take the boundary of an intermediate phrase to signal the presence of the highest \sim -operator. Although not key for AltQ composition -as there the foci and the boundary tones always coincide- we will see in 4.6.1 that it is necessary to tease apart focus marking and phonological phrasing for the analysis of disjunctive PolQs.

4.5 The final fall

Let me now turn to the role of the falling boundary tone in the architecture of AltQs. As discussed in section 4.3, there is consensus in the literature that, one way or another, the final fall is related to exhaustivity in declarative lists and non-*Wh*Qs (Zimmermann 2000, Biezma 2009, Biezma and Rawlins 2012, Roelofsen and van Gool 2010, Westera 2017). This is exemplified for declaratives in (13), repeated below as (32).

(32) A: Which tube stations are one stop from Oxford Circus?

- a. B: Piccadilly Circus, Bond Street, Tottenham Court Road, Green Park↓.
- b. B: Piccadilly Circus, Bond Street, Tottenham Court Road, Green Park↑.

(Zimmermann 2000, p. 261,ex. 12)

In order to account for this effect of the final fall in declaratives, Zimmermann (2000) proposes that a final falling intonation on a conjunction structure indicates the presence of an exhaustivity operator at LF, signalling that the list exhausts the range of possibilities. Zimmermann's (2000) basic assumption has been adopted in recent accounts of AltQs (Beck and Kim 2006, Roelofsen and van Gool 2010, Biezma and Rawlins 2012). Though these accounts differ in implementation and precise definitions, as previously described in section 4.3.3 and section 4.3.2, Zimmermann's (2000) intuition that a falling boundary tone signals closure stands strong. Within my analysis of AltQs and prosody, I model the final fall using the account by Westera (2017) and Westera (2018).

4.5.1 A pragmatic account of intonation: Westera (2017)

Westera (2017) builds on Zimmermann's (2000) intuition that the final fall signals exhaustivity, but departs from the idea that this has to be encoded semantically. Instead, the author develops a framework in which intonation is modeled pragmatically: prosodic cues signal what the speaker draws attention to and what she believes to be important in a given discourse (Westera et al. 2013, Westera 2017, 2018, 2019, 2020). In this dissertation, I make use of parts of this framework. Note that the complete picture is richer and more complicated than sketched in this section. I refer

the interested reader to Westera (2017) and ?. To model the interaction between discourse and intonation, the author defines A(attention)-Maxims governing the set of propositions that the speaker draws attention to. A-Maxims exist parallel to Grice's (1975) Information Maxims governing the delivery of information. For the goals of this dissertation, the crucial A-Maxims are the Maxims of A-Quality and of A-Relation in (34), parallel to the traditional Information Maxims in (33) (Westera 2017, 2018).

(33) Grice's (1975) (Information) Maxims:

- a. Quality: Assert only information that you consider true.
- b. Relation: Assert only information that you consider relevant.

(34) Westera's (2017) Attention Maxims:

- a. A-Quality: Intend to draw attention only to propositions that you consider epistemically possible.
- b. A-Relation: Intend to draw attention only to propositions that you consider relevant.

With regard to questions, Westera (2017) proposes that the speaker's attitude towards the A-Maxims is reflected in the boundary tones.²² A falling boundary tone (L%), on the one hand, signals that the speaker believes that all A-Maxims are satisfied, that is, that there are no relevant epistemically live possibilities other than the ones that the speaker has drawn attention to in the sentence.²³ A rising boundary tone (H%), on the other hand, does not signal that the speaker believes that all A-Maxims are satisfied.

²²Westera (2017) also includes Information Maxims in his account of pragmatics and meaning. Given that Information Maxims do not play a role in interrogatives, I leave this part of his account out of this section. I refer the interested reader to Westera (2018).

²³To be precise, this is derived from the combination of the A-Maxims and an additional assumption: the reasonable goal principle, as defined in (35).

(35) **The reasonable goal principle** (Westera 2017, ex.2.19,p.45)
 Only include propositions that are potentially accomplishable, i.e. the information can potentially be made common ground, and non-trivial, i.e., the information is not yet common ground.

The combination of the A-Maxims with the reasonable goal principle leads to the inference that if there is no attention for a proposition (as determined by the A-Maxims) this proposition should not be included in the QUD (as determined by the *reasonable goal principle*).

Before turning to the examples, I have to mention that the account by Westera (2017) and Westera (2018) proposal is concerned with the boundaries of intonational phrases (L% and H% tones) and with trailing tones (falling H*L or rising H*LH accents). Regarding the boundary tones, the author only discusses AltQs that consist of multiple intonational phrases, i.e., each disjunct ends with a boundary tone (H%).²⁴ Compare the utterances in (36) and (37).²⁵

(36) Was John_{L*H} at the party_{H%}, or Mary_{H*L-L%} (Westera 2017, ex.2,p.282)

(37) Did Ana write a POEM_{L*H-} or an ESSAY_{H*L-L%}? [AltQ]

According to the annotations, we have two intonational phrases in (36) and two intermediate phrases in (37). In section 4.2.2, I explained that for AltQs like (37), it is not clear whether the disjuncts are always separate intonational phrases. Bartels (1999) and Pruitt (2008) consider two possible surface forms: AltQs consisting of two intonational phrases and AltQs consisting of two intermediate phrases. In the latter case, this means that the first disjunct ends in a phrase accent (an intermediate boundary) (H-), instead of a final boundary tone (H%). In English, an intonational phrase boundary always co-occurs with an intermediate phrase boundary. To determine the exact nature of the boundary tone in the first disjunct in AltQs -is it an intermediate phrase boundary or an intonational phrase boundary- detailed prosodic research is required. I remain agnostic as to whether the multiple phrases in AltQs are intermediate or intonational phrases. It is likely that both are possible. As a consequence, I implement Westera's (2017) proposal for both intermediate boundary tones (L- and H-) and final boundary tones (L% and H%). Note that Westera (2017) obtains a similar result with his analysis of trailing tones.²⁶

Let us consider what this means for the simple questions with **final** boundary tones in the examples in (38).

(38) a. Are you from Denmark↑? → other alternatives are relevant and live

²⁴Note that Westera (2017) does not label these utterances AltQs and in general avoids the labels PolQ and AltQ.

²⁵Note that (37) does not correspond to the AltQ given at the beginning of this chapter, but that it is a possibility according to Pruitt (2008) and Bartels (1999)

²⁶In Westera's (2017) account, boundary tones indicate compliance with the Maxims relative to the main QUD, while trailing tones indicate compliance relative to a QUD that is responsible for the accent. This nuance does not play a crucial role in this dissertation. I refer to Westera (2017), p. 160, for details.

- b. Are you from Denmark↓? → no other alternatives are relevant and live

The form with a final rise in (38-a) signals that the speaker considers the possibility that there are relevant epistemically live alternatives other than the addressee being from Denmark, for example, the addressee being from Finland or from Norway. Hence, a speaker would use this form, for example, if what she is after is where the addressee is from and, even though she is right now asking about Denmark, she wants to signal to the addressee that she considers other epistemically live possibilities relevant as well (so that, if the addressee is not from Denmark, she can voluntarily share the information about where she is from). In contrast, the question with a final fall in (38-b) signals that the speaker believes that the only relevant epistemically live possibility is that the addressee is from Denmark. This would be appropriate, for example, if the speaker is checking whether the addressee complies with the prerequisite of being from Denmark to qualify for some insurance or contract (where being from Finland or being from Norway would not help and, thus, would constitute live but *irrelevant* possibilities); or it could be used in a quiz show where the rules dictate that the speaker can only posit PolQs and the addressee can only answer with a bare ‘yes’ or ‘no’, hence making the other epistemically live possibilities *irrelevant* (since the addressee is not allowed to volunteer any further information beyond ‘yes’ or ‘no’).

Importantly, the relationship between rising/ falling boundary tones and the speaker’s obedience of the A-Maxims can be applied to sub-sentential constituents with intermediate phrase boundaries as well, as illustrated in (39).

- (39) Ana wrote a poem↑, an essay↑, and a dissertation↓.

In this case, the rises signal that the speaker, till that point, still considers other relevant live possibilities to be available. The concluding fall signals that the speaker is finished listing what she thinks are the relevant live possibilities in the context.

Within my analysis, I implement Westera’s (2017) account of the final fall and take A-Quality and A-Relation to govern the QUD-structure of an utterance. That is, I take what is signalled to be relevant and live in the context to be available answers to the QUD. Alternatives that are

signalled to be not relevant or available, are eliminated from the QUD-structure.

4.6 Prosody-discourse mapping

We now have all the ingredients at hand to give a full analysis of the prosody-discourse mapping of polar and AltQs. I propose that (i) the focal accent in questions contributes focus marking (à la Rooth (1992)), (ii) that the free variable C refers to the motherQ of Q in the QUD structure (à la Roberts (1996)) and (iii) that the value of this C is shaped by the squiggle operator \sim –which I propose attaches to the IP node of Q – (à la Roberts (1996)) and is restricted via the (un)satisfaction of A-Maxims indicated by boundary tones à la Westera (2017) and Westera (2018). Let me now return to the data and apply the mechanics to the different question types.

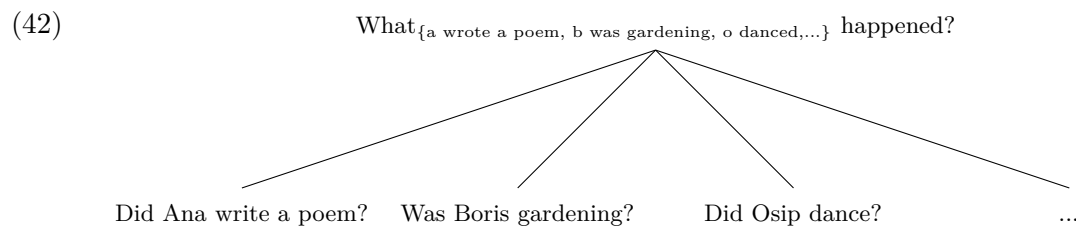
4.6.1 Prosody-discourse mapping for PolQs

Let us start with a plain, non-disjunctive PolQ with broad focus and a **final rise**. An example and an analysis are given in (40) (41). The \sim -operator is attached under the Q-morpheme at LF, as in (41-a). This determines, via the focus felicity condition (see chapter 2, section 2.6.1), and following Bäuerle (1979) and Roberts (1996), the general shape of the value of C , that is, of our immediately higher QUD. The result is (41-b), by which our $\llbracket C \rrbracket / \text{QUD}$ is required to be a subset of the set $\{a(\text{na}) \text{ wrote a poem, } b(\text{oris}) \text{ was gardening, } o(\text{sip}) \text{ danced, } \dots\}$ containing alternative values to the focus-marked IP. Finally, following Westera (2017), the final rise signals that our $\llbracket C \rrbracket / \text{QUD}$ may contain (relevant epistemically live) possibilities other than the one expressed by the original IP, thus imposing no further restrictions on $\llbracket C \rrbracket / \text{QUD}$, as in (41-c). The end result is that sentence (40) with broad focus and with a final rise is understood as being a daughterQ of the QUD *What happened?*, where *what* ranges over several IP values, producing the QUD structure in (42).²⁷

(40) Did Ana write a poem_{L*H-H%}? (see 4.3)

²⁷Note that the utterance in (40) is ambiguous between different types of focus marking. Placing the pitch accent on a particular constituent XP may signal focus on that XP or a larger constituent containing that XP (Selkirk 1995). Thus, the accent in (40) can be understood as narrow focus on *poem* or as broad focus. The intended focus structure here is the latter.

- (41) a. LF: [Q [IP Ana write a poem]_F ~C]
 b. [[C] / QUD] ⊆ [[Ana wrote a poem]_F]^f = {a wrote a poem, b was gardening, o danced,...}
 c. [[C] / QUD] = {a wrote a poem, b was gardening, o danced,...}
 = ‘What_{a wrote a poem, b was gardening, o danced,...} happened?’²⁸



Next, consider the plain non-disjunctive PolQ in (43), again with broad focus, but with a final **falling** boundary tone. The analysis is given in (44). Steps (44-a) and (44-b) are identical to steps (41-a) and (41-b). The only difference appears in step (44-c): Since the speaker used a final fall, she indicates that there are no (relevant epistemically live) possibilities in the immediately higher QUD other than the one expressed by the original IP. Formulating the QUD again as a *wh*-question, the end result is that sentence (43) with broad focus and with a final fall is understood as being a sub-question of the QUD *What happened?* where *what* ranges only over the possibility *ana wrote a poem*, as represented in the QUD structure (45).

- (43) Did Ana write a poem_{H*L-L%}?²⁹

- (44) a. LF: [Q [IP Ana wrote a poem]_F ~C]
 b. [[C] / QUD] ⊆ [[Ana wrote a poem]_F]^f = {a wrote a poem, b was gardening, o danced,...}
 c. [[C] / QUD] = {a wrote a poem, ~~b was gardening, o danced,...~~}
 = ‘What_{a wrote a poem} happened?’

²⁸I use this notation to express ‘What out of the set {a,b,c} happened.’

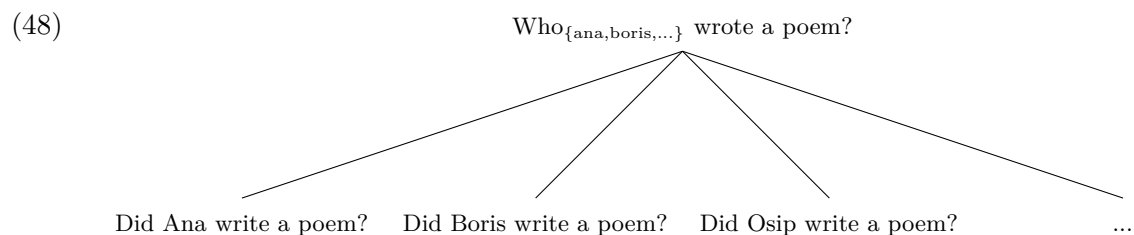
²⁹See footnote 27

- (45) What_{a wrote a poem} happened?
 |
 Did Ana write a poem?

Let me now turn to PolQs with narrow focus, which for the sake of illustration I will place on the subject. First, I will tackle the form with a **final rise**, exemplified in (46). Now only the subject *Ana* is focus-marked³⁰, as indicated in the LF (47-a), which means that our $\llbracket C \rrbracket / \text{QUD}$, consists of propositions that share the same IP property and differ solely in the value of subject, as shown in (47-b). Given that the final boundary tone is a rise, no further constraints are imposed on our $\llbracket C \rrbracket / \text{QUD}$, leading to (47-c). The result is that (46) - with narrow focus on the object and a final rise - is understood as a sub-question of the QUQ *Who_{ana,boris,osip,...} did Ana write?*, as shown in the QUD structure (48).

- (46) Did Ana_{H*} write a poem_{L-H%}?

- (47) a. LF: $[Q[_{IP} \text{Ana}_F \text{ wrote a poem}] \sim C]$
 b. $\llbracket C \rrbracket / \text{QUD} \subseteq \llbracket \text{Ana}_F \text{ wrote a poem} \rrbracket^f = \{\text{ana wrote a poem, boris wrote a poem, osip wrote a poem...}\}$
 c. $\llbracket C \rrbracket / \text{QUD} = \{\text{a wrote a poem, b wrote a poem, osip wrote a poem...}\}$
 $= \text{'Who}_{\{\text{ana,boris,osip...}\}} \text{ wrote a poem?}'$



If, instead of with a final rise, the PolQ with narrow focus is pronounced with a **final fall**, as in (49), the difference in the analysis would come about in step (50-c): Given that the speaker used a fall, the QUD is further constrained as to include only the expressed alternative *ana wrote a poem*, since the speaker has signalled that there is no other relevant epistemically live alternative. Hence,

³⁰I used subject focus here to avoid ambiguity. That is, an accent on *poem* leads to ambiguity between broad and narrow focus. Here, it is clear that there is narrow focus on *Ana*. The analysis for object focus would proceed following the same steps.

example (50) is understood as a daughterQ of the QUD $Who_{\{Ana\}} wrote a poem?$, as represented in the tree (51).

(49) Did Ana_{H*} write a poem_{L-L%}?

(50) a. LF: [Q [_{IP} Did Ana_F write a poem] ~ C]

b. [[C] / QUD \subseteq [[Ana_F wrote a poem]]^f = {ana wrote a poem, boris wrote a poem, osip wrote a poem,...}

c. [[C] / QUD = {ana wrote a poem ~~boris wrote a poem, osip wrote a poem,...~~}
= ‘Who_{ana} wrote a poem?’

(51) Who_{ana} wrote a poem?

|
Did Ana write a poem?

The next issue is what happens if, instead of focus marking on the simple subject ana_F , we have focus marking on the disjunctive object $[a poem or an essay]_F$, as in (53). That is, how are **PolQs with (a single) narrow focus over an entire disjunctive phrase** analyzed? No matter whether they are produced with a final rise or fall, the only difference with respect to the analysis of the second group is that the focus alternatives of the subject are of type e for simple ana_F but of generalized quantifier type $\langle\langle e,t \rangle, t \rangle$ for $[a poem or an essay]_F$, which allows for more complex alternative denotations such as ‘a dissertation or a book’, ‘a letter and an article’.

³¹ Now, for the case of the question with a block accent and a final **rise**, the derivation proceeds as in (54) and leads to the QUD tree in (55)³²

³¹Note that it is not clear what exactly these more complex alternative denotations look like. Within the literature on scalar implicatures, there two candidate sets of alternatives for $[a poem or an essay]_F$: the one just described, containing $\{pve, d \vee b, l \wedge a, \dots\}$ and the one à la Sauerland (2004) containing $\{pve, p \wedge e, p, e\}$. It is not clear whether these sets can be extended to the focus alternatives. I remain neutral as to what the set exactly looks like, as the proposed analysis makes the right predictions either way. In my examples, I will use the first type of alternative set, but this is for purely illustrative reasons.

³²For reasons of simplicity, the association properties of disjunction and the presence of the \exists -operator are left out of the LF in (54). The actual form is.

(52) [Q [[_{IP} \exists [Ana wrote [a poem or_i an essay]]] ~ C]]

In section 4.7, I address the question of why this LF involves a \exists -operator.

(53) Did Ana write a poem or an essay_{L*H-H%}? (see 4.4)

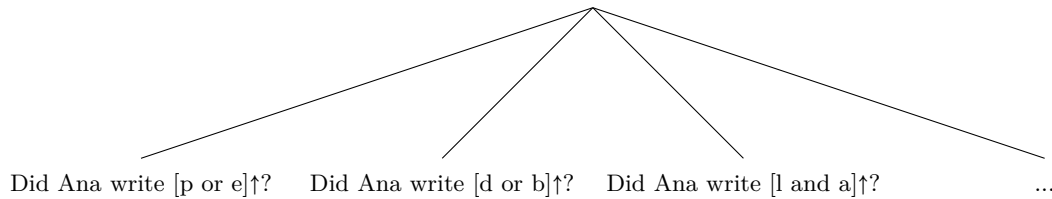
(54) a. LF: [Q_{[IP}Ana wrote [a poem or an essay]_F] ~ C]

b. [[C] / QUD ⊆ [[Ana wrote [a poem or an essay]_F]]^f = {ana wrote a poem or an essay, ana wrote a book or a dissertation, ana wrote a letter and an article,...}

c. [[C] / QUD = {ana wrote a poem or an essay, ana wrote a book or a dissertation, ana wrote a letter and an article,...}

= ‘What_{[p or e],[d or b],[l and a],...} did Ana write?’

(55) What_{[p or e],[d or b],[l and a],...} did Ana write?



In the case of a disjunctive PolQ with a **final** fall (see (23)) in (56), the derivation proceeds as in (57) and results in the QUD structure (58).

(56) Did Ana write a poem or an essay_{H*L-L%}?

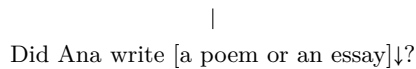
(57) a. LF: [Q_{[IP}Ana wrote [a poem or an essay]_F] ~ C]

b. [[C] / QUD ⊆ [[Ana wrote[a poem or an essay]_F]]^f = {ana wrote a poem or an essay, ana wrote a book or a dissertation, ana wrote a letter and an article,...}

c. [[C] / QUD = ={ana wrote a poem or an essay, ~~ana wrote a book or a dissertation,~~ ~~ana wrote a letter and an article,...}~~

= ‘What_{[p or e]} did Ana write?’

(58) What_{[p or e]} did Ana write?



Finally, consider the fact that there are disjunctive PolQs in which the disjunctive phrase is one intermediate phrase and each disjunct gets a pitch accent. Note that these are exactly the utterances that require modelling of not only the accents on the disjuncts, but also the phrasing. The tentative

explanation of why these utterances are PolQs while having two accents is that in this case there is only one intermediate phrase, while in AltQs there are two intermediate phrases. Consider (59) and the pitch contour in 4.16. The contrastive foci in IP₁ and IP₂ both make use of the ~-operator, checking felicity with intermediate C₁ and C₂. The edge of the intermediate phrase signals the presence of the **highest** ~-operator, checking felicity with the QUD.³³

- (59) Context: *Ana and Boris are two introverted intellectuals. There was a party of the book club and you made a bet with your friend. If Ana dances or Boris sings, she will take you out for dinner. You could not attend the party, but your friend did. You ask her:*
 (And?) Was Ana dancing or Boris singing?

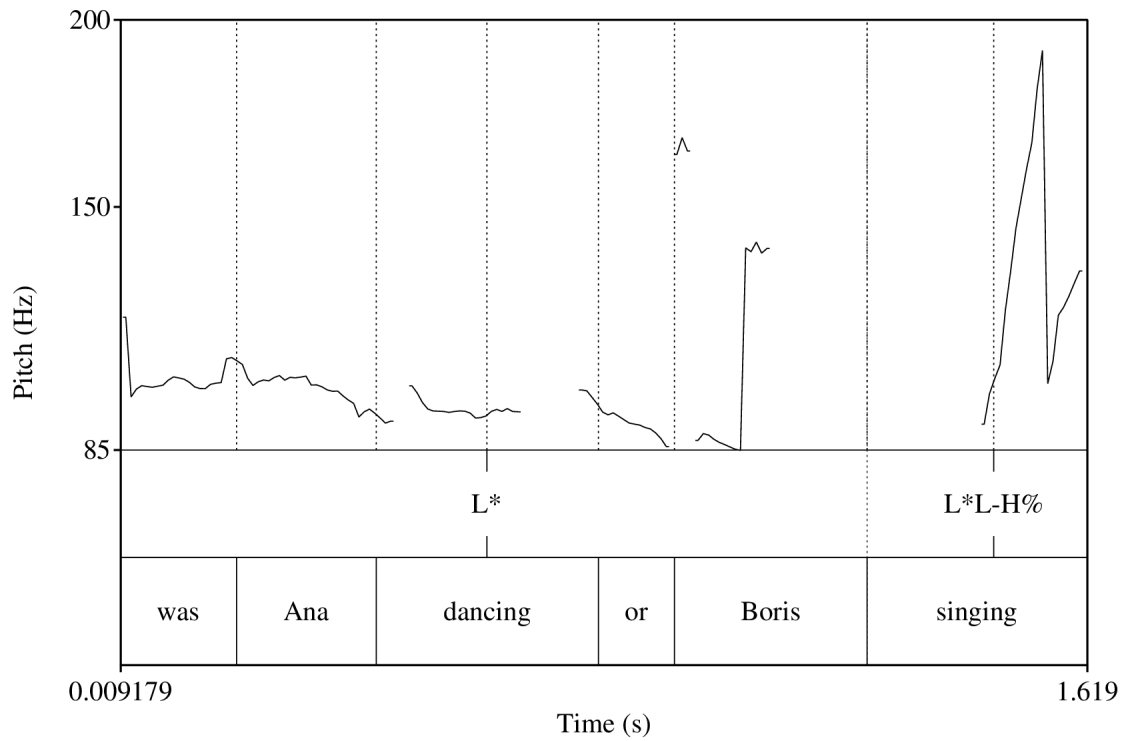
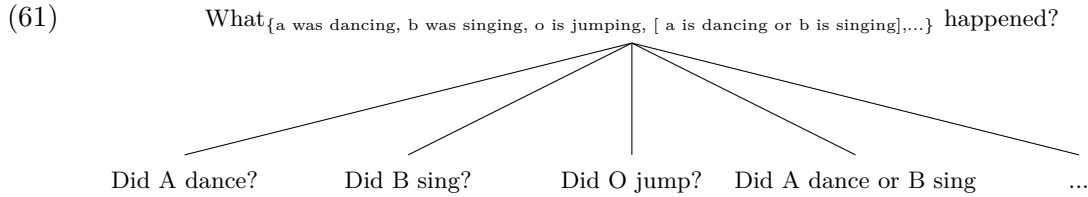


Figure 4.16: Pitch contour of a PolQ with multiple accents (59).

- (60) a. Was Ana dancing_{L*} or Boris singing_{L*L-H%}?

³³See footnote (52)

- (i) LF: [Q[IP was [IP1 Ana dancing]_F ~C₁ or [IP2 Boris singing]_F~C₂]_F~C]
 - (ii) [[C]]/ QUD ⊆ [[Ana was dancing or Boris was singing]]^f
 - (iii) [[C]]/ QUD ⊆ {a is dancing, b is singing, o is jumping, a is dancing or b is singing, a is singing and o is jumping,...}
- = ‘What_{a was dancing, b was singing, o is jumping, a is dancing or b is singing,...} happened?’



Here, each disjunct receives a pitch accent to mark contrastive focus, but there is only one intermediate phrase. The boundary of this phrase indicates the position of the highest ~. PolQs like the one in (59) are crucial because they reveal the difference between multiple phrases and multiple pitch accents. It shows that what is essential for AltQs is the division of the disjunctive phrase into multiple intermediate phrases, and that multiple foci can also appear within one intermediate phrase. This is directly related to Truckenbrodt’s (2013) observation that the multiple accents in AltQs cannot be reduced to contrastive foci, or the remnants of ellipsis, as proposed in Han and Romero (2004b). I discussed this in chapter 3, section 3.2.2.

There is another type of disjunctive questions: so-called ‘Open Questions’ with two intermediate phrases, two pitch accents, and a final rise (Roelofsen and van Gool 2010). I will discuss these question types in chapter 5. In the next subsection, I continue with the prosody-discourse mapping of AltQs.

4.6.2 Prosody-discourse mapping for AltQs

Concerning AltQs, we know that two components are crucial for the analysis: that each disjunct receives a focal accent and that there is a final falling boundary tone.

Analogous to what we saw for PolQs, the function of the **placement** of the multiple accent is to signal the position of the immediately higher question in the QUD stack. The **shape** of the accents is analyzed in terms of Westera’s (2017) A-maxims. Boundary tones at sub-sentential

constituents are analyzed as in (39) above: The rise on *poem* indicates that there might be relevant epistemically live alternatives other than the ones mentioned up to this point, while the fall on *essay* signals that there are no further relevant epistemically live alternatives at this point. The result is that the AltQ is understood as a daughterQ of the QUD *What_{poem,essay} did Ana write*, as represented in the QUD structure (64).

(62) Did Ana write a POEM_{L*L-H%} or an ESSAY_{H*L-L%}? (see 4.1)

- (63) a. LF: [Q[[*IP*₁ Ana wrote a poem_F] ~ C] or [[*IP*₂ Ana wrote an essay_F] ~ C]]
 b. $[[C]] \subseteq [[IP1]]^f = [[IP2]]^f = \{a \text{ wrote a poem, a wrote an essay, a wrote a dissertation, ...}\}$
 c. $[[C]] = \text{QUD} = \{a \text{ wrote a poem, a wrote an essay, a wrote a dissertation, ...}\}$
 = 'What_{poem,essay} did Ana write?'

(64) What_{poem,essay} did Ana write?
 |
 Did Ana write a poem_F↑ or an essay_F↓?

With these descriptions of the prosody-discourse mapping for various types of PolQs, and AltQs at hand, we can now proceed to tackle how this interacts with the semantics of AltQs and PolQs as described in chapter 2.

4.7 Proposal

The next step in the analysis is to see how in languages like English, the final question meaning of a disjunctive question can be derived from the multiple accent and the final boundary tone. I propose that the key principle underlying the disambiguating function of prosody in disjunctive questions is that the prosody-discourse mapping always has to be coherent with the syntax-semantics mapping. The notion of coherence can be seen as a mechanism in which two objects of different nature have to 'click'. The idea is that this clicking mechanism is disabled if particular constraints are not satisfied. To see this, let us first briefly return to the semantics of disjunction from chapter 2, section 2.4. Recall that I assume a Hamblin semantics for disjunction (Alonso-Ovalle 2006)

and that the interpretation of an utterance relies on the interaction of disjunction with different operators, in this case Q and \exists .³⁴ As a result, English disjunctive questions are ambiguous on the syntax-semantics level. In other words, the plain string *Did Ana write a poem or an essay* is ambiguous. This is different for languages that employ interrogative disjunction forms to compose AltQs. Compare the English disjunctive questions to their Basque counterparts, repeated below as (67). The prosodic pattern in Basque disjunctive questions patterns with English. That is, AltQs are associated with a multiple accent and a final fall, and PolQs with a block accent and a final rise.

- (66) a. Did Ana write a POEM↑ or an ESSAY↓? [AltQ]
 b. Did Ana write [a poem or an essay]↑? [PolQ]
- (67) a. [Te-a]↑ **ala** [kafe-a]↓ nahi duzu↓?
 tea-ART **or_{alt}** coffee-ART want you-it
 ‘Do you want coffee or tea?’ [Basque-AltQ]
- b. [Te-a **edo** kafe-a] nahi duzu↑?
 tea-ART **or_{stan}** coffee-ART want you-it
 ‘Do you want coffee or tea?’ [Basque-PolQ]

(Sergio Monforte, p.c.)³⁵

As we will see in chapter 9, I argue that languages like Basque encode the association properties of disjunction in the lexical entry for disjunction. The interrogative disjunction form *ala*, on the one hand, always forces association with Q, leading to an AltQ interpretation. The standard disjunction form *edo* in Basque, on the other hand, is ambiguous and signals that the set of alternatives that disjunction projects, associates with the \exists -operator. I will return to this proposal in detail in chapter 9. Here, the point is that there are languages that overtly express the association properties of

³⁴As explained in chapter 2, I do not derive the interpretation of a disjunctive question from the syntactic position - and thus the scope- of disjunction, as suggested in, inter alia, Biezma and Rawlins (2012), Nicolae (2014) and Uegaki (2014b). One reason for not doing so is that the PolQ interpretation is available for a disjunctive question with two, fully spelled out, IP disjuncts. Witness (65).

(65) Did Ana cite a poem or sing a song ↑?

³⁵Again, note that not all Basque speakers use both disjunction forms. The data discussed here is from speakers that use both forms, and only use *edo* in PolQs.

disjunction, which raises predictions for the coherence proposal.

Concerning Basque, I predict infelicity if the syntax-semantics as generated by disjunction is not coherent with the discourse structure as indicated by prosody. In the case of English, I take prosody to be the guide towards the syntax-semantics. The prosody associated with PolQs in English can only ‘click’ with the denotation in which *or* is associating with \exists (PolQ LF). AltQ prosody is only coherent with the semantics in which *or* associates with Q (AltQ LF). Because each available prosodic structure is only compatible with one LF, prosody on its own gets us to the right interpretation. An important implication of the proposal is that the disambiguating effects of prosody in English are neither encoded semantically, nor syntactically. Rather, the disambiguating effects are, in the spirit of Büring (1997), the result of pragmatic reasoning.

4.7.1 Analytical ingredients

Let me get a bit more specific and define what I mean by **coherence**. To evaluate whether a prosodic structure is coherent with a given LF, there are two analytical ingredients: (i) *Maximize Informativity* and (ii) there has to be a proper motherQ-daughterQ relation.

4.7.1.1 Maximize Informativity

Let me start with *Maximize Informativity*. Dayal (1996) proposed the principle in (69) to capture the contrast between singular *wh*-questions (70-a) and plural *wh*-questions (70-b). While singular nouns denote a set of atomic individuals, plurals denote a set containing both atomic and non-atomic individuals (Sauerland 2003). The latter is illustrated in the example in (68). Negating the plural *poets*, means negating both atomic and non-atomic individuals. This means that there was no single poet who came to the party.

(68) No poets came to the party.

The principle *Maximize Informativity* was originally defined in the answer operator, given in (71). As the formal implementation of *Maximize Informativity* is not of great relevance here, I will not use the answer operator in my examples.

(69) *Maximize Informativity*: The Hamblin set of a question must contain a maximally informative true answer.

- (70) a. A: Which poet did Ana see? ($=\{\text{ana saw boris, ana saw osip}\}$)
 B: $\#$ Ana saw Boris and Osip.
 b. A: Which poets did Ana see? ($=\{\text{ana saw boris, ana saw osip, ana saw boris} \oplus \text{osip}\}$)
 B: \checkmark Ana saw Boris and Osip

$$(71) \quad \text{Ans}(Q, w_0) = \iota p[p \in Q \wedge p(w_0) \wedge \forall p' \in Q[p'(w_0) \rightarrow p \subseteq p']]$$

Applying (69) to singular *wh*-questions leads to exclusivity, i.e. the unavailability of the *both* answer, as shown in (72).³⁶

- (72) a. Which poet did Ana see?
 b. $[_{CP} \text{which poet} _ \iota [_{IP}_i^t \text{ did Ana see}]]$
 c. $\lambda p. \exists x[\text{poet}_{w_0}(x) \wedge p = \lambda w'. \text{see}_{w'}(a, x)]$
 d. $\{\text{ana saw boris, ana saw osip, ana saw marina}\}$

In the case of (72), the *wh*-phrase ranges over singular atomic individuals. Now, *Maximize Informativity* says there has to be a maximally informative true answer in the Hamblin set. First, consider a world of evaluation w_0 , in which one out of $\{\text{boris, osip}\}$ were seen. In this case, *Maximize Informativity* will be fulfilled. The denotation in (72-d) consists of alternatives that are maximally informative in that case. Now, consider another world of evaluation w_0 in which both Boris and Osip were seen. In that case, the condition in *Maximize Informativity* is not fulfilled. Given the fact that the denotation consists only of atomic individuals, there is no maximally informative answer in the denotation of the question. Next, consider the plural *which* question, in (73).

- (73) a. Which poets did Ana see/who did Ana see?
 b. $[_{CP} \text{which poets/who} _ \iota [_{IP}_i^t \text{ did Ana see}]]$
 c. $\lambda p. \exists x[\text{poet}_{w_0}(x) \wedge p = \lambda w'. \text{see}_{w'}(a, x)]$

³⁶Note that Dayal's (1996) *Maximize Informativity* wrongly predicts a minimality presupposition for plural *which* questions. I will return to this issue in section 4.8.2.

- d. {ana saw boris, ana saw osip, ana saw marina, ana saw boris \oplus osip, ana saw osip \oplus marina, ana saw boris \oplus marina, ana saw boris \oplus osip \oplus marina}

In this case, the *wh*-phrase is plural and thus allows for atomic and non-atomic individuals, as in (73-d) (Sauerland 2003). Since the denotation allows for the non-atomic element *boris \oplus osip*, *Maximize Informativity* is met in a world of evaluation w_0 in which both Boris and Osip came. Hence, the conjunction is available as a possible answer to the question.

I follow Spector (2010) and adopt his suggestion that *Maximize Informativity* applies to AltQs. I do not take *Maximize Informativity* to apply to the denotation of PolQs for two reasons. First, as far as I am aware, there is no account available in the literature that argues for the extension of Dayal's (1996) *Maximize Informativity* to PolQs. Second, if one wants to combine *Maximize Informativity* with Roberts's (1996) QUD framework, in which PolQs are taken to denote singleton sets, there are reasons for not extending it to PolQs. This does not solely apply to this dissertation, but is an issue for any account that incorporates both Roberts's (1996) framework and Dayal's (1996) account. Altogether, *Maximize Informativity* applies to the semantic objects expressed by *Wh*Qs and AltQs.

Note that within Roberts's (1996) framework QUDs are semantic objects and *Wh*Qs, which might make one wonder if *Maximize Informativity* applies to the QUD level of an utterance. The answer is "no". As explained in chapter 2, I take QUDs to formally be *themes* or *attention sets*, sets containing alternatives. Both the positive and the negative evaluation are under discussion. Given that from this perspective, QUDs are not semantic objects, Dayal's (1996) *Maximize Informativity* does not apply.

4.7.1.2 MotherQ-DaughterQ Relation

The second component of the proposal is that, in order for the prosody-discourse mapping and the syntax-semantics mapping to be coherent, there has to be a proper motherQ-daughterQ relation. In diagnosing this, I first adopt Roberts (1996)'s hierarchical ordering of Questions, as introduced in chapter 2 and repeated below as (74).

(74) For all q and $q' \in \text{QUD}(m)$, if $q < q'$, then the complete answer to q' contextually entails a partial answer to q . (Roberts 1996, ex.10,p.13)

To see this, consider the definition of answerhood in (75).

- (75) (Roberts 1996) and (Groenendijk and Stokhof 1994)
- a. A proposition p is a partial answer to q iff $[p] \cup [q] \neq \emptyset$
 - b. A complete answer is a proposition which contextually entails an evaluation for each element of $\text{q-alt}(q)$

Concerning the relation between questions, Roberts (1996) defines *entailment*, following Groenendijk and Stokhof (1984) as in (76).³⁷

(76) A question q_1 entails another question q_2 iff answering q_1 yields a complete answer to q_2 (Roberts 1996, ex.8,p.12)

I extend Roberts's (1996) definition with respect to two points. First, it is crucial that **every** complete answer to q' contextually entails a partial answer to q . Second, I assume that every answer to a daughterQ had to obtain a **different** result for the QUD. In other words, every possible answer has to individually advance the QUD in a way that only that alternative does. In the case of PolQs, the possible answers are *yes* and *no*. In the case of AltQs, following from *Maximize Informativity*, the answers *Ana wrote a poem* and *Ana wrote an essay*.³⁸ These two points are formulated in (78).

- (78) (Roberts 1996) and (Groenendijk and Stokhof 1994)
- a. A proposition p is a partial answer to q iff $[p] \cup [q] \neq \emptyset$

³⁷In their definition, Groenendijk and Stokhof (1984) make explicit that one interrogative q_1 entails another interrogative q_2 iff every proposition that answers q_1 answers q_2 as well.

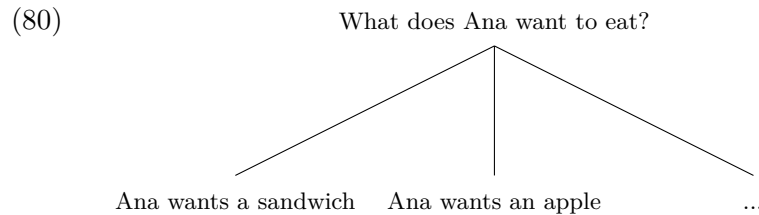
³⁸For the cases in this dissertation, this strong requirement always yields the correct results. Note that there could be cases with multiple alternatives (e.g. plurals, triple list questions). It seems like these cases support the strong formulation. If counterexamples would be brought up, one could formulate a weaker version, such as (77).

(77) At least two of the answers to q have to obtain a different evaluation of an element of $\text{q-alt}(q)$

- b. A complete answer is a proposition which contextually entails an evaluation for each element of $q\text{-alt}(q)$
- c. Every (partial or complete) answer to q has to obtain a different evaluation of an explicitly expressed element of $q\text{-alt}(q)$

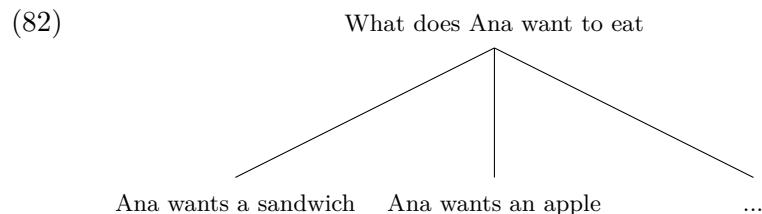
Let me illustrate this with the two sequences in (79) and (81). Let me start with the felicitous sequence in (79). The motherQ that was asked first and the alternatives it contains is given in (80). *What does Ana want to eat* precedes (<) *Does she want a sandwich?*. This means that every answer to the latter contextually entails a partial answer to the motherQ. The positive answer *yes*, reflects the proposition *ana wants a sandwich*, which is a positive evaluation of an alternative contained in the motherQ. In the same way, the negative answer *no* expresses a negative evaluation: *Ana doesn't want a sandwich*. Hence, both answers to the daughterQ in (79) provide a partial answer to the motherQ *What does Ana want to eat?*

(79) What does Ana want to eat? Does she want a sandwich?



Now consider the infelicitous sequence in (81). As the first question in the order is identical to the one in (79), the tree is identical too, as repeated in (82). Now, the second question in the order is *Does she want a coke?*. In this case, neither the positive nor the negative answer reflect an evaluation of an alternative that is contained in the motherQ. Hence, the daughterQ in (81) does not provide an answer to the motherQ.

(81) # What does Ana want to eat? Does she want a coke?



Finally, violations of the requirement that every answer to the QUD has to obtain a different result for the QUD, as in (78-c), result in contradictory signals. If (78-c) is not satisfied, i.e., when there are alternatives that serve as an answer to the daughterQ and do not advance the motherQ, there is no coherence. This also becomes evident in *WhQ*-*PolQ* sequences in which the *WhQ* already restricts the set of possible answers. See, for example, (83).

- (83) *There was a contest for the best poet in town and Ana and Boris were the finalists. You want to know who ended up winning. You ask:*
- # Which poet won the prize? Did [Ana or Boris] win the prize↑?

In (83), the daughterQ does not advance the QUD because both answers to the daughterQ obtain the same result.

To summarize, to settle whether a daughterQ, given the syntax-semantics, is coherent with a motherQ, given the prosody, Roberts's (1996) criterion in (74) has to be fulfilled.

4.7.2 The coherence mechanism

Let us now turn back to the data and see how the described system is applied. We saw at the beginning of this chapter that the placement of accents (multiple or block) and the shape of the boundary tones (rising or falling) indicate what the overarching QUD of a question is. In this section, I discuss three QUD types that are the result of mixing these two intonational cues: rising *PolQ*s with a block accent, falling *PolQ*s with a block accent, and *AltQ*s with multiple accents and a final fall. I check the coherence requirements of the QUDs with the two available LFs for disjunctive questions that we saw in chapter 2).³⁹ Ultimately, I show that the available prosodic structures for

³⁹I turn to the application of the coherence mechanism in Open Questions, with multiple accents and a final rise, in the next chapter.

disjunctive questions are only compatible with one possible LF for each question type.

4.7.3 Coherence in rising PolQs

Let me start with **rising** PolQs with a **block accent** on the disjunctive phrase. I show that the QUD, given the prosodic structure, is only compatible with the LF that results from association with \exists . To assess coherence, first recall what we saw for prosody-discourse mapping in the analysis in (54), given in (84-c). The block accent on *[a poem or an essay]*[↑] generates propositions that are alternatives to *a poem or an essay*. The final rise signals that it is not the case that the speaker believes she obeyed the A-Maxims. This means that other alternatives than Ana having written a poem or an essay could be relevant or epistemically live. In other words, other alternatives are still in the running as possible answers to the QUD.

[Q [[_{IP}∃[Ana wrote [a poem or_i an essay]]]~C]]

(84) *or* associates with \exists (*edo* in Basque) [PolQ LF]

- a. [Q [[_{IP}∃_i [Ana wrote [a poem or_i an essay]_F]]~C] ↑]
- b. Denotation: $\{\lambda w'.A \text{ wrote}_{w'} \text{ poem} \vee A \text{ wrote}_{w'} \text{ essay}\}$
- c. QUD: ✓ What_{[p or e],[l and a],...} did Ana write? (via (55), §4.6)

Now let us turn to evaluating the coherence between the syntax-semantics and prosody-discourse. The first analytical ingredient, *Maximize Informativity*, does not play a role here. Since Dayal's (1996) principle only applies to *Wh*Qs and *Alt*Qs, it is not applied to the denotation in (84-b). The second ingredient is evaluating whether there is a proper motherQ-daughterQ relation, according to Roberts's (1996) criterion in (74). Both the positive and the negative answer to the proposition in (84-b) reflect an evaluation of the alternative *[p or e]* that is contained in the QUD in (84-c). That is, an answer to the daughterQ in (84-b) provides a partial answer to the motherQ in (84-c). Moreover, (78-c) is not violated, since both answers reflect two different resolutions. We can conclude that the syntax-semantics and prosody-discourse are coherent with each other and the interpretation is available in the grammar.

Now, consider the same QUD that is the result of the block accent and the final rise (see

(85-c)), but combined with the denotation that results from association with the Q-operator in (85). In this case, the Hamblin set consists of the two propositions *ana wrote a poem* and *ana wrote an essay*, see (85-b).

- (85) *or* associates with Q (*ala* in Basque) [AltQ LF]
- a. $[Q_i \text{ } [[\text{IP Ana wrote [a poem or}_i \text{ an essay]}_F] \sim C] \uparrow]$.
 - b. Denotation: $\{\lambda w. \text{Ana wrote}_w \text{ poem}, \lambda w. \text{Ana wrote}_w \text{ essay}\}$
 - c. QUD: # What_{[p or e], [l and a]...} did Ana write? (via (55), §4.6)

The first step is to apply *Maximize Informativity* to the Hamblin set in (85-b). This presupposes that either {ana wrote a poem} or {ana wrote an essay} is true (minimality), and not both (exclusivity). The next step is to evaluate whether there is a proper motherQ-daughterQ relation according to (74). Here, we see that the motherQ in (85-c) and the daughterQ in (85-b) send contradictory signals. Given that the denotation gives rise to minimality (at least one out of {p,e} is true), the alternative *p or e* is already positively evaluated by the daughterQ. In other words, an answer to the daughterQ is not needed to evaluate the alternative *p or e*. As a result, there is no good reason to make exactly the alternative explicit that is already answered explicit. Yet, this is what is expressed in the QUD. Note that this is a violation of the requirement in (78-c) and, in particular, of the part that demands that answers have **different** implications for the QUD. In this case, a *yes* to *Ana wrote a poem* and a *yes* to *Ana wrote an essay* render the exact same result. I conclude that this is not a viable strategy and that there is no coherence between the motherQ in (85-c) and the daughterQ in (85-b).

In sum, there is only one Hamblin set coherent with the QUD produced by the block accent and the final rise: the Hamblin set resulting from association with the \exists -operator. As a result, this is the only available interpretation of a disjunctive question with this prosodic structure. The same reasoning applies to disjunctive PolQs with multiple foci (in (59)).

4.7.4 Coherence in falling PolQs

The coherence mechanism works similarly for falling PolQs. Again, let me start with the ‘successful’ and coherent case: block intonation with a final fall, combined with a PolQ LF, given in (86). The denotation in (86-b) is the result of association with \exists . The QUD is derived from (i) the block accent indicating the shape of the QUD and (ii) the final fall, signalling that no other alternatives than the mentioned ones are relevant and epistemically live.

- (86) *or* associates with \exists (*edo* in Basque) [PolQ LF]
- a. $[Q \text{ } [[_{IP} \exists_i \text{ } [Ana \text{ wrote } [a \text{ poem } or_i \text{ an essay}]_F]] \sim C] \downarrow]$
 - b. Denotation: $\{\lambda w'. A \text{ wrote}_{w'} \text{ poem} \vee A \text{ wrote}_{w'} \text{ essay}\}$
 - c. QUD: \checkmark What $_{\{[p \text{ or } e], [f \text{ and } a], \dots\}}$ did Ana write? (via (58), §4.6)

Given that the daughterQ is a PolQ, *Maximize Informativity* does not apply. Concerning the motherQ-daughterQ relation, the criterion in (74) is met: Both the negative and the positive answer to the daughterQ in (86-b) (*It's true that Ana wrote a poem or an essay* and *it's not true that Ana wrote a poem or an essay*) reflect an evaluation of the alternative contained in the motherQ. Thus, each answer to the daughterQ provides an, in this case complete, answer to the motherQ. This means that there is coherence between the syntax-semantics mapping and the prosody-discourse mapping.

Now, consider the same QUD, given the prosodic structure (see (87-c)), combined with the AltQ denotation (see (87-b)). Corresponding to what we saw for rising PolQs, falling PolQs are not coherent with the AltQ LF, because LF and QUD send contradictory messages and involve a violation of (78-c). Consider (87).

- (87) *or* associates with Q (*ala* in Basque) [AltQ LF]
- a. $[Q_i \text{ } [[_{IP} Ana \text{ wrote } [a \text{ poem } or_i \text{ an essay}]_F] \sim C] \downarrow]$
 - b. Denotation: $\{\lambda w. Ana \text{ wrote}_w \text{ poem}, \lambda w. Ana \text{ wrote}_w \text{ essay}\}$
 - c. QUD: \times What $_{\{[p \text{ or } e], [f \text{ and } a], \dots\}}$ did Ana write? (via (58), §4.6)

Like in (86), the final fall signals that the only relevant and epistemically live alternative is {poem or essay}. Association with Q results in the Hamblin set in (87-b). The application of *Maximize Presupposition* to the AltQ denotation in (87-b) results in a minimality and exclusivity presupposition. In assessing whether there is a proper motherQ-daughterQ relation, we check the criterion in (74). Similar to the case of rising PolQs, we observe that the motherQ in (87-c) and the daughterQ in (87-b) send signals that are contradicting each other. Given that the denotation in (87-b) gives rise to minimality (at least one out of p or e is true), the alternative $[p \text{ or } e]$ is already positively evaluated by the daughterQ. As $[p \text{ or } e]$ is the only alternative contained in the QUD, the denotation in (87-b) is not an appropriate daughterQ. Again, this boils down to the requirement in (78-c) that says that the answers have to obtain **different** results for the QUD. Hence, there is no coherence between the QUD in (87-c) and the AltQ denotation in (87-b).

Consequently, the only available interpretation of disjunctive questions with a block accent and a final fall is the one in which the Hamblin set projected by disjunction associates with the \exists -operator.

4.7.5 Coherence in AltQs

We have come to the final case: the QUD resulting from the placement of multiple accents and the final fall, hence the AltQ QUD in (88-c). We begin with the combination of this QUD with the AltQ denotation in (88-b).

- (88) *or* associates with Q (*ala* in Basque) [AltQ LF]
- a. $[Q_i \text{ } [[_{IP1} \text{ Ana wrote a poem}_F] \sim C] \uparrow \text{ or } [[_{IP2} \text{ Ana wrote an essay}_F] \sim C] \downarrow]$.
 - b. Denotation: $\{\lambda w. \text{Ana wrote}_w \text{ poem}, \lambda w. \text{Ana wrote}_w \text{ essay}\}$
 - c. QUD: \checkmark What $_{\{\text{poem}, \text{essay}\}}$ did Ana write? (via (64), §4.6)

Applying *Maximize Informativity* to the AltQ denotation in (88-b) results in minimality and exclusivity presuppositions. According to Roberts's (1996) criterion, there is a proper motherQ-daughterQ relation. Both answers *poem* and *essay* provide, unsurprisingly, an evaluation of the alternatives *poem* and *essay* that are the only alternatives contained in the QUD (see (88-c)). Given

that the QUD contains the singular alternatives *poem* and *essay*, the minimality and exclusivity effects resulting from *Maximize Informativity* do in themselves not serve as an evaluation of the alternatives in the QUD. Hence, we do not have the issue of conflicting messages and the violation of (78-c) that we had in the PolQ cases. Every answer to the daughterQ provides an answer to the QUD, and the answers provide different evaluations. This means that both parts of (78-c) are satisfied. Thus, in the case of (88), QUD and Hamblin set are coherent with each other, meaning that the AltQ interpretation is available for the prosodic structure with the multiple accent and the final fall.

I obtain a different result for the next case: the combination of the QUD resulting from the multiple accent and the final fall (see (89-c)) with the PolQ denotation that results from association with the \exists -operator (see (89-b)).

- (89) *or* associates with \exists (*edo* in Basque) [PolQ LF]
- a. $[Q [\exists_i [[IP_1 \text{ Ana wrote a poem}_F] \sim C]\uparrow \text{ or } [[IP_2 \text{ Ana wrote an essay}_F] \sim C]]\downarrow]$
 - b. Denotation: $\{\lambda w'. A \text{ wrote}_{w'} \text{ poem} \vee A \text{ wrote}_{w'} \text{ essay}\}$
 - c. QUD: # What_{poem,essay} did Ana write? (via (64), §4.6)

Since the denotation in (89-b) is a PolQ, *Maximize Informativity* does not apply and the Hamblin set is unaffected. In checking Roberts's (1996) criterion in (74), we find that the negative answer to (89-b) (*It's not true that Ana wrote a poem or an essay*) serves as a negative evaluation of all alternatives in the QUD in (89-c), and is thus a complete answer. On the contrary, the positive answer *It's true that Ana wrote a poem or an essay* neither serves as a positive evaluation nor as a negative evaluation of any alternative in the QUD. In other words, it does not solve an alternative in the QUD and thus does not serve as a partial or complete answer. Recall that in order for there to be a proper motherQ-daughterQ relation, **every** answer to a daughterQ must be an at least partial answer to the motherQ, according to (78-c). Since the positive answer to the daughterQ in (89-b) is not advancing the QUD in (89-c), the criterion in (74) is violated and there is no coherence between QUD and Hamblin set.

To conclude, only the Hamblin set that results from association with the Q-operator is coherent

with the QUD derived from the multiple accent and the final fall. From this it follows, that this is the only available interpretation of a disjunctive question with that particular prosodic structure.

4.7.6 The coherence proposal: taking stock

I have proposed that the disambiguating effects of prosody in English are the result of coherence requirements between the syntax-semantics mapping and the prosody-discourse mapping. Each of the used coherence requirements are independently motivated and serve a purpose in the grammar outside of the domain of AltQs. Crucially, I take prosody to govern pragmatics and discourse structure, meaning that prosody only affects the semantic content of an utterance indirectly. Furthermore, I showed that the current proposal can handle crosslinguistic variation in AltQ composition. Firstly, I have drawn the link between Q-particles and the focal multiple accent, on which I will follow up in chapter 7. Secondly, different interrogative disjunction forms can be modelled within the coherence proposal, as we will see in chapter 9. In the following section, I show how we can derive the complex utterance meaning of AltQs from the current proposal. Before turning to the final section of this chapter, allow me to take a moment to draw the parallel between the current account and Büring's (1997) account of scope-inversion.

4.7.6.1 Parallel with Büring (1997) on scope and prosody

Büring (1997) famously accounts for the interaction between intonation and the interpretation of utterances with negated universal quantifiers. Such utterances are syntactically/semantically ambiguous. The negation can be interpreted taking scope over the universal quantifier as in (90)-(i). Alternatively, the utterance can be interpreted with high scope for the universal quantifier, as illustrated in (90)-(ii).

- (90) Alle politiker sind nicht korrupt (Büring 1997, ex.1,p.1)
 all politicians are not corrupt
- (i) ✓ No politician is corrupt [$\forall > \neg$]
- (ii) ✓ It is not the case that all politicians are corrupt [$\neg > \forall$]

Büring (1997) observed that if a CT accent is placed on the universal quantifier, the only available

interpretation is the one with the universal quantifier taking scope over negation, as showed in (91).

- (91) ALLE_T politiker sind NICHT_T korrump (Büring 1997, ex.2,p.1)
 all politicians are not corrupt
 (i) # No politician is corrupt [∀ > ¬]
 (ii) ✓ It is not the case that all politicians are corrupt [¬ > ∀]

Büring (1997) derives the unavailability of (91)-(i) from the implications that the CT accents have on the QUD.⁴⁰ It is exactly this rationale that is applied in the proposed analysis of the disambiguation between PolQs and AltQs above. To see the parallel, let me briefly walk through Büring's (1997) reasoning. First, the author takes an utterance to have, in addition to its ordinary semantic value $[[\cdot]]^o$ and its focus-semantic value $[[\cdot]]^f$, a topic value $[[\cdot]]^t$ that is constructed by replacing the CT marked elements by alternatives of the same type. Second Büring (1997) proposes the conditions in (92).

- (92) (Büring 1997, ex.9,p.179)
 a. Given a question answer sequence, QA , $[[A]]^o$ must be an element of $[[A]]^t$
 b. Given a sentence containing a CT, there must be at least one element in $[[A]]$ that remains disputable/unsolved after uttering A

The conditions in (92), restrict the coherence between utterances containing CT-marking and the discourse structured they are uttered in. Büring (1997) defines this as follows.

- (93) (Büring 1997, ex.15,p.180)
 If a sentence S with a CT accent is uttered given some context (=QUD stack), and there is no set of disputable elements the sentence establishes, the utterance of S is infelicitous in this context.

The application of these ingredients to the LF in (91)-(i)(∀ > ¬), results in infelicity, whereas their

⁴⁰In the paper, Büring (1997) uses the label D-topic.

application to (91)-(ii) ($\neg > \forall$) is unproblematic. Let us start with the former case. The topic value and the corresponding implicature of (91)-(i) are given in (94) and (95) respectively.

- (94) $\llbracket \forall > \neg \rrbracket^t =$ (Büring 1997, ex.21c,p.183)
 $\{\{\text{all}(\text{politicians})(\lambda x. \neg \text{corrupt}(x)), \text{all}(\text{politicians})(\lambda x. \text{corrupt}(x))\},$
 $\{\text{most}(\text{politicians})(\lambda x. \neg \text{corrupt}(x)), \text{most}(\text{politicians})(\lambda x. \text{corrupt}(x))\},$
 $\{\text{some}(\text{politicians})(\lambda x. \neg \text{corrupt}(x)), \text{some}(\text{politicians})(\lambda x. \text{corrupt}(x))\},$
 $\{\text{one}(\text{politicians})(\lambda x. \neg \text{corrupt}(x)), \text{one}(\text{politicians})(\lambda x. \text{corrupt}(x))\},$
 $\{\text{no}(\text{politicians})(\lambda x. \neg \text{corrupt}(x)), \text{no}(\text{politicians})(\lambda x. \text{corrupt}(x))\}\}$
- (95) After asserting $\text{all}(\text{politicians})(\lambda x. \neg \text{corrupt}(x))$, there is at least one set of propositions in $\llbracket \forall > \neg \rrbracket^t$ which is disputable/unsolved (Büring 1997, ex.22,p.184)

Within Büring's (1997) account, a disputable set of propositions corresponds to a question whose answer is neither entailed nor excluded. All propositions (except from the *no* case) are entailed by $\text{all}(\text{politicians})(\lambda x. \neg \text{corrupt}(x))$, and so their negations are excluded. $\text{no}(\text{politicians})(\lambda x. \neg \text{corrupt}(x))$, is contradicted by $\text{all}(\text{politicians})(\lambda x. \neg \text{corrupt}(x))$, while $\text{no}(\text{politicians})(\lambda x. \text{corrupt}(x))$ is equal to it. This means that (95) is not met and thus that the LF is not available for the utterance given its prosody. Now consider the topic value of the utterance (91)-(ii)($\neg > \forall$) in (96).

- (96) $\llbracket \neg > \forall \rrbracket^t =$ (Büring 1997, ex.23c,p.183)
 $\{\{-\text{all}(\text{politicians})(\text{corrupt}), \text{all}(\text{politicians})(\text{corrupt})\},$
 $\{-\text{most}(\text{politicians})(\text{corrupt}), \text{most}(\text{politicians})(\text{corrupt})\},$
 $\{-\text{some}(\text{politicians})(\text{corrupt}), \text{some}(\text{politicians})(\text{corrupt})\},$
 $\{-\text{one}(\text{politicians})(\text{corrupt}), \text{one}(\text{politicians})(\text{corrupt})\},$
 $\{-\text{no}(\text{politicians})(\text{corrupt}), \text{no}(\text{politicians})(\text{corrupt})\}\}$

Here, none of the propositions is entailed or contradicted by $\neg \text{all}(\text{politicians})(\text{corrupt})$. This means that the LF is available for the utterance with the two CT accents. The parallel with the coherence proposal described above is apparent: Büring (1997) derives the unavailability of the $\forall > \neg$ inter-

pretation for (91) from restrictions that CT-marking puts on the QUD. In particular, that a CT accent comes with the implication that the QUD contains unresolved alternatives. If an LF does not come with such unresolved alternatives, the CT marked utterance is unavailable. Vice versa, this means that if an utterance with scope ambiguity is pronounced with CT accents, only the LF that does not solve all alternatives is available. In the coherence analysis, described in section 4.7, the same reasoning is applied. Disjunctive questions have two possible LFs and prosody shapes and restricts the QUD. It is the QUD, given the prosodic structure of the utterance, that eventually determines what LF is available.

Let us now turn to the final section of this chapter, in which I show how the complex utterance meaning of AltQs can be derived from the current proposal.

4.8 Deriving complex utterance meaning

One of the overarching goals of this dissertation is to derive the complex utterance meaning of an AltQ, including minimality, exclusivity and exhaustivity. In this section, I show how all three meaning effects naturally follow from the proposal presented above. Crucially, the presented account departs from the dominant idea in the literature that minimality, exclusivity, and exhaustivity are the result of a semantic operator (Roelofsen and van Gool 2010, Biezma and Rawlins 2012, Roelofsen 2015). Instead, I take the complex utterance meaning of AltQs to be the result of the interaction of different, independently motivated principles. I argue that the current proposal is favorable over existing accounts because it only uses ingredients that are necessary in the grammar to account for phenomena outside of the domain of AltQs. Consequently, no special operators need to be constructed to account for minimality, exclusivity, and exhaustivity.

4.8.1 Exhaustivity

AltQs always give rise to an exhaustivity presupposition (Biezma and Rawlins 2012), i.e. only the alternatives denoted by the disjuncts serve as possible answers to the question.

The implementation of Westera's (2017) account, that builds on Zimmermann (2000) and Biezma and Rawlins (2012), immediately predicts exhaustivity within the current account. Under

Westera’s (2017) account, as explained in section 4.5.1, the final falling boundary tone signals that no alternatives other than those mentioned serve as relevant and possible answers to the QUD. Via the final fall, the speaker ‘exhausts’ the set of possible answers to the QUD and thus the discourse possibilities. Consider the AltQ in(97).

- (97) **Scenario:**⁴¹ (Biezma and Rawlins 2012, ex.4,p.364)
- You are in charge of coordinating the cooks for the colloquium dinner. John is one of the cooks. The menu is pasta, stew and tofu.
- You: Are you making PASTA↑ or STEW↓?
- a. John: # (No,) I am making tofu.
- b. John: ✓ Wait, I was planning on making the tofu, can’t I do that?

Here, *I am making tofu* is an infelicitous answer because the final fall signals that the mentioned alternatives (*I am making pasta* and *I am making stew*) are the only relevant and possible answers to the QUD. The felicity of the answer *tofu* increases, when the speaker acknowledges the presupposition and questions it, as in (97-b).

Westera’s (2017)’s proposal predicts that falling PolQs give rise to exhaustivity in the same way. This prediction is borne out in the sense that the speaker signals that she does not consider other alternatives to be relevant or epistemically live. Westera (2017) put forward the example in (98).

- (98) (Westera 2017, ex.4,p.285)
- a. A: Was JOHN at the party↑?
B: Mary was.
- b. Was JOHN at the party↓?
? Mary was.

Although both Bartels (1999) and Westera (2017) mention these data, the judgment is subtle and

⁴¹This is a veganized version of Biezma and Rawlins’s (2012) original example

there currently is no empirical data to support Westera’s (2017) claim. It seems that in both (98-a) and (98-b), a context must be constructed that makes Mary a potentially relevant answer. Nevertheless, I share the intuition that in (98-b), the speaker is signalling zero interest in Mary’s presence at the party. This is in line with what we observed for AltQs: Due to the final fall, the QUD is restricted to the explicitly mentioned alternatives. Thus, exhaustivity can be directly derived from Westera’s (2017) account.

There is one observation that deserves some attention here. The usage of falling PolQs in exhaustive contexts is marked depending on the illocutionary act they appear in. Crucially, falling PolQs are infelicitous as offers, by which I mean a speech act in which the speaker gives an addressee the opportunity to accept or reject an object or a proposal. This is unexpected according to Westera’s (2017) account. Consider (99).

- (99) a. Context: *At a night club, all tickets are sold out and the only people who can enter are people that are on the guest list. There is a bouncer at the front door, navigating the people who want to get in. He asks:*
 ✓ Are you on the guest list↓? [info-seeking]
- b. Context: *A friend is coming over and you have no drinks to offer her, apart from tap water. You ask:*
 # Do you want a glass of water↓? [offer]

From Westera’s (2017) perspective, the fall in (99-a) signals that the only relevant and possible alternative is that the night club visitor is on the guest list. This is compatible with the exhaustive context, in which it is clear that this, indeed, is the only relevant alternative. Hence, the utterance is felicitous. But, applying the same reasoning to the offer in (99-b) leads us to the wrong predictions. The fall in signals that the only relevant and possible alternative is that you want a glass of water. As this is, indeed, the only available alternative in the context, we expect the PolQ with the final fall to be perfectly felicitous, contrary to fact.

Additionally, we find that in both illocutionary acts, the final rise is licensed.

- (100) a. Context: *At a night club, all tickets are sold out and the only people who can enter are people that are on the guest list. There is a bouncer at the front door, navigating the people who want to get in. He asks:*
 ✓ Are you on the guest list↑? [info-seeking]
- b. Context: *A friend is coming over and you have no drinks to offer her, apart from tap water. You ask:*
 ✓ Do you want a glass of water↑? [offer]

This raises the flip side of the coin: In (99), we need to account for the infelicity of the offer in (99-b) in an exhaustive context. In (100-a), the issue is why the rise is felicitous in an exhaustive context. If the final fall signals exhaustivity and we have an exhaustive context, why is a purely information-seeking question PolQ, like the one in (100-a), felicitous with a final rise?

To sum up, any analysis that relates the final fall to exhaustivity needs to additionally explain: (i) the infelicity of falling PolQs as offers in exhaustive contexts, and (ii) the felicity of both offers and information-seeking rising PolQs in exhaustive contexts.

Let me sketch a very tentative potential solution to this puzzle. Key here is that discourse mechanisms governing politeness and face-saving always play a role. This is not to say that the final fall directly encodes such mechanisms. Rather, its effect - restricting the QUD - results in violations of politeness principles. Let me start with the first observation; the infelicity of falling PolQs as offers. I suggest this infelicity is due to the nature of offers and invites. Such illocutionary acts inherently share the property that the speaker wants to protect the negative face of the addressee, that is, to secure the addressee's sense of freedom. This immediately explains the felicity of rising PolQs as offers in exhaustive contexts (issue (ii)). Within Westera's (2017) account, the final rise signals that it is not the case that the speaker believes she obeyed the A-Maxims. This means the speaker does not necessarily believe that there are other relevant and possible alternatives. It is standard in the literature to assume that the rise in PolQs is the default and unmarked form (Bartels 1999, a.o.). Thus, using the rise in an exhaustive context does not make the speaker a liar who suggests that there are other alternatives available. Rather, the speaker uses the unmarked form in order to not put the restricted amount of alternatives in the addressee's face. By doing

so, the speaker protects the negative face of the addressee. Purely information-seeking questions, (99-a) and (100-a) do not inherently carry such politeness restrictions, explaining the felicity of (99-a). Although it is not a requirement of the illocutionary act, it is not forbidden to save the negative face of the addressee in information-seeking questions. Consequently, the PolQ in (100-a) is perfectly felicitous.

Taking the final rise as the unmarked boundary tone also explains why using the fall in offers leads to infelicity. This would be a violation of the face-saving principles because it emphasizes the limited amount of alternatives and leaves no room for the addressee to follow up. To see how strong this effect is, consider (101).

- (101) a. I don't have anything else to offer, so do you want a glass of water ↑?
b. #Do you want a glass of water ↓?

The contrast in (101) reveals a difference between exhausting a set by stating it or by doing it via the QUD using the final fall. By stating it, on the one hand, the speaker still leaves the options open to follow up, by for example talking about how it is a shame there is no other drink or what the guest would have wanted to drink. Exhausting a set via the QUD, on the other hand signals that the speaker is not interested in such a follow up. It is exactly this kind of signal that threatens the negative face of the addressee and that needs to be avoided in speech acts such as offers and invites.

Altogether, there needs to be an explanation for the interaction between (i) exhaustivity or non-exhaustivity, (ii) rising or falling boundary tones, and (ii) the illocutionary flavor of an utterance. If the explanation sketched above is on the right track, this would be an improvement of Westera (2017) and other accounts that associate the final fall with exhaustivity, meaning that these accounts have a way forward.

4.8.2 Minimality

Minimality is the presupposition that at least one of the alternatives that are denoted by the spelled-out disjuncts is true. Within the presented proposal, minimality arises due to two successive steps:

First, given the proposed coherence mechanism, the only available LF for a disjunctive question with multiple accents and a final fall is the AltQ LF that is the result of association of *or* with the Q-operator. The AltQ example and its denotation are repeated in (102).

- (102) Did Ana write a POEM \uparrow or an ESSAY \downarrow ?
 {ana wrote a poem, ana wrote an essay}

Second, following Spector (2010), Dayal’s (1996) *Maximize Informativity* is applied to the denotation of AltQs. According to this principle, there is always a maximally informative answer in the Hamblin set denoted by a question, as explained in section 4.7.1.⁴² Given that the AltQ in (102) denotes a set containing two alternatives {ana wrote a poem, ana wrote an essay}, *Maximize Informativity* is not fulfilled in a world of evaluation w_0 in which Ana wrote neither a poem nor an essay.

4.8.2.1 Dayal (1996) and minimality

Deriving minimality via Dayal’s (1996) *Maximize Informativity* principle is not fully satisfactory. Although it produces the desired outcome for disjunctive questions, *Maximize Informativity* was originally proposed by Dayal (1996) to account for the difference between singular and plural *which*-questions. It has not gone unnoticed in the literature that with respect to minimality, *Maximize Informativity* makes the wrong predictions for *who*-questions (Fox 2018, a.o.). This is a general problem for *Maximize Informativity*, not just for its application in this dissertation. Consider the paradigm in (103).

- (103) a. Which poet came to the party? {Boris, Osip}
 b. Which poets came to the party? {Boris, Osip, Boris \oplus Osip}
 c. Who came to the party? {Boris, Osip, Boris \oplus Osip}

According to Dayal’s (1996) *Maximize Informativity*, the question denotations of all three question

⁴²Deriving minimality and exclusivity may be achievable using different tools, for instance, by using the combination of A-Quantity (Intend to draw attention to all possibilities that A-Quality and A-Relation permit) combined with the assumption that QUDs close under conjunction. I refer to Westera (2017) and Westera (2020).

types have to contain a maximally informative answer, i.e., all three question types presuppose that at least one of the poets came to the party. Following Dayal (1996), we thus expect a minimality effect for singular *which*-questions, plural *which*-questions and *who*-questions. There is no reason to expect a stronger minimality effect for singular *which*-questions than for the other two cases. Yet, this is what has been observed. Fox (2018), for example, argues that the minimality presupposition is weaker for *who*-questions than for *which*-questions. This is reflected in (104): A negative answer (*no poet came to the party*) seems to be infelicitous as a response in (104-a) but acceptable in the cases of (104-b) and (104-c).

- (104) a. A: Which poet came to the party? {Boris, Osip}
 # B: None of them
- b. A: Which poets came to the party? {Boris, Osip, Boris \oplus Osip}
 B: None of them
- c. Who came to the party? {Boris, Osip, Boris \oplus Osip} (to be revised)
 ✓ B: Nobody

I follow a suggestion put forward by Fox (2018) and assume that *who* includes in its domain what Bylinina and Nouwen (2018) call the zero individual. That is, the plural lattice that *who* ranges over contains *zero*. The denotation of the *who* question is then defined as in (105)

- (105) Who came to the party? {Boris, Osip, Boris \oplus Osip, nobody}

This correctly predicts the felicity of the *nobody answer*. There is one caveat for this solution: The status quo is that there is minimality for singular *which*-questions like (104-a) and not for *who*-questions like (104-c). The judgments for plural *which*-questions are less clear. Native speakers reported that plural *which*-questions seem to pattern in between singular *which* questions and *who* questions.⁴³ This is particularly apparent when the *which* expression is embedded under *always*, as in (106).

⁴³I discussed these data with 2 native speakers of British English and 3 speakers of American English. Needless to say, a proper empirical investigation is needed to make a strong point.

- (106) The secretary always knows which poets will come to the party
 → The secretary knows it when no poets are coming

The implementation of Bylinina and Nouwen’s (2018) account for *who*-questions only predicts that singular and plural *which*-questions pattern alike, which does not seem to be the case. On top of that, assuming that *who* restricts a different plural set to *which*+plural seems arbitrary and in contrast with the conceptual aim in Bylinina and Nouwen (2018) - to make a claim about plurality in general. The other option is to implement Bylinina and Nouwen’s (2018) account for both *who*-questions and plural *which*-questions. This would avoid the conceptual problem but does not explain why minimality has a seemingly stronger effect in *who*-questions than in *which*-questions. It is very well possible that there are other variables playing a role here that the literature has not controlled for.⁴⁴

I leave this issue for future work.^{45 46}

4.8.2.2 Westera (2017) and minimality

Finally, Westera (2017) makes the overly strong prediction that the final fall presupposes minimality for falling PolQs. The author himself acknowledges that there is an asymmetry between minimality in AltQs and PolQs, in the sense that the effect is stronger in AltQs. Compare the utterances in (108).

- (108) a. Did Ana write a POEM↑ or an ESSAY↓?

⁴⁴A potential variable could be the implicit domain of *who*. The difference between *who* and plural *which* seems to disappear when the domain of *who* is made explicit. Consider the Dutch example in (107). Here, there is no strong contrast between *who* and *plural which*. Both give rise to minimality.

- (107) a. Welke (van de) dichters waren op het feestje?
 Which (of the) poets were at the party
 ‘Which poets were at the party?’
 b. Wie van de dichters waren op het feestje?
 Who of the poets were at the party
 ‘Who of the poets were at the party?’

Thanks to Matthijs Westera for pointing this example out to me

⁴⁵Many thanks to Aviv Schoenfeld for helpful discussions on this topic.

⁴⁶See Hirsch and Schwarz (2020) and Socolof et al. (2020) for a recent discussion on the issue of Dayal’s (1996) principle in *which* questions.

→ Ana wrote at least one out of a poem and an essay

- b. Did Ana write a poem↓? ↗ Ana wrote a poem

Westera (2017) argues that the prediction that (108-b) gives rise to minimality is in line with observations in the literature that falling questions are assertive (Bartels 1999) or confirmation-seeking (Nilsenová et al. 2006). The author argues that falling PolQs are either not genuine questions or minimality is not believed to be true (see Westera (2017, p. 298)). It is argued that the former explains why falling PolQs are often used in rhetorical or quiz-like contexts, i.e., contexts in which the speaker knows the answer, while the latter explains why falling PolQs are felicitous in contexts where the speaker does not necessarily expect an answer, e.g., before starting a monologue or for tag-questions (Westera 2017, Bartels 1999).

Although there is consensus in the literature about the markedness of falling PolQs and their particular flavor (Bartels 1999, Banuazizi and Creswell 1999), the prediction that they always presuppose minimality is too strong. In particular, in purely information-seeking contexts, falling PolQs cannot be claimed to presuppose minimality. Consider the following set of examples from Bartels (1999).

- (109) a. (In a guessing game:) Is it green↓? Can we eat it↓?
b. (To spouse, who is unpacking the suitcase:) Did you find my camera↓? Did you leave it in Edinburgh↓?
c. (In court:) Do you know the defendant↓? (Bartels 1999)

According to the account proposed in this dissertation, QUDs are formally attention sets containing alternatives that call for evaluation. There is no reason why falling PolQs would differ from rising PolQs in their preference for a positive evaluation. Hence, the felicity of the examples in (109) is unsurprising. The observation that falling PolQs are particularly suitable to ask for confirmation or rhetorical questions requires additional explanation. The topic of intonation and question bias outscopes the goals of this dissertation and involves multiple variables that I do not address. Therefore, I will not attempt to tackle this issue. Note however, that I do not consider falling

PolQs to be unmarked. I attribute their observed markedness to the exhaustivity presupposition they give rise to, as discussed in the previous section.

Altogether, the proposed account does not predict minimality for falling PolQs. I leave the issue of biased and rhetorical questions for future work.

4.8.3 Exclusivity

AltQs give rise to exclusivity: the presupposition that at most one of the alternatives that are denoted by the spelled-out disjuncts is true. Analogous to minimality, the current account derives exclusivity from two steps: By means of the placement of the final fall, the QUD is restricted and via the coherence mechanism only coherent with an AltQ denotation. Since *Maximize Informativity* applies to the denotation of AltQs (Spector 2010), it holds true that the denotation contains one maximally informative answer. This is not fulfilled in a world of evaluation w_0 in which Ana wrote both an essay and a poem. As a result, AltQs always give rise to exclusivity effects. This is illustrated in (110).

(110) Did Ana write a poem \uparrow or an essay \downarrow ? {ana wrote a poem, ana wrote an Essay}
 → Ana did not see both Boris and Osip

The current proposal correctly predicts that neither falling nor rising disjunctive PolQs give rise to exclusivity.

(111) Did Ana write [a poem or an essay] \uparrow ? {ana wrote a poem\ana wrote an Essay}
 ↯ Ana didn't write both a poem and an essay

(112) Did Ana write [a poem or an essay] \downarrow ?
 ↯ Ana didn't write both a poem and an essay

Recall from section 4.7.1 that *Maximize Informativity* does not apply to PolQs. As a result, there is simply no restriction on the worlds that PolQs are compatible with. Hence, there are no exclusivity effects in disjunctive PolQs.

4.8.4 Comparison with existing accounts

There are a number of essential advantages inherent in the current proposal, as compared with prominent accounts in the literature. First, while Biezma and Rawlins (2012) model only the final fall and Roelofsen and van Gool (2010) make its semantic net contribution null, the current proposal acknowledges both the final falling boundary tone and the multiple accent - while distinguishing between multiple foci and multiple phonological phrases - as essential in AltQ composition and theoretically models both. This is a fundamental improvement, since it allows us to capture falling (disjunctive) PolQs and PolQs with contrastive foci. Second, the current proposal of the multiple accent and the final fall sets the stage for an extension to languages that rely on Q-particles or disjunction forms for AltQ composition. I account for the interaction between prosody and disjunction form in Basque and showed that Q-particles mirror the multiple accent. At this point, I do not see how an account that only models the final falling intonation could handle the crosslinguistic empirical picture. Finally, and most importantly, Biezma and Rawlins (2012) and Roelofsen and van Gool (2010) take the complex meaning of AltQs to be encoded in a special operator. Within the current proposal, exclusivity follows naturally from pragmatic principles that are independently motivated.

4.9 Conclusion

In this chapter, I put forward an analysis of the role of prosody in AltQ composition. I showed that the multiple accent and the final fall are of equal importance and that the combination of both cues determine what the overarching QUD looks like. I proposed that the final AltQ interpretation is derived from this prosody via a coherence mechanism that governs the interaction between the syntax-semantics mapping on the one hand, and the prosody-discourse mapping on the other hand.

In the next chapter, I continue with prosody and address two different types of disjunctive questions: Open Questions and Class Questions.

Chapter 5

Prosody II: Open Questions and Class Questions

5.1 Aims

In the previous chapter, I have discussed and modelled the role of pitch accents and the final boundary tones in polar and AltQs. To obtain a truthful picture of the empirical landscape and a better understanding of the role of prosody in the interrogative system, it is essential to look beyond the ‘canonical’ cases. In this chapter, I discuss two cases of disjunctive questions that have received little to no attention in the literature: Open Questions (henceforth: OpenQs) (Roelofsen and van Gool 2010, Roelofsen 2015, Westera 2017) and what I label Class Questions (henceforth: ClassQs). Most prominent accounts on disjunctive questions do not take these two question types into account (Han and Romero 2004b, Beck and Kim 2006, Biezma and Rawlins 2012, Pruitt and Roelofsen 2013) and cannot capture the final utterance meaning of these two question types. The first goal of this chapter is to broaden the empirical landscape and show that the distribution properties of OpenQs and ClassQs are a phenomenon worth investigating. The second goal is to understand the mechanisms that underlie the distribution of OpenQs and ClassQs.

The chapter is structured as follows: I begin with a discussion of the prosodic characteristics of OpenQs and ClassQs in section 5.2. I then turn to a comparison of AltQs, PolQs, OpenQs and ClassQs. I show that OpenQs and ClassQ are syntactically and semantically PolQs, and, crucially, are not a ‘hybrid’ between AltQs and PolQs. I argue that the distributional differences between PolQs, OpenQs and ClassQs are the result of additional pragmatic effects due to their specific prosody. In section 5.4, I show that the meaning effects and the answer patterns of OpenQs can

be derived from the ingredients we already have at hand. In particular, the work is done by the combination of Roberts's (1996) QUD framework and Westera's (2017) A-maxims. I then turn to ClassQs in 5.5, and show that the prosodic characteristics of ClassQs - a lengthened plateau rise on each disjunct- is not compositional in Westera's (2017) terms. I propose that this prosodic cue has two specialized meaning contributions: invoking a salient class and signalling a particular illocutionary flavor. This means that this chapter extends the compositional programme for intonational meaning, but also shows its limits. In section 5.6, I discuss a possible outlook and conclude the chapter.

5.2 Characteristics of OpenQs and ClassQs

5.2.1 The characteristics of OpenQs

OpenQs are disjunctive questions that are characterized by a pitch accent (L*H-) on each disjunct and end in a final rise (-H) (Roelofsen and van Gool 2010, Roelofsen 2015). An example of an OpenQ is given in (1).

- (1) Did Ana_{L*} write a POEM_{L-H%} or an ESSAY_{L*L-H%}? [OpenQ]

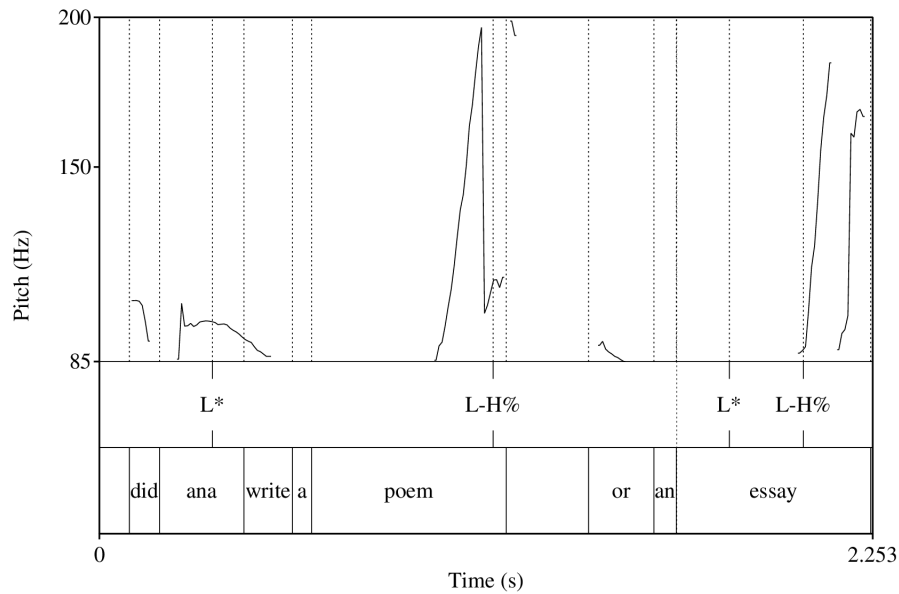


Figure 5.1: Pitch contour of an OpenQ (1).

OpenQs should not to be confused with a sequence of two PolQs, of which the second one is partially elided, see the underlying structure in (2).

(2) Did Ana write a poem_{L*H-} or ~~did Ana write~~ an essay_{L*H-H%}? [Disjoined PolQs]

Although the transcripts of these sentences look identical, OpenQs are a real third category, and not a sequence of PolQs. To see this, consider the OpenQ in (3).

(3) Did Ana_{L*L-H%} or Boris_{L*L-H%} see Osip_{L*H%}? [OpenQ]

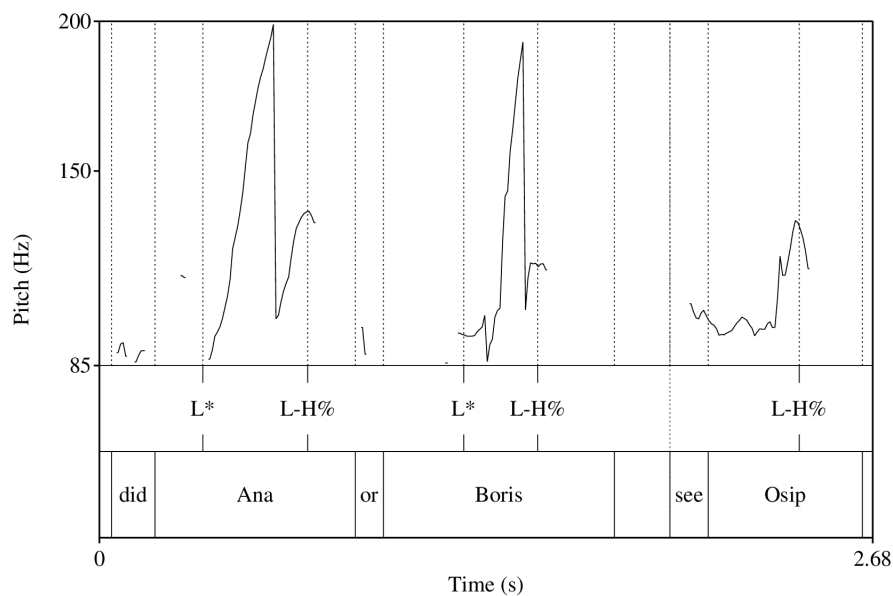


Figure 5.2: Pitch contour of an OpenQ (3).

Data like this show that OpenQs can appear in various positions in the sentence, in this case in the subject position. This shows that they cannot be derived from structures like (2).

Roelofsen and van Gool (2010) observe that OpenQs pattern between PolQs and AltQ in terms of the answers they license. The authors argue that OpenQs license a plain *no* answer, but not a plain *yes* answer, as illustrated in (6-a). Compare the answer paradigm in (4)-(6).

(4) Do you want ketchup \uparrow or mayonnaise \downarrow ? [AltQ]

- a. #yes
- b. #no
- c. ketchup/mayonnaise
- d. #mustard

(5) Do you want [ketchup or mayonnaise] \uparrow ? [PolQ]

- a. yes
- b. no
- c. (yes,) ketchup/mayonnaise

d. #mustard

(6) Do you want ketchup↑ or mayonnaise↑? [OpenQ]

a. #yes

b. no

c. (yes,) ketchup/mayonnaise/both

d. #mustard

We will soon see that, in order to fully understand OpenQs, we need to take a closer look at these data.

5.2.2 The characteristics of ClassQs

ClassQs were first discussed in previously published work (Meertens 2019a) and, to my knowledge, have otherwise not been explored in the literature. For an example, see (7).

(7) Do you want ketchup_{<len>} H*H-L% or mayonnaise_{<len>} H*H-L-%? [ClassQ]

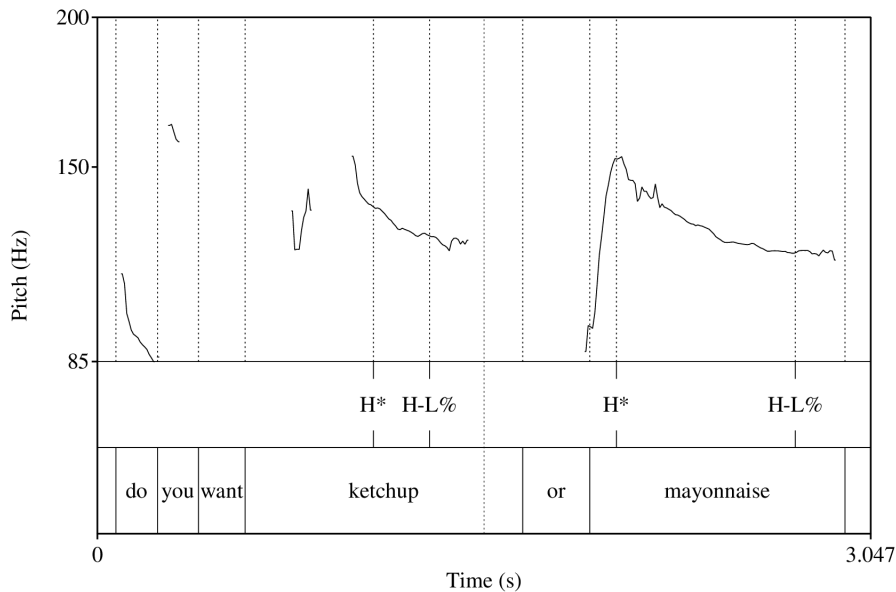


Figure 5.3: Pitch contour of a ClassQ (7).

ClassQs always consist of two phonological phrases and a pitch accent on each disjunct. The shape of the accent is a high plateau (H*H-L%). Furthermore, the disjuncts are typically lengthened. For this dissertation, the duration is not experimentally investigated and therefore it is not clear what the ratio of this lengthening is. It is clear however that in ClassQs, the disjuncts are always substantially longer than the disjuncts in their OpenQ (or AltQ and PolQ) counterparts. In the contour in 5.3, *ketchup* was pronounced in 1,094 seconds and *mayonnaise* took 1,371 seconds. In comparison, in the OpenQ, pronounced by the same speaker in the same session, *ketchup* had a duration of 0,494 seconds and *mayonnaise* took 0,486. Throughout the dissertation, I refer to the combination of the prosodic characteristics (the plateau rise and the lengthening) using dots and an arrow pointing up (...↑). As we will see shortly, ClassQs invoke a semantic category or class, hence the name.

5.3 The meaning effects of OpenQs and ClassQs

OpenQ and ClassQs bring about particular meaning effects.¹ In order to understand what underlies these effects, the first issue to tackle is whether OpenQs and ClassQs are semantically AltQs, PolQs, or a hybrid between AltQs and PolQs.

5.3.1 OpenQs and ClassQs are semantically PolQs

In terms of semantic denotation, OpenQs as well as ClassQs are PolQs. I support this claim with two arguments.

First, Han and Romero (2004a) observe that disjunctive questions containing a preposed negation lack an AltQ reading and are always interpreted as PolQs, as illustrated in (8).

- (8) a. Don't you want [ketchup or mayonnaise]↑? [PolQ]
 b. # Don't you want KETchup↑ or MAYonnaise↓? [AltQ]

Both OpenQs and ClassQs pattern like PolQs and are available under preposed negation, see (9).

¹Most of the data presented in this section was previously published in Meertens (2019b)

- (9) a. Don't you want KETchup↑ or MAyonnaise↑? [OpenQ]
 b. Don't you want KETchup...↑ or MAyonnaise...↑? [ClassQ]

Second, there is crosslinguistic support for the analysis of OpenQs and ClassQs as PolQs, found in languages that use morpho-syntactic or lexical cues to disambiguate between PolQs and AltQs. According to the speakers I consulted, in such languages, the PolQ strategy is used to compose OpenQs and ClassQs.² First, Finnish employs the interrogative disjunction form *vai* to compose AltQs, and the standard disjunction *tai* to compose disjunctive PolQs. This is illustrated in (10).

(10) *Finnish disjunctive questions*

- a. Haluatko sokeiria **vai** kermaa?
 Want.2SG.Q sugar **or_{alt}** cream
 'Do you want sugar or cream?' [AltQ]
- b. Haluatko sokeiria **tai** kermaa?
 Want.2SG.Q sugar **or_{stan}** cream
 'Do you want sugar or cream?' [PolQ (preferred)/AltQ]

Intonation in Finnish is not a distinctive cue to mark interrogativity. That is, neither the shape of the accents, nor the shape of the boundary tones (i.e. rise or fall) play a crucial role in Finnish question composition (Iivonen and Hirst 1998). Therefore, it is difficult to assess the characteristics of OpenQs without any further phonological examination. ClassQs are more straightforward, as they employ not only the plateau rise, but also lengthening in English. In Finnish, ClassQs are composed by lengthening each disjunct³ The disjunction form used in Finnish ClassQs, is the standard disjunction *tai* that we find in declaratives and PolQs.

- (11) Haluatko sokeiria... **tai** kermaa...?
 Want.2SG sugar **or_{stan}** cream
 'Do you want sugar or cream (or something)?' [Finnish- ClassQ]

²A proper phonological investigation of these data unfortunately goes beyond the scope of this dissertation. The data here reflect the judgments of a handful of native speakers. I view these data as a starting point for further research.

³These data are confirmed by three native speakers of Finnish. Needless to say, these data also need to be examined in an experimental setting.

Similarly, in Turkish, OpenQs and ClassQs look like PolQs morpho-syntactically. The used disjunction form in both OpenQs and ClassQs is *veya* and not the interrogative disjunction form *yoksa* that we find in AltQs. On top of that, we find one, sentence-final, appearance of the Q-particle *mI*, in contrast to AltQs, where we find *mI* in each disjunct (Göksel and Kerslake 2005). Compare the question types in (12).⁴

(12) *Turkish disjunctive questions*

- | | | |
|----|--|----------|
| a. | Ali iskambil mi (oynadi) yoksa futbol mu oynadi?
Ali cards MI play.PST or _{alt} football MI play.PST | [AltQ] |
| b. | Ali iskambil veya futbol oynadi mu ?
Ali cards or _{stan} football play.PST MI? | [PolQ] |
| c. | Ali iskambil↑,eh , veya futbol↑ oynadi mu ?
Ali cards, eh, or _{stan} football play.PST MI? | [OpenQ] |
| d. | Ali iskambil...↑ veya futbol...↑ oynadi mu ?
Ali cards or _{stan} football play.PST MI? | [ClassQ] |

The emerging picture is one in which speakers of Finnish and Turkish use PolQs strategies to compose OpenQs and ClassQs. Based on the observations that OpenQs and ClassQs are allowed under preposed negation, and are composed using PolQ morpho-syntax in Finnish and Turkish, I conclude that OpenQs and ClassQs are fundamentally PolQs.

5.3.2 The plain *yes* answer

The conclusion of the previous subsection calls for an explanation of the answer pattern of OpenQs observed by Roelofsen and van Gool (2010). What causes the tension between PolQs on the one hand and OpenQs on the other in terms of the not further specified *yes* answer? This tension was illustrated in (5-a) and (6-a) and is repeated below as (13) and (14). The same issue has to be solved for ClassQs that cannot be felicitously answered with a plain *yes*, as illustrated in (15).

⁴These data are given to me by three native speakers of Turkish, of which two were German-Turkish bilinguals. A proper phonological investigation is required to draw strong conclusions from these data.

- (13) Do you want [ketchup or mayonnaise]↑? [PolQ]
 ✓yes
- (14) Do you want ketchup↑ or mayonnaise↑? [OpenQ]
 #yes
- (15) Do you want ketchup...↑ or mayonnaise...↑? [ClassQ]
 #yes

As a first step, the data in (13)-(15) need to be revised. A pilot study by Arendt (2017) shows that a plain *yes* is a perfectly felicitous answer to OpenQs, as long as the contexts in which the question is asked makes it explicit that the overarching QUD is about the disjunction, and not about the individual alternatives. This is exemplified in (16), in which the context makes explicit that the speaker does not care about the individual alternatives. This pattern is duplicated for ClassQs, as illustrated in (17).

- (16) A: I need to take notes later. Will you bring a PEN↑ or a PENCil↑?
 B: ✓Yes.
- (17) A: I need to take notes later. Will you bring a PEN...↑ or a PENCil...↑?
 B: ✓Yes.

We conclude that for both OpenQs and ClassQs, a plain *yes* response is typically marked, but that this markedness disappears if the context makes it explicit that the individual disjuncts are not relevant. In this case, the second disjunct comes with the feeling of an afterthought. This effect needs to be captured by an account of OpenQs and ClassQs. We will return to this in section 5.4.

5.3.3 The class in ClassQs

ClassQs differ from OpenQs and PolQs in that they invoke a *class* of alternatives. The label *class* is used to describe three properties. The first one concerns the mandatory presence of unmentioned alternatives in the context. OpenQs and PolQs signal the **possibility** that there are other

alternatives available in the context, but this is not required. Witness (18).

(18) Context: *A party where the host only serves wine and beer.*

- a. ✓Do you want [wine or beer] ↑? [PolQ]
- b. ✓Do you want WINE↑ or BEER↑? [OpenQ]

Recall from the previous chapter that the final rise is the default strategy and that therefore the final rise is compatible with contexts in which it is clear that there are no alternatives available other than the mentioned ones. On top of that, in OpenQs and PolQs it is left open what the unmentioned alternatives are.

For ClassQs the availability of at least one unmentioned alternative in the context is a hard felicity condition for ClassQs. This is illustrated in (19).

(19) Context: *A party where the host only serves wine and beer.*

- # Do you want WINE...↑ or BEER...↑? [ClassQ]

The ClassQ in (19) signals that there is at least one other salient alternative - in this case - beverage to choose from - and it is implied that the speaker knows which one(s). This is something that requires further explanation.

The second property is that these obligatory unmentioned alternatives, together with the mentioned ones form a conceptually salient class that is known by both the speaker and the addressee. This can either be an extensional or an intensional class. An example of an extensional class is given in (20). Here, the speaker refers to a class of which each item is known by the addressee.

- (20) Do you want cheese...↑or lettuce...↑? [ClassQ]
- a. A burgerbar where optional toppings are: cheese, lettuce, pickles, cucumber, tomatoes.
 - b. A burgerbar where optional toppings are: cheese, lettuce, pickles, cucumber, tomatoes, various sauces, crispy bacon, chilli peppers, onions.
 - c. On Mars, trying to talk to an alien.

The plateau rise on each disjunct signals that the speaker introduces a class of alternatives. As a result, crispy bacon is part of the class in (20-b) (as it is clear for speaker and addressee that it belongs to the class), but not in (20-a) (since speaker and addressee both understand it does not belong the class).

The possibility of referring to an intensional class is exemplified in (21).⁵ Here, the addressee is aware of the intensional class, but does not (yet) know exactly what the list items are.

(21) *You want to borrow a costume for carnival from your friend. She shows you a random selection of items in her closet. You don't know exactly what she has in her closet. She asks:*

Do you want to be a butterfly...↑ or a Santa Claus...↑?

The second characteristic of ClassQs regards the exact status of these unmentioned alternatives. We know that in OpenQs and PolQs, there might be other alternatives contained in the motherQ. These potential alternatives are part of the motherQ and not part of the meaning of the PolQ or OpenQ that is being asked. I argue that this is different for ClassQs, in which the alternatives are not only included in the QUD but are part of the semantic denotation of a question. This is supported by the resolution conditions of ClassQs. In line with Roelofsen and Farkas (2015), I am using the felicity of answer particles as a diagnostic of understanding the resolution conditions of questions. In ClassQs, an unmentioned alternative that belongs to the same *class* as the expressed alternatives resolves the issue. In contrast, in PolQs and OpenQs, such alternatives might be contained in the QUD, but they do not resolve the issue for rising PolQs and OpenQs. This can be seen in (22), (23) and (24). Here, *mustard* is a salient alternative to *ketchup* and *mayonnaise*. While the answer *mustard* does not resolve the issue for the PolQ (see (22-d)) or the OpenQ (see (23-d)), it does for the ClassQ in (24-d).

(22) Do you want [ketchup or mayonnaise]↑? [PolQ]
 a. ✓ketchup

⁵Thanks to Maribel Romero for this example and to Ramona Wallner for the costume inspiration.

- b. ✓mayonnaise
- c. ✓none ((Roelofsen and van Gool 2010, Biezma and Rawlins 2012, a.o.))
- d. #mustard

(23) Do you want KEtchup↑ or MAyonnaise↑ ? [OpenQ]

- a. ✓ketchup
- b. ✓mayonnaise
- c. ✓none ((Roelofsen and van Gool 2010, a.o.))
- d. #mustard

(24) Do you want KEtchup...↑ or MAyonnaise...↑ ? [ClassQ]

- a. ✓ketchup
- b. ✓mayonnaise
- c. ✓none
- d. ✓mustard

This pattern is replicated for the other side of the coin: the negative answer. As shown in (26), a negative answer cannot be followed up by an unmentioned alternative in the class made salient in (25). This shows that the answer *no* to a ClassQ targets not only the mentioned alternatives, but also the salient unmentioned ones. This shows that such alternatives are part of the semantic denotation of the question. This is in contrast with PolQs and OpenQs, for which, given the same context (25), a negative answer suggesting an unmentioned alternative is acceptable. This is illustrated in (27) and (28).

(25) Context for (26), (27) and (28)

You are having burgers at your place with a friend and you want to offer her sauce. You have four sauces that are all standing on the table that you are eating on: ketchup, mayonnaise, mustard, and piccalilli.

(26) A: Do you want KEtchup...↑ or MAyonnaise...↑ ? [ClassQ]

B: # No, mustard

(27) A: Do you want [ketchup or mayonnaise]↑? [PolQ]
B: ✓No, mustard

(28) A: Do you want KEtchup↑ or MAyonnaise↑ ? [OpenQ]
B: ✓No, mustard

In sum, an analysis of ClassQs needs to model the observation that the presence of unmentioned salient alternatives in the context is obligatory, that those alternatives form a conceptually salient class, and that such alternatives are part of the question denotation of a ClassQ.

5.3.4 The illocutionary flavor of ClassQs

Diving into the distribution of question types across different illocutionary acts has proven to be a fruitful step in advancing our understanding of the semantics and pragmatics of disjunctive questions (Bolinger 1978, Beltrama et al. 2020). Interestingly, ClassQs can only be used in a restricted range of illocutionary acts. In this respect, they differ from PolQs and OpenQs which are more versatile, and from AltQs, which are also restricted, but show a different distribution.

In purely information-seeking questions, AltQs, OpenQs and PolQs can be freely used, but ClassQs cannot.⁶ This is exemplified in (30).

(30) **Information-seeking**

Your partner is about to leave the house and you want to know where she is going. You ask:

- a. ✓Are you going to the SUpermarket↑ or the BAkery↓? [AltQ]
- b. ✓Are you going to the [supermarket or the bakery]↑? [PolQ]
- c. ✓Are you going to the SUpermarket↑ or the BAkery↑? [OpenQ]

⁶By ‘purely’ information-seeking questions, I mean questions that serve no other goals than seeking information. There are examples of ClassQs as information-seeking questions with an ‘offering/inviting’ flavor. I do not consider these purely information-seeking.

(29) Thanks for bringing this issue to our attention Boris. Ana, do you know what the regulations say about this? Is it something to communicate to management...↑, or to keep between us...↑?

d. #Are you going to the SUpermarket...↑ or the BAkery↑? [ClassQ]

ClassQs come with a particular illocutionary flavor and are only felicitous in certain illocutionary uses, such as offers/invites and suggestions. This is illustrated in (32) and (33). While PolQs and OpenQs can be used to make offers or suggestions, those are precisely contexts from which AltQs are banned.⁷

(32) **Offer**

You are making burgers and you want to offer your friend some sauces, you ask:

- a. #Do you want KEtchup↑ or MAyonnaisse↓? [AltQ]
- b. ✓Do you want [ketchup or mayonnaise]↑? [PolQ]
- c. ✓Do you want KEtchup↑ or MAyonnaisse↑? [OpenQ]
- d. ✓Do you want KEtchup...↑ or MAyonnaisse...↑? [ClassQ]

(33) **Suggestion** Your friend is in the final stage of her PhD and is getting desperate about how to continue a particular chapter. You are thinking along:

- a. #Did you try talking to a PEER↑ or your SUpervisor↓? [AltQ]
- b. ✓Did you try talking to [a peer or your supervisor]↑? [PolQ]
- c. ✓Did you try talking to a PEER↑ or your SUpervisor↑? [OpenQ]
- d. ✓Did you try talking to a PEER...↑ or your SUpervisor...↑? [ClassQ]

The picture that emerges is one in which PolQs and OpenQs can be used freely across invites/offers, suggestions and information-seeking questions. AltQs can be used in info-seeking contexts, but neither in invites/offers nor in suggestions. ClassQs display the opposite distribution: They are felicitous as invites/offers and suggestions but can never be purely information-seeking.

⁷Note that so-called complement AltQs like (31) arguably can function as invites/offers (Beltrama et al. 2020). I do not consider these types here.

(31) Do you want COFFEE↑ or something ELSE ↓?

5.3.5 Data overview

A summary of the data presented in this section is given in Table 5.1

	plain yes answer	preposed negation	PolQ strategy X-linguistically	Class	Illocutionary act
AltQs	#	*(8-b)	*(10-a)/(12-a)	#	info-seeking
PolQs	✓	✓(8-a)	✓(10-b)/(12-b)	#	i-s/offer/suggestion
OpenQs	✓* (16)	✓(9-a)	✓(12-c)	#	i-s/offer/suggestion
ClassQs	✓* (17)	✓(9-b)	✓(11)/(12-d)	✓(24)/(19)/(20)	offer/suggestion

Table 5.1: Comparing OpenQs, ClassQs, PolQs and AltQs.

In the remainder of this chapter, I explore how far we can push the boundaries of the framework we are using to account for the distributional properties of OpenQs and PolQs. As we will see, the ingredients at hand can be extended far enough to account for OpenQs, but ClassQs require additional modelling.

5.4 Analysis of OpenQs

Let us start with OpenQs. I am aiming for an account that analyzes OpenQs as PolQs and at the same time captures the reduced felicity of a plain *yes* response to OpenQs. Recall that Roelofsen and van Gool (2010) argue that a plain *yes* is marked as an answer to OpenQs, based on examples like (6-a), repeated below as (34). This claim is revised by Arendt (2017), based on (16), repeated below as (35)).

(34) A: Do you want ketchup[↑] or mayonnaise[↑]? [OpenQ] B: #yes

(35) A: I need to take notes later. Will you bring a PEN[↑] or a PENCil[↑]? B: ✓Yes.

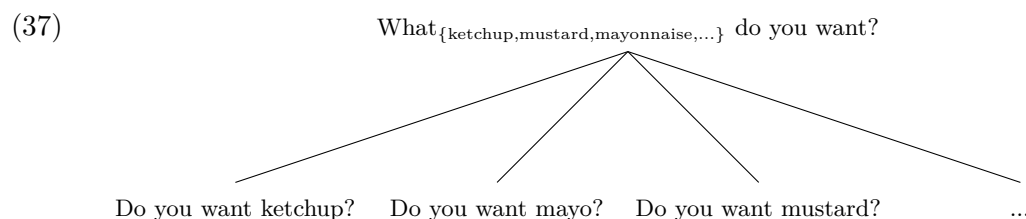
The analysis is presented in two steps. We start with the observation that OpenQs are compositionally PolQs. This follows directly from the coherence analysis presented in the previous chapter. I show that the QUD that is the result of OpenQ prosody, is coherent with PolQ semantics, but not with AltQ semantics. We then turn to the data in (34) and (35). I show this can be directly derived from the framework used in this dissertation, combining Roberts’s (1996) and Büring’s

(2003) hierarchical structure of discourse and the A-Maxims, developed in Westera (2017) and ?.

5.4.1 Prosody-discourse mapping of OpenQs

In order to evaluate coherence between the QUD generated by OpenQs and the semantic denotations of AltQs and PolQs, I first model the prosody-discourse mapping of OpenQs. In OpenQs, each disjunct receives a focal accent, which will be modelled as two instances of focus marking. This results in the LF in (36-a) and in the set of alternatives in (36-b). Concerning the A-Maxims, the final rise signals that it is not the case that the speaker believes that the mentioned alternatives are the only relevant and possible answers to the QUD. This is represented in the tree in (37).⁸

- (36) Do you want KETCHup↑ or MAYonnaise↑?
- LF: $[Q[[IP_1 \text{ you want ketchup}_F] \sim C \uparrow] \text{ or } [[IP_2 \text{ you want mayonnaise}_F] \sim C \uparrow]]$
 - $[[C]] \subseteq [[IP_1]]^f = [[IP_2]]^f = \{\text{you want ketchup, you want mayonnaise, you want mustard, ...}\}$
 - $[[C]] = \text{QUD} = \{\text{you want ketchup, you want mayonnaise, you want mustard, ...}\}$
 $= \text{'What}_{\{\text{ketchup, mustard, mayonnaise, ...}\}} \text{ do you want'}$



Note that the QUD for OpenQs is identical to the QUD for PolQs with narrow focus, that we saw in section 4.6.1 in the previous chapter. Yet, OpenQs differ from PolQs with respect to the felicity of the plain *yes* answer. We thus need an additional ingredient to account for this.

5.4.2 Evaluating coherence

The steps taken here are analogous to those in the previous chapter. I combine the QUD with the possible semantic denotations of the disjunctive question: the AltQ denotation and the PolQ

⁸For presentational reasons, the \exists -operator is not included in the LF. See section 5.4.2 for the full LF.

denotation. The coherent combination between the OpenQ QUD (in (38-c)) and PolQ denotation (in (38-b)) is given below.

- (38) *or* associates with \exists [PolQ LF]
- a. [Q [\exists_i [[[*IP*₁ you want ketchup_F] ~ C ↑] or_i [[[*IP*₂ you want mayonnaise_F] ~ C ↑]]]]]
 - b. Denotation: { $\lambda w'.\text{you want}_{w'} \text{ ketchup} \vee \text{you want}_{w'} \text{ mayonnaise}$ }
 - c. QUD: ✓ What_{ketchup, mayonnaise, mustard, ...} do you want?

We find a coherent relation between the prosody discourse mapping and the semantics. The negative answer to (38-b) reflects a negative evaluation of two alternatives in the QUD in (38-c): *ketchup* and *mayonnaise*, and thus serves as a partial answer. Assuming that the disjunction {ketchup \vee mayonnaise} is an implicit alternative in the QUD, the positive answer to the Hamblin set in (38-b) provides an evaluation of at least one alternative in the QUD. Thus, the PolQ Hamblin set in (38-b) is coherent with the QUD in (38-c).

Next, consider (39), in which OpenQ prosody is combined with the semantics that follow from the association of *or* with Q, i.e. the AltQ denotation. In this case, no coherent relation between the prosody-discourse mapping and the syntax-semantics mapping can be assessed.

- (39) *or* associates with Q [AltQ LF]
- a. [Q_i [[[*IP*₁ you want ketchup_F] ~ C ↑] or_i [[[*IP*₂ you want mayonnaise_F] ~ C ↑]]].
 - b. Denotation: { $\lambda w.\text{you want}_w \text{ ketchup}, \lambda w.\text{you want}_w \text{ mayonnaise}$ }
 - c. QUD: # What_{ketchup, mayonnaise, mustard, ...} do you want?

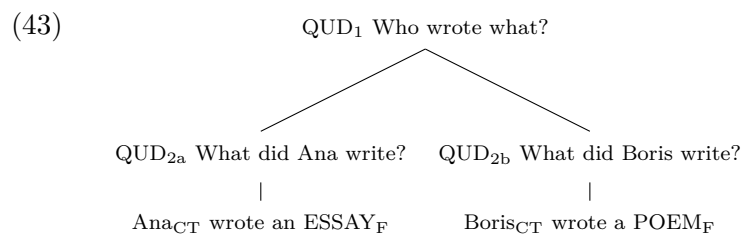
Let us walk through the steps. Given that the denotation in (39-b) is an AltQ, we apply *Maximize Informativity*, from which it follows that exactly one out of *ketchup* or *mayonnaise* is a true answer to the question. Both answers to (39-b) (*ketchup* and *mayonnaise*) provide an evaluation of an alternative in the QUD in (39-c). Thus, both answers serve as a partial answer to the QUD according to Roberts's (1996) criterion. However, the denotation in (39-b) and the QUD in (39-c) send messages that contradict each other. While the QUD in (39-c) signals that there might

This is exactly what happens in (40). The ‘Grandmother’ QUD (QUD₁ in (41)) is answered via the ‘Mother’ QUD (QUD_{2a} in (41)). In this case, it is clear from the context that there is an intermediate QUD (QUD₂).

As explained in chapter 2, one way to organize this orderly structure and to convey what layer of the QUD stack you are operating on, is prosodic marking. In particular, CT-marking is a well-known strategy to acknowledge that the QUD hierarchy consists of multiple layers (Büring 2003). An example of CT-marking to indicate multiple QUD layers is given below, accompanied with the corresponding tree.

(42) A: What about Ana, what did she write?

B: ANA_{CT} wrote a POEM_F



Note that if the speaker decides to answer the ‘Grandmother’ QUD (QUD₁) via the ‘Mother’ QUD (QUD₂) and thus skips a step, she has to acknowledge this via prosody. Not using the available system of indicating this via CT-marking leads to awkwardness. Consider the example in (44).

(44) A: What have the poets been up to?

B: ? Ana wrote a POEM_F

Here, B emits the CT accent on Ana and thus fails to convey the question is answered via the intermediate QUD *What did Ana write?*. The result is a frictionous and awkward response to the question asked by A.

I argue that the relation between the Hamblin set in (39-b) and the QUD in (39-c) is incoherent for exactly the same reason. The prosody in OpenQs fails to acknowledge that the QUD is answered via an intermediate MotherQ. I conclude that although there is congruence according to Roberts

(1996), there is no coherence between the question denotation in (39-b) and the QUD in (39-c).

5.4.3 The pragmatics of the plain *yes*

Up to this point, we have seen that OpenQ prosody is coherent with a PolQ denotation, but not with AltQ semantics. The remaining issue is the tension around the plain *yes* answer to OpenQs, as in (6-a) and (16) (repeated as (45) and (46) (Roelofsen and van Gool 2010, Arendt 2017).

- (45) A: Do you want ketchup \uparrow or mayonnaise \uparrow ? [OpenQ]
 B: #yes
- (46) A: I need to take notes later. Will you bring a PEN \uparrow or a PENCil \uparrow ? [OpenQ]
 B: \checkmark Yes.

I propose that the answer pattern in OpenQs is the result from a defeasible pragmatic inference that is invoked by the combination of QUD and Hamblin set. To see this, compare the disjunctive PolQ in (47) to the OpenQ in (48).¹¹

- (47) Do you want [ketchup or mayonnaise] $_F\uparrow$ [PolQ]
 a. LF: [Q \exists_i [IP_1 You want [ketchup or $_i$ an mayonnaise] $_F \sim C\uparrow$]]
 b. Denotation: $\{\lambda w'.\text{you want}_{w'} \text{mayonnaise} \vee \text{you want}_{w'} \text{ketchup}\}$
 c. QUD: \checkmark What $_{\{[k \text{ or } m],[s \text{ and } p],\dots\}}$ do you want? (via $\sim C$)
- (48) Do you want KETchup $_F\uparrow$ or MAyonnaise $_F\uparrow$ [OpenQ]
 a. LF: [Q \exists_i [IP_1 you want KETchup \uparrow] $\sim C$ or $_i$ [IP_2 you want MAyonnaise \uparrow] $\sim C$]
 b. Denotation: $\{\lambda w'.\text{you want}_{w'} \text{mayonnaise} \vee \text{you want}_{w'} \text{ketchup}\}$
 c. QUD: \checkmark What $_{\{\text{ketchup}, \text{mayonnaise}, \text{mustard}, \dots\}}$ do you want? (via $\sim C$)

In both cases, there is a coherent relationship between the Hamblin set and the QUD. However,

¹¹For the sake of simplicity, I attach a \sim -operator for each foci in OpenQs at IP-level. Note that for AltQs, there is strong evidence that the underlying structure is *IP-or-IP*, as discussed in chapter 3. No studies have investigated the underlying syntactic structure of OpenQs. It is possible that OpenQs syntactically represent the disjunction of two NPs (*NP-or-NP*). I leave open how to obtain the same result from attaching the \sim operator at NP level for each disjunct.

there is an important difference between the focus values of (47) and (48) and therefore between the indicated QUDs. In the PolQ in (47), there is a block accent on the disjunctive phrase, meaning the pronounced alternative *ketchup or mayonnaise* is the only one that is explicitly indicated to belong to the QUD. It is not made explicit whether the singular alternatives *ketchup* and *mayonnaise* are salient alternatives in the QUD. This is the default and unmarked strategy to ask the question denoted by the Hamblin set in (47-b). This is different for the OpenQ in (48). As observed by Roelofsen and van Gool (2010), using OpenQ prosody is marked as a strategy to ask the question denoted by the Hamblin set in (48-b). The answer to the question of why this is not the default strategy lies in the relation between QUD and Hamblin set. In OpenQs, there is a focal accent on each disjunct. The focus-semantic value of the disjunctive phrase ($\llbracket \text{KETchup or MAyonnaise} \rrbracket^f$) is $\{\text{ketchup, mayonnaise, ...}\}$. This signals explicitly, via the \sim -operator, that both alternatives are individually contained in the QUD. The ordinary value of the disjunctive phrase ($\llbracket \text{KETchup or MAyonnaise} \rrbracket^o$) is $\{\lambda w'. \text{ mayonnaise}_{w'} \vee \text{ketchup}_{w'}\}$. Since the ordinary semantic value always belongs to the focus value of an utterance, $\{\lambda w'. \text{ mayonnaise}_{w'} \vee \text{ketchup}_{w'}\}$ is also contained in the focus-semantic value. As a result, the alternative *ketchup or mayonnaise* is implicitly contained in the QUD. The fact that the speaker explicitly signalled that the individual alternatives *ketchup* and *mayonnaise* belong to the QUD gives rise to the inference that the speaker considers the individual alternatives as relevant and possible (cf. Roelofsen and van Gool's (2010) highlighting). The inference roughly comes about in the following way: If a speaker explicitly draws attention to two individual alternatives, she needs to have a good reason for it. Otherwise, she would have asked a question with default PolQ prosody. This explains the marked status of the plain *yes* answer to OpenQs illustrated in (45). If the speaker makes the effort to explicitly signal that she cares about the individual alternatives, it is uncooperative to respond with *yes*, without further specification. The data from Arendt (2017) show that this inference is defeasible. If the context is not in line with the inference that the speaker is interested in the individual alternatives, then the inference is not carried out and the plain *yes* answer is felicitous, as we saw in (46). In this case, the second disjunct with the accent is interpreted as an afterthought.

The described inference is very much in line with and inspired by the intuition described

by Roelofsen and van Gool (2010), labelled *highlighting*. The difference is that, according to the current account, no additional ingredient is needed to model this effect and it is derived from the interaction between the syntax-semantics mapping and the prosody-discourse mapping according to Roberts (1996), Westera (2017), and Westera (2018).

5.4.4 Concluding OpenQs

To summarize, the contribution of this section lies in two things. First, the data concerning preposed negation and the crosslinguistic composition of OpenQs show that OpenQs are semantically PolQs. This is explained by the coherence analysis presented in the previous chapter. OpenQ prosody is coherent with a PolQ denotation, but not with an AltQ denotation. Second, the answer pattern of OpenQs as discussed by Roelofsen and van Gool (2010) and, Arendt (2017) can be explained using the core ingredients of the proposal: Roberts’s (1996) QUD framework and Westera’s (2017) account of the boundary tones. We proceed with the analysis of ClassQs in the next section.

5.5 Analysis of ClassQs

We have now arrived at the analysis of ClassQs. The aim is to capture (i) that ClassQs are semantically PolQs, (ii) the mandatory status of unmentioned alternatives, (iii) the fact that the class is part of the semantic denotation of a ClassQ, and (iv) the particular illocutionary flavor of ClassQs. The first step is to explore the semantic-pragmatic contribution of the lengthened plateau rise. Based on the data in this chapter and previous work (Hirschberg 2004, Burdin and Tyler 2018), I propose that the multiple instances of the plateau rise signal that a speaker invokes a salient class of alternatives that is mutually known by speaker and addressee. The second issue is whether this meaning contribution of the multiple plateau rises is compositional in the sense of the pragmatic analysis of intonation (Westera 2017, 2018, a.o.). I show that this programme cannot be extended to capture the meaning of the plateau rise. Instead, I propose that the multiple plateau rises constitute a complex unit that carries a specialized meaning: It semantically invokes a salient class of alternatives and is restricted to offers/invites and suggestions. Before getting there, let us first turn to the meaning effects of the plateau rise.

5.5.1 Plateau rise

In section 5.3, I showed that ClassQs, characterized by a lengthened plateau rise in each disjunct, signal that the spelled-out alternatives belong to a class that is mutually known to speaker and addressee. Effects of this kind have been related to the plateau rises before. Hirschberg (2004), for example, argues that a plateau rise in declarative lists conveys that the speaker is talking about an ‘open-ended set’, which I interpret as a set that is kept open because the addressee is expected to fill in the blanks. Westera (2017) proposes that plateau rises are available if compliance with the A-Maxims does not need to be indicated. Those can be contexts in which it is already sufficiently obvious or already common ground. Additionally, Burdin and Tyler (2018) experimentally examined the meaning effect of the plateau rise in declarative lists. In the next subsection, I briefly summarize their findings.

5.5.2 Burdin and Tyler (2018)

Burdin and Tyler (2018) examined the contribution of plateau rises in a series of experiments. Here, I discuss an experiment that tested the hypothesis that the plateau rise makes reference to the speaker’s beliefs about the addressee’s knowledge state. The authors used a forced choice task. Participants were presented with a context, a recording of a list utterance (in square brackets [] in (49)), and the two options that the participants were forced to choose from. The goal of the experiment was to make a direct comparison between rises and plateau rises. Therefore, there were two recorded versions of the list items: one version with H*H-L% contours for the plateau condition and the other with L*L-H% for the rise condition. The lists were designed to be ambiguous as to whether they were complete or incomplete, and open or closed. Examples of lists are grocery lists, lists of ingredients for a recipe and such like. An example is given in (49).

(49) Stacie is on her way to the grocery store and calls Mark to ask if they need anything. Mark says:

[Oh, I’m going to make some bean dip! So I need some beans, corn, peppers]

Choose the option below which you think best matches what you just heard.

- Mark is pretty sure Stacie knows what goes in the bean dip
 - Mark is pretty sure that Stacie doesn't know what goes in the bean dip
- (Burdin and Tyler 2018, ex. 10,p. 9)

The results revealed an overall bias towards 'doesn't know' responses for both rises and plateau rises. However, for the rise there were significantly more 'doesn't know' responses compared to the plateau rise (75% vs. 59%). The authors attribute the high amount of doesn't know responses to a problem with the contexts. The difference between the rise and the plateau rise leads Burdin and Tyler (2018) to conclude that, in general, the plateau rise signals that the speaker makes an appeal to the epistemic state of the addressee, assuming the list items are shared knowledge.

5.5.3 The compositionality of the plateau rise

Let us take a step back here and consider how the intuition that ClassQs invoke a salient class and the findings of Burdin and Tyler (2018) relate to the compositional view of prosody (Ladd 2008, Westera 2017, 2018). If we assume prosodic categories that carry parts of 'meaning', we have to understand whether we want an analysis that is applicable across the board and, if so, to what extent. The data in section 5.3 and the findings of Burdin and Tyler (2018) show that the effect of the plateau rise is constant across speech acts. Both in declaratives and questions, the plateau rise 'points' at a salient class known to speaker and addressee. Thus, on this level, the contribution of the plateau rise is compositional in the sense that it can be applied in different speech acts, providing the same effect. This is in line with the core principle in Westera's (2017) framework: Certain prosodic categories have a direct relation with the very basic principles of discourse. In this case, a reference is made to a salient class that the speaker assumes to be known by the addressee. But, while this core idea can be maintained, ClassQs also show the limits of the compositional programme for intonational meaning as pursued by Westera (2017) and others (Ladd 2008, Steedman 2008, Nilsenová et al. 2006, Büring 2003, Westera 2018, 2019) and assumed in this dissertation.

Within Westera's (2017) framework, one can mix and match the placement of the accents and their shape and from that derive the meaning of an utterance, something that has been gratefully

exploited and extended in the previous and the current chapters of this dissertation. The plateau rise is not a compositional prosodic feature that can be combined freely, like the placement and the shape of the accents. In (50), for example, we observe that the plateau rise cannot be freely combined with the block accent or the final fall. In (50-b), we see that if the first disjunct receives a lengthened plateau rise, the second disjunct cannot be marked with a fall.¹² Likewise, if the first disjunct does not get an accent and we have a so-called block accent on the disjunctive phrase, the question cannot end in a plateau rise.

- (50) a. Do you want KEtchup↑ or MAyonnaise↓ [‘↑+↓’ → AltQ]
 b. # Do you want Ketchup...↑ or MAyonnaise↓ [‘...↑+↓’ →#]
 c. Do you want [ketchup or mayonnaise]↑? [‘block+↑’ → PolQ]
 d. # Do you want [ketchup or mayonnaise]...↑? [‘block + ...↑’ →#]

We find that if we have a lengthened plateau rise, it has to appear on every disjunct. I do not see how to derive this with the current treatment of intonational meaning and the tools at hand. The multiple plateau rises together form a complex unit with a specialized meaning that is not the result of systematically combining prosodic cues. Now, we have to differentiate between the two features: (i) the deictic, class-invoking effect of ClassQs and (ii) the particular illocutionary flavor. The first effect is invoked by the plateau rise in different speech acts. I model the overall contribution of multiple instances of the plateau rise in the next subsection.

In terms of the illocutionary flavor, recall that ClassQs are special because they are restricted to offers/invites and suggestions. I argue that this is an idiosyncratic property signalled by the lengthened plateau rises that does not follow from any other decomposition of the prosodic cues.¹³ The fact that a linguistic cue is associated with a special illocutionary force is not unique and has been attested previously. In the grammar, there are various examples of prosodic, lexical, and syntactic cues that simply signal a particular illocutionary flavor. This is not always the result of the combination of independent parts carrying portions of meaning. In terms of prosody, for

¹²See Westera (2017), p. 233 for a similar observation. The author argues that within his system, such utterances are only available if a speaker changes her mind while listing things and realises her list is exhaustive.

¹³As we will see in section 5.6.1, the same contour produces a similar effect in imperatives.

example, it is known that the prosodic realization of rhetorical PolQs differs from information-seeking PolQs (Dehé and Braun 2020). In a production study, Dehé and Braun (2020) found that information-seeking PolQs are mostly realized with a final high rise (H-H%), while rhetorical PolQs typically end in a plateau (H-L%). In addition, Dehé and Braun (2020) show that the nuclear accent is an important phonological cue to the difference between information-seeking PolQs and rhetorical PolQs. In their study, around a quarter of the rhetorical PolQs had a nuclear accent on the subject, while in information-seeking PolQs, the nuclear accent was typically placed on the syntactic object. As far as the literature goes, the rhetorical flavor or meaning of a question cannot be compositionally derived from the combination of a nuclear accent on the subject and a H-L% rise. Rather, these cues serve as a frozen or fixed signal indicating the complex illocutionary meaning of rhetorical questions.

An example of a fixed lexical signal is found in the literature on imperatives. Condoravdi and Lauer (2012) show that imperatives come with a variety of illocutionary forces: directives, wishes, permissions, and disinterested advice, as illustrated in (51).

- (51)
- | | | |
|----|---|------------------------|
| a. | Don't touch the hot plate! | [directive] |
| b. | Get well soon! | [wish] |
| c. | Have a cookie! | [permission] |
| d. | Take the train that leaves in 10 minutes. | [disinterested advice] |

In joint work with Sven Lauer, we observe that *melioratives* - imperative like forms with the adverb *better* - can only be used to express a directive (Meertens and Lauer 2018). Witness (52).

- (52)
- | | | |
|----|---|------------------------|
| a. | You better don't touch the hot plate! | [directive] |
| b. | #You better get well soon! | [wish] |
| c. | #You better have a cookie! | [permission] |
| d. | #You better take the train that leaves in 10 minutes. | [disinterested advice] |

Again, the illocutionary flavor of melioratives seems to be not compositionally derived, but rather to be idiosyncratically encoded. Altogether, I take the illocutionary flavor of ClassQs to be an

idiosyncratic property associated with the lengthened plateau rise that is particular to ClassQs. This is similar to what is known in the literature for prosody and rhetorical questions or the lexical item *better* and the illocutionary use of imperatives.

To conclude, the effects of the lengthened plateau rise that is characteristic for ClassQs cannot be derived compositionally in terms of Westera’s (2017) programme. Instead, there is a fixed relation between the prosodic cue and the deictic effect. We saw that this deictic effect of the plateau rise - the ‘pointing’ to a salient class’ - is also attested in declarative lists (Hirschberg 2004, Burdin and Tyler 2018). In the next section, my aim is to capture this effect and model the plateau rise. As explained above, with regards to the illocutionary flavor of ClassQs, I take this to be a special meaning effect of ClassQs. The relation between this illocutionary flavor and the prosody is similar to, for example, the relation between rhetorical questions and their prosody: as a frozen, non systematic relation.

5.5.4 Proposal: plateau rises signal a mutually known class

In this subsection, we are aiming for an analysis of the lengthened plateau rise that captures the deictic class effect and the PolQ status of ClassQs. As it requires a thorough phonological investigation, I do not disentangle the effect of lengthening and the effect of the plateau rise. I consider these two prosodic characteristics of ClassQs to represent a part of meaning together and do not consider them separately. Building on the observations on ClassQs previously described in this chapter, the generalization by Hirschberg (2004), and the experimental results of Burdin and Tyler (2018), I propose that the lengthened plateau rise in disjunctive questions signals that the speaker refers to a contextual class, mutually known to the speaker and the addressee, of which the mentioned alternatives are representatives. I define the concept of class in (53). Via an index on the plateau rise, this amounts to the denotation of disjunctive phrases with class prosody in (54).

- (53)
- a. [a] is a class represented by ‘a’
 - b. A class [a] is a set that mandatorily includes *a* and other elements that are taxonomically related to *a* via a salient relation available to both Speaker and Addressee

- (54) $\llbracket a \dots \uparrow_i \text{ or } b \dots \uparrow_i \rrbracket^g$ is defined only if $a \in g(i)$ and $b \in g(i)$ and there is at least one $x \neq a/\neq b$ such that $x \in g(i)$ and $g(i)$ constitutes a class for a and for b ;
if defined, $\llbracket a \dots \uparrow_i \text{ or } b \dots \uparrow_i \rrbracket^g = g(i)$

In prose, the overall semantic contribution of the lengthened plateau rises is to generate an index via which the speaker ‘points’ at a set of which all members belong to a salient class, hereby restricting the QUD to contain only alternatives to the elements of that class. In other words, the domain of discourse is presupposed to be restricted to what the speaker assumes to be the common ground between her and the addressee. This is similar to what happens in other question types, e.g. *WhQs*, but in the opposite direction. While in canonical *WhQs*, the domain is typically narrowed by the free variable C , it is widened in *ClassQs*. Consider the example in (55).

- (55) Context: *A supervisor to her student at a conference:*
‘Who did you talk to today?’

Here, the domain is naturally restricted to a set of individuals that exclude, for example, family members, friends, bus drivers, and so on. As we saw in section 5.3, in *ClassQs* the domain is not narrowed. In both cases, the semantics are affected but in a different direction.

Let us now apply the proposed definitions in (53) and (54) to the data. The LF of the example *ClassQ* is given in (58-a). In (58-b), we see that the denotation of the disjunctive phrase in which there is a lengthened plateau rise on each disjunct is simply $g(i)$. This $g(i)$ represents a class, which is a set containing the mentioned alternatives and unmentioned alternatives that hold a salient relation to the mentioned alternatives. The resulting denotation of the IP is given in (58-c). This set associates with the *exists-operator*, yielding (56-d). The final association with the Q-operator, maintains this denotation as the question meaning.

- (56) Do you want *KEtchup*... \uparrow or *MAyonnaisse*... \uparrow ?
 a. LF: $[Q [\exists [IP \text{ you want } KEtchup \dots \uparrow_j \text{ or } MAyonnaisse \dots \uparrow?]]]$ [\checkmark PolQ LF]
 b. $\llbracket KEtchup \dots \uparrow \text{ or } MAyonnaisse \dots \uparrow \rrbracket = g(i)$ (via (54))

- c. $\llbracket \text{you want KEtchup...}\uparrow \text{ or MAyonnais...}\uparrow \rrbracket = \lambda w. \text{want}_w(\text{you}, g(i))$
 $= \llbracket \text{you want KEtchup...}\uparrow \text{ or MAyonnais...}\uparrow \rrbracket = \{\text{you want ketchup, you want mayonnaise, you want mustard, you want piccalilli}\}$ (via (53))
- d. $\llbracket \exists \text{ you want KEtchup...}\uparrow \text{ or MAyonnais...}\uparrow \rrbracket = \{\text{you want ketchup} \vee \text{you want mayonnaise} \vee \text{you want mustard} \vee \text{you want piccalilli}\}$
- e. $\llbracket Q \exists \text{ you want KEtchup...}\uparrow \text{ or MAyonnais...}\uparrow \rrbracket = \{\text{you want ketchup} \vee \text{you want mayonnaise} \vee \text{you want mustard} \vee \text{you want piccalilli}\}$

Within this analysis, the set containing the class alternatives, projected from the lengthened plateau rise, associates with the \exists -operator, before associating with the Q-operator. This results in a PolQ semantics for ClassQs, which is in line with the data we saw in section 5.3. The markedness of the plain *yes* answer to ClassQs, as illustrated in (15), repeated below as (57), is derived via the focal accents in ClassQs, similar to what we saw for OpenQs.

- (57) Do you want ketchup... \uparrow or mayonnaise... \uparrow ? [ClassQ]
 #yes

5.5.5 Why ClassQs can never be AltQs

One issue remains unresolved: Why do ClassQs never receive an AltQ interpretation. That is, why is it not possible for the set with the mentioned and unmentioned alternatives belonging to a salient class to directly associate with the Q-operator. We saw in section 5.3 that ClassQs are always PolQs. The question is, why is an AltQ LF, as in (58), not available for ClassQs.

- (58) Do you want KEtchup... \uparrow or MAyonnais... \uparrow ? [# AltQ LF]
- a. LF: $[Q_j \llbracket \text{IP you want KEtchup...}\uparrow \text{ or}_{jj} \text{ MAyonnais...}\uparrow \rrbracket]$ [AltQ LF]
- b. $\llbracket \text{KEtchup...}\uparrow \text{ or MAyonnais...}\uparrow \rrbracket = g(i)$ (via (54))
- c. $\llbracket \text{you want KEtchup...}\uparrow \text{ or MAyonnais...}\uparrow \rrbracket = \lambda w. \text{want}_w(\text{you}, g(i))$
 $= \llbracket \text{you want KEtchup...}\uparrow \text{ or MAyonnais...}\uparrow \rrbracket = \{\text{you want ketchup, you want mayonnaise, you want mustard, you want piccalilli}\}$

onnaise, you want mustard, you want piccalilli} (via
 (53))

- d. $\llbracket \text{Q you want KEtchup...}\uparrow \text{ or MAyonnaise...}\uparrow \rrbracket = \{\text{you want ketchup, you want mayonnaise, you want mustard, you want piccalilli}\}$

We have seen that the lengthened plateau rise is not a compositional cue like the focal accents and the final fall or rise. Therefore, the coherence analysis that we saw above for OpenQs does not apply. At this point, I tentatively propose that the solution might lie in the incompatibility of the illocutionary flavor of ClassQs with AltQs. Recall from section 5.3 that ClassQs can only be offers/invites or suggestions and cannot be plain information-seeking questions. AltQs have a complementary distribution: They cannot be offers/invites or suggestions, but they can be information-seeking. The relevant data are repeated in (59)-(61).

(59) **Offer**

You are making burgers and you want to offer your friend some sauces, you ask:

- a. $\#$ Do you want KEtchup \uparrow or MAyonnaise \downarrow ? [AltQ]
 b. \checkmark Do you want KEtchup... \uparrow or MAyonnaise... \uparrow ? [ClassQ]

(60) **Suggestion** Your friend is in the final stage of her PhD and is getting desperate about how to continue a particular chapter. You are thinking along and ask:

- a. $\#$ Did you try talking to a PEER \uparrow or your SUPervisor \downarrow ? [AltQ]
 b. \checkmark Did you try talking to a PEER... \uparrow or your SUPervisor... \uparrow ? [ClassQ]

(61) **Information-seeking**

Your partner is about to leave the house and you want to know where she is going. You ask:

- a. \checkmark Are you going to the SUPermarket \uparrow or the BAKery \downarrow ? [OpenQ]
 b. $\#$ Are you going to the SUPermarket... \uparrow or the BAKery \uparrow ? [ClassQ]

The conclusion is that ClassQs cannot be AltQs because their illocutionary force is not compatible

with the illocutionary restrictions on AltQs.

5.5.6 Intermediate summary

To summarize, I argue that the lengthened plateau rise cannot be modelled within the compositional programme, because its contribution is not compositional in the sense that it can be freely combined with other prosodic cues. I propose that the plateau rise or the fusion of multiple plateau rises makes two meaning contributions. First, it indicates the presence of a salient class in declarative and interrogative lists, that is modelled via an indexical and part of the semantics. Second, in disjunctive questions, the plateau rise indicates that the question (the ClassQ) is an invite/offer or a suggestion and cannot be information-seeking. These two proposed features of the plateau rise account for (i) the mandatory presence of unmentioned alternatives, (ii) the fact that these unmentioned alternatives are contained in the semantic denotation of a ClassQ, and (iii) the particular illocutionary flavor of ClassQs. Finally, the illocutionary flavor also explains why ClassQs are semantically always PolQs: The illocutionary flavor of ClassQs is simply not compatible with the illocutionary range that AltQs cover.

5.6 Concluding remarks

Before concluding this chapter, I want to take the opportunity to point at directions for further research. In particular, I discuss occurrences of the plateau rise outside of the domain of disjunctive questions, the crosslinguistic data, and the notion of class.

5.6.1 Plateau rises beyond disjunctive questions

In this chapter, I approached the ‘meaning’ contribution of the plateau rise from the perspective of disjunctive questions. For those utterances, we observed that the plateau rise contributes what I labelled the introduction of a class. Additionally, we saw that Burdin and Tyler’s (2018) experiments showed that the plateau rise in declarative lists signals that the speaker assumes that the addressee knows the list items. To account for these data, I proposed that the plateau rise signals that the speaker makes reference to a class that is mutually known by speaker and addressee. This proposal

can possibly be extended to the plateau rise in other environments, including non-list utterances. Let me start with declaratives. Burdin and Tyler (2018) examined lists with at least three items. The following data suggest that a similar effect arises in disjunctive phrases with two items.

(62) Ana wants ketchup...↑ or mayonnaise...↑.

signals: Ana wants something out of the class represented by ketchup and mayonnaise

In addition, disjunctive imperatives with a plateau rise in each disjunct give rise to the deictic class effect. We also observe that in imperatives, the lengthened plateau rise is restricted to a limited range of illocutionary uses. In particular, disjunctive imperatives marked with the plateau rises on the disjuncts can never be a plain order. Witness (63).

(63) A: I'm feeling a bit under the weather. What shall I do?

B: Go home...↑ or take a painkiller...↑.

signals: The speaker proposes the addressee does something out of the mutually known class, represented by going home and taking a painkiller

Now, consider the non-list declarative, PolQ and imperative in (64).

(64) a. Ana wants ketchup...↑

b. Does Ana want ketchup...↑?

c. Take a painkiller...↑

In the utterances in (64), the plateau rise results in an impatient or impolite flavor. This follows from the analysis of the plateau rise as a device to make reference to the epistemic state of the addressee. By signalling that the addressee knows the list items, the speaker conveys that either the speaker is supposed to know or that she is not sure what would resolve the addressee's issues. The question that remains open is why utterances which have two or more list items do not necessarily give rise to this feeling of impatience or impoliteness. I leave this for future research.

5.6.2 Crosslinguistic examination

I showed that in Turkish and Finnish, ClassQs are composed using the PolQ disjunction form (Turkish and Finnish) and particle placement (Turkish). The next step within the enterprise of developing a compositional model of prosody and question meaning is to perform a phonological, empirical study, to confirm the presented judgments for Turkish and Finnish. It is not unlikely that there are languages that do not encode the ‘reference to the addressee’s epistemic state’ in the prosody. A crosslinguistic investigation could take us a step further in establishing what exactly the formal characteristics of class are. Another possible route to pursue is to examine similar effects that are the result of gestures. In a way, a wink from speaker to addressee also makes reference to something that is mutually known by speaker and addressee. Again, I consider the proposal in this chapter as a starting point. The topic not only outscopes the domain of disjunctive questions, but possibly the domain of the prosody-meaning interface as well. I leave this for future research.

5.6.3 Conclusion

This chapter provided a description of the meaning effects of OpenQs and ClassQs. In my view, the main contribution of this chapter is twofold. First, it advances our understanding of the compositionality of the prosody-meaning interface. While Roberts’s (1996), Büring’s (2003), and Westera’s (2017) ingredients could be straightforwardly extended to account for OpenQs, ClassQs posed a challenge and showed us the limits of the programme. Second, this chapter shifts our attention from the literature’s hyperfocus on rising and falling boundary tones and emphasizes the importance of other prosodic cues. The presented data broaden the empirical landscape in the prosody-meaning interface. So far, the compositional role of the focal accents, the final rise, and the final fall have been widely discussed. Here, I showed that other phonological features also play a compositional role. It is likely that similar generalizations can be made for other phonological cues.

Chapter 6

Q-particles I: the empirical picture

6.1 Aims

In various languages, AltQs are composed by attaching a Q-particle to each disjunct (Hagstrom 1998, a.o.). An example from Turkish is given in (4-a), in which the vowel-harmonic Q-particle *mI* appears twice (Kamali 2015).

- (1) *Turkish* [AltQ]
Ali iskambil **mi** (oynadi) yoksa futbol **mu** oynadi?
Ali cards MI play.PST or_{alt} football MI play.PST
‘Was it cards or football that Ali played?’

In Turkish, disjunctive PolQs are formed using only one Q-particle, that appears sentence-final. This is illustrated in (4-b) (Kamali 2015).

- (2) *Turkish* [PolQ]
Ali iskambil veya futbol oynadi **mu**?
Ali cards or_{decl/pol} football play.PST MI?
‘Is it true that Ali played cards or football?’

The central aim in the current chapter is to make progress towards a better understanding of the meaning contribution of Q-particles in AltQs. We begin with an empirical overview of four languages that employ Q-particles in question composition. Sinhala, Tamil and Turkish make use of multiple Q-particles to compose AltQs. I also discuss the usage of Q-particles in Macedonian, in which the placement of multiple Q-particles in AltQs is marked. As we will see, in this set of languages, Q-particles can always be used in PolQs, invoking a focusing effect when attached

locally, and sometimes in *Wh*Qs. This empirical fact has two theoretical implications concerning the meaning contribution of Q-particles in AltQs: (i) there always is a connection with Q-particles in PolQs and (ii) there sometimes is a connection with Q-particles in *Wh*Qs.

We concentrate on the first issue: What is the meaning contribution of Q-particles in PolQs and can we unify the focusing effect of locally attached Q-particles in PolQs and the crucial role of multiple Q-particles in AltQs? Given the robust pattern, the avenue taken is to use the narrow placement of Q-particles in PolQs as a window into AltQ meaning. That is, I assume that the contribution of Q-particles is exactly the same in PolQs as in AltQs. To get to the key of unification, we have to understand what exactly the common denominator is in PolQs in different languages that are composed with a locally placed Q-particle. Based on a close examination of the behavior of Q-particles in PolQs in Turkish and Macedonian, I call into question the claim by Kamali and Buring (2011) that the Turkish Q-particle *mI* always contributes a uniqueness presupposition. I then conclude that the underlying mechanism determining AltQ meaning is not related to uniqueness.

The chapter is structured as follows. Section 6.2 provides an overview of the distribution of Q-particles in Sinhala, Tamil, Turkish and Macedonian. Section 6.3 discusses the relation between focus marking and the position of Q-particles in PolQs, as described in the literature. Section 6.4 addresses the pragmatic or *usage* effect of locally attached Q-particles in PolQs. As we will see, the local attachment of Q-particles in Turkish has been claimed to always invoke a uniqueness presupposition (Kamali and Buring 2011). I challenge this idea by pursuing a close examination of the data put forward by Kamali and Buring (2011) and presenting data from a pilot study by Karatas (2017). I then follow up on the issue of uniqueness and present empirical data on Macedonian PolQs that was previously published in Jordanoska and Meertens (2020). The experimentally collected data show that in Macedonian, narrow Q-particles in PolQs do not give rise to a uniqueness presupposition, which leads me to conclude that the contribution of the Q-particles in AltQs is not to invoke such a presupposition. Section 6.5 presents a chapter summary and the conclusions.

6.2 Q-particles in Sinhala, Tamil, Turkish and Macedonian

Before turning to the connection between Q-particles in AltQs and Q-particles in other question types, let us turn to the description of the data in four languages: Sinhala, Tamil, Turkish, and Macedonian.

6.2.1 Sinhala

Sinhala is an Indo-Aryan language spoken in Sri Lanka. It is an SOV language in the base, but has a relatively free word order. In Sinhala, the Q-particle *də* appears in AltQs, PolQs, and *Wh*Qs. In addition, *də* appears in certain *wh*-indefinite pronouns (Slade 2011). Let me start with *Wh*Qs. Compare the declarative in (3) to the *wh*-question in (4).

- (3) Chitra potə gatta
Chitra book bought.A
'Chitra bought the book.' (Slade 2011, ex.1,p.19)

- (4) Chitra monəwa də gatte
Chitra what Də bought.E
'What did Chitra buy?' (Slade 2011, ex.2,p.19)

In (4), *də* is attached locally, that is, it immediately follows the *wh*-element. In *wh*-questions, *də* can also be attached non-locally. This is possible in embedded *wh*-questions under particular verbs (such as (5)), rhetorical questions, and degree questions (Morita 2019). In matrix questions, *də* cannot be attached at the right edge of a clause, as shown in (6) (Kishimoto 2005, Cable 2010, Slade 2011).¹

- (5) ooya kauru aawa də kiyəla dannəwa də?
you who came.A Də that know.A Də
'Do you know who came?' (Slade 2011, ex.20,p.22)

- (6) *Chitra monawa gatta də?
Chitra what buy Də
(Kishimoto 2005, ex.4,p.4)

¹For an explanation, I refer to Cable (2010), section 2.6, p.43.

In PolQs, the placement of the Q-particle can appear clause-final, taking wide scope, resulting in a neutral question, see for example (7) (Kishimoto 2005).

- (7) Chitra ee potə kieuwa də?
 Chitra that book read.A Də
 ‘Did Chitra read that book?’ (Kishimoto 2005, ex.21b,p.11)

Furthermore, *də* can be attached locally, in which case it induces a focus effect (Kishimoto 2005), witness (8)

- (8) Chitra ee potə də kieuwe?
 Chitra that book Də read.E
 ‘Was it that book that Chitra read?’ (Kishimoto 2005, ex.21a,p.11)

In AltQs, the particle *də* mandatorily appears in each disjunct (Slade 2011), as illustrated in (9).

- (9) oyaa maalu də mas də kanne?
 you fish Də meat Də eat.E
AltQ: ‘Which one do you eat: fish or meat?’ (Weerasooriya 2019, ex.36,p.12)

In the polar counterpart of (9), there is only one occurrence of *də*. Disjunction is realized by the placement of the particle *hari* in each disjunct. This is the default disjunction in Sinhala and also occurs in declaratives. See the disjunctive PolQ in (10) and a declarative sentence containing disjunction in (11) (Slade 2011, Weerasooriya 2019).

- (10) Oyaa maalu hari mas hari kanəwa də
 you fish HARI meat HARI eat.A Də
PolQ: ‘Is it true that you ate meat or fish?’ (Weerasooriya 2019, ex.35,p.12)

- (11) John Giita hari Maala hari hamuuna.
 John Giita HARI Maala HARI meet.PST.A
 ‘John met Giita or Maala.’ (Weerasooriya 2019, ex.19a,p.8)

Furthermore, Sinhala employs the verb ending *-e* to signal there is a constituent that bears focus. This can be distinguished from the neutral *-a* ending. Observe the difference between (7) and (8). In (7), the Q-particle scopes over the verb, that takes the neutral *-a* ending. In contrast, (8) has

a locally attached Q-particle, signalling that the constituent it is adjacent to is focused. In that case, the verb is *-e* marked. Sinhala focus constructions are argued to always carry what I label an *existence presupposition*: the presupposition that there is at least one alternative of the semantic type of the *wh*-phrase for which the proposition is true. This is reminiscent of English (pseudo-)cleft sentences, as in (12).²³ This presupposition does not only arise in questions, but also in certain declaratives containing an *-e* marked verb, witness (13) (Slade 2011).

(12) Was it John who came?

presupposition: Someone came

(13) koləmbə giyē gunē nevey.
Colombo.DAT go.PST.E Gune NEG
'It is not Gune who went to Colombo.'

presupposes: Someone went to Colombo (Slade 2011, ex.22,p.79)

It is not the case that for all declaratives, the *-e* ending signals focus and thus gives rise to an existence presupposition. In, (14), for example, the reading is neutral.⁴

(14) gunē koləmbə giyē nææ
Gunee Colombo go.PST.E NEG
'Gunee did not go to Colombo.' (Slade 2011, ex.38,p.69)

Concerning questions, the difference between *-e* and *-a* marking on the verb is illustrated in the difference between (15) and (5), repeated below as (16). The example in (15), on the one hand, gives rise to the presupposition that someone came. (16) on the other hand, does not have such a presupposition (Kishimoto 2005, Slade 2011).

(15) Ooya kau də aawe kiyəla dannəwa də?
you who də came.E that know.A də
'Do you know who came?'

²See De Vaugh-Geiss et al. (2018) for experimental work challenging the robustness of the existence presupposition in clefts and pseudo-clefts.

³See Slade (2011) for a diachronic analysis of pseudo-clefts in Sinhala.

⁴The negation form *nææ* in (14) is the basic negation found in neutral sentence. In contrast, the form *nevey*, used in (13) is a specifically focus-associated constituent negator. Slade (2011) assumes the *-e* ending in (14) is a "pseudo-*e*", as it has none of the properties typical of the special focussing *-e* ending.

presupposes: someone came

(Slade 2011, ex.21,p.23)

- (16) ooya kauru aawa də kiyəla dannəwa də?
you who came.A də that know.A də
'Do you know who came?'

does **not presuppose** that someone came

(Slade 2011, ex.20,p.22)

The existence presupposition in (15) is illustrated by the observation that answering the question with *yes, nobody came* is infelicitous. This contrasts the question in (16), to which the negative answer is felicitous response.

Finally, *də* is used to compose indefinite pronouns. Using *də* results in an exclusive interpretation of *somebody* (Weerasooriya 2019). This is illustrated in (17).

- (17) John kaawə də hamu-un-a
John who də meet-PST-A
'John met somebody' (exclusive → at most one out of {a,b,c})

(Weerasooriya 2019, ex.41,p.16)

To summarize, the Q-particle *də* occurs in WhQs, AltQs, PolQs and indefinites. The position of *də* in the sentence has a direct effect on the final question meaning. In AltQs, *də* occurs in each disjunct.

6.2.2 Tamil

The second language of our interest is Tamil. Tamil is a Dravidian language, mostly spoken in Sri Lanka and India and usually has an SOV word order. Tamil employs the Q-particle *-aa* that occurs in PolQs and AltQs, but not in WhQs.⁵⁶ To start, consider the declarative in (18) and the WhQ in (19), that is composed without a Q-particle.

- (18) Chitra gramatu.kku po.n.aal
Chitra village.DAT go.PST.3SGF

⁵The data in this section is shared with me by Rajamathangi S. I am very grateful for her patience and willingness to help me.

⁶There is regional variance with respect to the realization of the Tamil Q-particle. While most Indian variants employ *aa*, Sri-lankan Tamil uses *oo*. This is a phonetic difference and there are no distributional differences between *aa* and *oo*. Thanks to Rajamathangi S. and Kengatharaiyer Sarveswaran for their valuable input on this topic.

‘Chitra went to the village’ (Rajamathangi S., p.c.)

- (19) Gramatu.kku yaru po.na
village.DAT who.NOM go.PST
‘Who went to the village?’ (Rajamathangi S., p.c.)

Concerning PolQs, we observe the same pattern as in Sinhala. The Q-particle appears in clause-final position in ‘neutral’ questions. If the particle is attached locally, it has a focussing effect, as illustrated in (20) and (21).

- (20) Tharindu appil sapitan aa?
Tharindu apple ate AA
‘Did Tharindu eat an apple?’ (Rajamathangi S., p.c.)

- (21) Tharindu appil aa sapitan?
Tharindu apple AA ate
‘Was it an apple that Tharindu ate?’ (Rajamathangi S., p.c.)

The questions with narrow *-aa* do not only give rise to a focussing effect, but also to an existence presupposition, similarly to what we saw for Sinhala. This is not the only strategy in Tamil to ask a question with an existence presupposition. There is also the possibility to compose a pseudo-cleft, by nominalizing the verb, as in (22). Note that in this case, the particle appears clause-finally.

- (22) Kardz vilayad.i.kond.irun.t.adu Tharindu aa
Cards play.ADVPART.PROG.be.PST.NOMZ Tharindu AA
Was it Tharindu that was playing cards? (Rajamathangi S., p.c.)

AltQs are composed with the Q-particle *-aa* in each disjunct, as illustrated in (23). Disjunctive PolQs are formed with only one Q-particle, appearing clause-finally, as shown in (24).

- (23) Tharindu kofiy aa ila tiy aa kudi.cc.aan
Tharindu coffee AA or tea AA drink.PST.3SGM
AltQ: ‘Which one did Tharindu drink: coffee or tea?’ (Rajamathangi S., p.c.)

- (24) Tharindu kofi ila ti kudi.cc.aan aa
Tharindu coffee or tea drink.PST AA
PolQ: ‘Is it true that Tharindu drank coffee or tea?’ (Rajamathangi S., p.c.)

In short, the Tamil Q-particle *-aa* occurs in polar and AltQs. *Aa* does neither appear in *wh*-questions, nor in declaratives. In PolQs and AltQs, Tamil *aa* patterns with Sinhala *də*: In PolQs the narrow placement of *aa* induces a focal effect and gives rise to an existence presupposition. In AltQs, *aa* mandatorily appears in each disjunct.

6.2.3 Turkish

Let me turn to our third Q-particle language. Istanbul Turkish (henceforth: Turkish) is an SOV language with relatively free word order, mainly spoken in Turkey. In Turkish, the Q-particle *mI* mandatorily appears in PolQs and AltQs. Let us start with PolQs. Analogous to Tamil and Sinhala, the Q-particle has a focussing effect when attached locally (Kamali 2015). Compare the ‘neutral’ PolQ in (54-a) to the one in (54-b).⁷

(25) Ali iskambil oynadi mi?
 Ali cards play MI
 ‘Did Ali play cards?’

(26) Ali mi iskambil oynadi?
 Ali MI cards play
 ‘Was it Ali who played cards?’

It is not entirely clear whether PolQs with locally attached *mI* give rise to an existence presupposition, like we saw for Sinhala and Tamil. Kamali and Buring (2011) claim that questions with local *mI* give rise to an existence presupposition. However, as we will see shortly, the robustness of Kamali and Buring’s (2011) observation is questionable.

In AltQs, the Q-particle *mI* is attached to each disjunct, as shown in (4-a), repeated as (23) below. Disjunctive PolQs make use of only one Q-particle, appearing sentence-finally (Göksel and Kerslake 2005), as illustrated in the repeated example in (28).

(27) Ali iskambil mi (oynadi) yoksa futbol mu oynadi?
 Ali cards MI play.PST or_{alt} football MI play.PST
AltQ: ‘Which one did Ali play: cards or football?’

⁷Thanks to Tolga Can and Seda Karatas for helping me with the Turkish data in this section

- (28) Ali iskambil veya futbol oynadi mu?
 Ali cards or_{decl/pol} football play.PST MI?
PolQ: ‘Is it true that Ali played cards or football?’

There is also the possibility to attach *mI* to the disjunctive phrase in a disjunctive PolQ, as illustrated in (29).

- (29) Ali iskambil veya futbol mu oynadi?
 Ali cards or_{decl/pol} football MI play.PST?
PolQ: ‘Was it [cards or football] that Ali played?’

The default strategy to compose *WhQs* in Turkish is without the Q-particle *mI*, as illustrated in (30).

- (30) Resimleri kim değerlendirecek?
 Paintings who evaluate
 ‘Who will evaluate the paintings?’ (Göksel and Kerslake 2005, ex.41,p.259)

There is one exception in which *mI* appears in *WhQs*: echo-*WhQs* (Göksel and Kerslake 2005, Sezer 2012). Echo-*WhQs* differ from canonical *WhQs* both in their form and in their discourse properties. In short, echo-*WhQs* suggest that the *wh*-element marks a ‘gap’ of which the discourse participants know that is has already been closed (Beck and Reis 2018). This is illustrated for English in (31).

- (31) A: Boris wrote a poem about Stalins dictatorship.
 B: Boris wrote a poem about WHAT?

In Turkish echo-*WhQs*, the Q-particle *mI* can be attached to a constituent, as illustrated in (32)

- (32) HüYA mi kim?
 Hülya MI who?
 ‘Who is HÜLya?’ (‘Are you asking who Hülya is?’)

(Göksel and Kerslake 2005, ex.105,p.267)

Additionally, *mI* can appear adjacent to the *wh*-element, giving rise to a slightly different echo- *WhQ* meaning (Sezer 2012). Compare the canonical *WhQ* in (33) to the echo question in (34).

(33) Kim öv.dü Ali'yi?
Who beat.PST Ali.ACC
'Who beat Ali?' (Sezer 2012, ex.8a,p.32)

(34) Kim mi öv.dü Ali'yi?
Who MI beat.PST Ali.ACC
'WHO beat Ali?' (Sezer 2012, ex.8b,p.32)

Furthermore, attaching *mI* to the *wh*-element is felicitous in contexts in which the addressee wants the speaker to confirm that she understood the question correctly, as can be seen in (35-b) (Kornfilt 1997).

(35) a. A: Yarin akjsam nere.ye gid.ecek.sin?
A: tomorrow evening where.DAT go.FUT.2SG
A: 'Where will you go tomorrow evening?'
b. B: Yarin akjsam nere.ye mi gid.eceğ.im?
B: tomorrow evening where.DAT MI go.FUT.1SG
B: 'Where I am going tomorrow evening?' (Kornfilt 1997, ex.167,p.38)

The dialogue in (35-b) can be followed by the speaker A confirming that the addressee B understood the question correctly, after which B can answer the question (Kornfilt 1997).

Finally, *mI* can never occur in declarative contexts. Altogether, In Turkish the Q-particle *mI* occurs obligatorily in AltQs and PolQs and directly influences the interpretation of a question. The usage of *mI* in *WhQs* is restricted: *mI* does not occur in run-of-the-mill information-seeking *WhQs*, but only in non-canonical echo *WhQs*.

6.2.4 Macedonian

We have arrived at the final language of this chapter. Standard Macedonian (henceforth: Macedonian) is a relatively understudied Eastern South-Slavic language, mostly spoken in North-Macedonia. It has a base word order of SVO and employs the optional Q-particle *li*. This Q-particle can be

found in many slavic languages, but as there are crucial differences between languages, the data presented in this section only concern Macedonian. The Q-particle *li* is mainly used in PolQs. It can appear sentence-initially in the cliticized form *dali*, or attached locally (Rudin et al. 1999). Consider the questions in (36)-(38). In (36), the question is composed using only intonation and no Q-particle, resulting in a ‘neutral’ question. In (37) the Q-particle *dali* has wide scope which again results in a ‘neutral’ question. and in (38) the Q-particle *li* is attached locally, signalling that the constituent it is adjacent to, is focused.⁸

- (36) Sakaš musli?
 want.2SG muesli
 ‘Do you want muesli?’ (Izabela Jordanoska, p.c.)
- (37) Dali saka-š musli?
 DALI want.2SG muesli
 ‘Do you want muesli?’ (Izabela Jordanoska, p.c.)
- (38) Musli li saka-š?
 muesli LI want-2SG
 ‘Do you want MUESLI?’ (Izabela Jordanoska, p.c.)

As I will show in section 6.2.4, PolQs with local *li* do not give rise to an existence presupposition (Jordanoska and Meertens 2020).

Concerning AltQs, the default strategy in Macedonian is to use intonation. Like in English, AltQs are characterized by an accent on each disjunct and a final falling boundary tone. Disjunctive PolQs are typically realized with block intonation on the disjuncts and a final rise. Compare the AltQ in (39) to the disjunctive PolQ in (40).

- (39) (Dali) saka.š MEso↑ ili RIba↓?
 DALI want.2SG meat or fish
AltQ: ‘Which one do you want: meat or fish?’ (Izabela Jordanoska, p.c.)
- (40) (Dali) saka.š [meso ili riba]↑?
 DALI want.2SG meat or fish
PolQ: ‘Is it true that you want meat or fish?’ (Izabela Jordanoska, p.c.)

⁸I would like to thank Izabela Jordanoska for helping me with the data in this section, part of which appears in our joint work Jordanoska and Meertens (2020).

AltQs with multiple Q-particles, like we saw for Sinhala, Tamil, and Turkish, are marked in Macedonian and the availability of this form is speaker dependent. If they are available at all, AltQs of this form cannot be used out of the blue or in run-off-the-mill contexts. Interestingly, their felicity increases in contexts in which the addressee is avoiding a question that has already been asked. AltQs with two Q-particles have furthermore been reported to have an insistent or pushy flavor, i.e. this form can be felicitously used as a repeat question. An example of a context in which such an AltQ is felicitous, is given in (41-b).

- (41) a. A: (Dali) MEso↑ ili RIba↓ saka.š?
 A: DALI meat or fish want.2SG
 A: ‘Which one do you want: meat or fish?’
 B: A: Hmm I love meat!
 A: Ok, but which one do you want?
 B: And fish is so healthy!
- b. A: Meso **li** riba **li** saka-š?
 A: meat LI fish LI want-2SG
 ‘Which one do you want: meat or fish?’ (Izabela Jordanoska, p.c.)

The distribution of the Q-particle *li* in *Wh* Qs is restricted. *Li* does not appear in canonical *Wh*Qs. There are, however, specific types of *Wh*Qs that license *li*, e.g. so-called *what the hell*-questions (Rudin et al. 1999), as illustrated in (42).

- (42) Što li najde vo nego?
 what LI find.3SG in 3SG.DAT
 ‘Whatever did (s)he see in him?!’ (Rudin et al. 1999, ex.41a,p.561)

In general, *li* is banned from declaratives.⁹

⁹In Jordanoska and Meertens (2020), we point out that *li* is licensed in declaratives in contexts in which there is an intensive and durative aspect.

- (43) Context: *This guy lost his keys in the stadium. Everybody thinks he is just watching the game...*
 . A toj bara *(li) bara.
 and.CONT 3SG.M.PRO search.3SG LI search.3SG
 ‘But he is searching and searching.’ (google search)

As this context is so restricted, I do not consider these data here. It has also been reported that *li* can appear in

To sum up, we have seen that the Q-particle *li* optionally occurs in PolQs, in which it induces a focus effect when attached locally. Moreover, we find a very restricted usage of *li* in Macedonian *Wh*Qs. Finally, Macedonian AltQs do not directly pattern with Sinhala, Tamil and Turkish. It is not mandatory to have multiple instances of *li* in AltQs. Instead, the AltQ with multiple Q-particles, if acceptable at all, are restricted to repeat contexts in which the addressee is avoiding answering the question.

6.2.5 Data summary

The distribution of the Q-particles in Sinhala, Tamil, Turkish, and Macedonian is summarized in Table 6.1. the ✓ symbol indicates that a form is felicitous and unmarked across the board, while × means that a form cannot be used in run-off-the-mill contexts. If a form is marked in run-off-the-mill contexts, but can be used to express a specialized meaning, this meaning is given in brackets.

	Sinhala <i>də</i>	Tamil <i>aa</i>	Turkish <i>mI</i>	Macedonian <i>li</i>
<i>Wh</i> Qs	✓ (4)	×(19)	×(30)-(34) (echo)	×(42) (what the hell)
PolQs broad → neutral	✓ (7)	✓ (20)	✓ (54-a)	✓ (37) (optional)
PolQs local → focus	✓ (8)	✓ (21)	✓ (54-b)	✓ (38) (optional)
AltQs (...Q or ...Q)	✓ (9)	✓ (23)	✓ (23)	×(41-b) (repeat question - speaker dependent)
existence presupposition for local Q	✓	✓	×	×

Table 6.1: Distribution of Q-particles in Sinhala, Tamil, Turkish and Macedonian.

conditionals. Again, I do not address these data here.

Though there are distributional differences between the languages in Table 7.1, the emerging picture is one in which Q-particles appear in each disjunct in AltQs. Besides that, Q-particles can be used in PolQs in all languages, while only Sinhala employs Q-particles in unmarked *Wh*Qs. Concerning PolQs, Q-particles have a focusing effect when attached locally in PolQs. Macedonian behaves differently from Sinhala, Tamil and Turkish when it comes to the mandatory multiple Q-particles in AltQs. Since the placement of Q-particles in PolQs in Macedonian is optional to begin with, I do not see this as a language that behaves in a complete different way. Instead, as we will see shortly, the optionality of Macedonian *li* offers a nice window into the contribution of the Q-particles. The important point here is the empirical fact that if a language employs Q-particles in AltQs, it also uses these Q-particles in PolQs. This takes us to the first theoretical issue of this chapter: What is the meaning contribution of locally attached Q-particles in PolQs? Or, in other words, what do PolQs with local Q-particles in different languages have in common, in terms of their meaning?

With respect to *Wh*Qs, the empirical picture is not so consistent. In Tamil, Q-particles are banned from *Wh*Qs. In Turkish and Macedonian, attaching Q-particles in *Wh*Qs is used to express very particular question types: echo-*Wh*Qs in Turkish and *what the hell*-Qs in Macedonian. In Sinhala, the Q-particle is mandatory in *Wh*Qs. I will return to this in chapter 7.

In the following sections (6.3-7.4), I address the meaning effect of locally attached Q-particles in PolQs and the link with their meaning contribution in AltQs. As said in the introduction of this chapter, we use the narrow placement of Q-particles in PolQs as a window into AltQ meaning and assume that the contribution of Q-particles is the same across question types. The discussion in the following sections concentrate on Turkish and Macedonian, unless indicated otherwise. I will return to Tamil and Sinhala in section 7.3. Let us start with reviewing existing literature on the contribution of Q-particles in PolQs.

6.3 Q-particles in PolQs: previous accounts

It is widely agreed upon that there is a relation between the placement of Q-particles and focus-marking. With respect to all four languages -Sinhala, Tamil, Turkish, and Macedonian-, there is

literature available from different linguistic disciplines in which Q-particles are considered focus-markers or focus-sensitive operators. For example, it has been proposed that Sinhala *də* is a focus-sensitive operator (Cable 2010) or that *də* carries an optional [+F] feature (Slade 2011). Likewise, for Turkish, Kornfilt (1997), Göksel and Kerslake (2005) and Kamali and Buring (2011) take *mI* to be a focus-sensitive operator. Similarly, within the literature on Macedonian, it is commonly assumed that there is a relation between *li* and focus (Rudin et al. 1999, Lazarova-Nikovska 2003, Schwabe 2004). To understand what multiple focus-marking amounts to in AltQs, a better insight in the contribution of focus in PolQs is key. This section serves to lay out what previous literature has claimed about the relation between Q-particles and focus in PolQs. I start with an overview of the reported meaning impact of narrowly attached *li* in Macedonian. I then turn to a recent account by Kamali and Buring (2011). I will review prominent accounts concerning the Sinhala Q-particle *də* by Cable (2010) and Slade (2011) in section 7.5, as it involves the modelling of Q-particles in *WhQs*.

6.3.1 Macedonian *li* in PolQs

Let us begin with a review of previous work on Macedonian *li* in PolQs. Before turning to the literature, remember that in Macedonian, the placement of multiple Q-particles is not mandatory in AltQs. It thus might seem strange to use Macedonian data to understand the multiple occurrences of Q-particles in AltQs. Why did Macedonian end up on this pile of Q-particle languages in the first place? The answer to this question is that Macedonian is a ‘between strategies’ language - it employs both Q-particles and accents to apply focus-marking. The similarity between the effect of attaching the Q-particle *li* locally and the effect of locally attached Q-particles in Sinhala, Tamil and Turkish, is striking. Though in AltQs, the preferred strategy is to employ the multiple accent, exploring the contribution of *li* in PolQs helps us understand the contribution of Q-particles in general. Having said this, let us turn to previous literature on Macedonian *li* (Rudin et al. 1999, Tomić 1996, Schwabe 2004, Lazarova-Nikovska 2003).

Consider (44-a) and (44-b). I will use the labels *sentence initial li PolQ* and *narrow li PolQ* to refer to the question types in (44-a) and (44-b) respectively.

- (44) a. Dali saka-š musli?
 DALI want.2sg muesli
 ‘Do you want muesli?’ [sentence initial *(da)li* PolQ]
- b. Musli li saka-š?
 muesli LI want-2SG
 ‘Do you want MUESLI?’ [narrow *li* PolQ]

There is consensus in the literature that *li* is associated with focus-marking. The main arguments put forward supporting this view are of syntactic or phonological nature. Most importantly, *li* always attaches to a constituent that receives a pitch accent and is focus-fronted (Tomić 1996, Rudin et al. 1999, Schwabe 2004, Lazarova-Nikovska 2003). Concerning the pragmatics and the usage of questions with broad *li* (as in (44-a)) and narrow *li* (as in (44-b)), the literature is more divided. It is far from clear when speakers use a *dali* PolQ or narrow *li* PolQs. There is a wide range of suggestions available concerning this topic. Most of these suggestions are incompatible with each other and lack empirical support. First of all, Minova-Ćurkova (1987) and Rudin et al. (1999) have reported that narrow *li*-Qs are interpreted as rhetorical questions. Moreover, Rudin et al. (1999) have put forward the observation that PolQs in which *li* is adjacent to the verb convey surprise. This intuition is shared by Lazarova-Nikovska (2003, p.137), who argues that *li* “adds a tone of surprise to the focused constituent” and illustrates her point with a PolQ in which *li* is locally attached to the verb. A third suggestion comes from Englund (1977), who suggests that narrow *li*Qs indicate that the speaker expects a negative answer. In contrast, Kramer (1985), as cited in Rudin et al. (1999), argues that questions with sentence initial *(da)li* and narrow *li* are exchangeable and can be used in the same contexts. For example, both question types can be used to ask a shopkeeper if they have a certain product. This lead Kramer (1985) to conclude that whatever difference there is between sentence initial *(da)li* PolQs and narrow *li* PolQs, it is minimal. Finally, Koneski (1965), as cited in Englund (1977, 128), points out that there is regional variation and that generally *li* is less used in Western dialects. Finally, consider Dukova-Zheleva’s (2010) analysis of *li* PolQs in Bulgarian. Bulgarian, being an Eastern South Slavic language, is closely related to Macedonian. Dukova-Zheleva (2010) claims that narrow *li* PolQs give rise to a uniqueness presupposition, as illustrated in (46). The definition of *uniqueness* used throughout this dissertation

is given in (45). Note that uniqueness involves what I labelled minimality and exclusivity for AltQs: there is at least one alternative that is a true answer to the question (minimality) and there is at most one alternative that is a true answer to the question (exclusivity).

(45) **Uniqueness:** There is exactly one relevant and epistemically live true focus alternative contained in the QUD.

(46) *Scenario:* Paul, Ivan, Mary, Susan and Peter are students of history. Usually their final examinations are oral. Today they have an examination of this type. The teacher is in her office and asks them to enter one by one. The exam has just begun. Paul is in the teacher's office, when Peter's phone rings. In order to not disturb his classmates, Peter moves away to answer the call. A few minutes later he comes back, but he sees only Mary and Susan's purse. He asks then if the one who has entered next is Ivan, thinking that Susan is probably somewhere else since she has left her things.

Ivan *li* *vleze*?

Ivan *LI* *enter.PRS.3SG*

'Is Ivan the one who entered?'

(Bulgarian; Dukova-Zheleva 2010, 258)

The context Dukova-Zheleva (2010) set up for (46) is such that only one person can be in the room at the same time. This suggests that the narrow *li* PolQ presupposes uniqueness. Altogether, there is no consensus in the literature about the pragmatic licensing of narrow *li* PolQs. In the next subsection, I continue with a discussion of the placement of Q-particles and their pragmatics in Turkish.

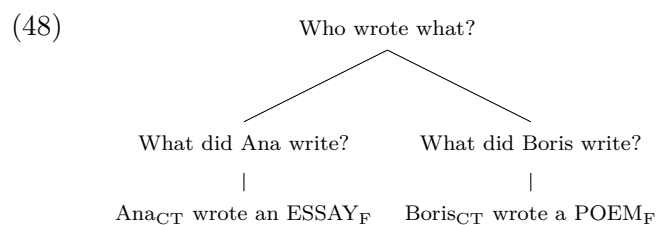
6.3.2 Kamali and Büring (2011)

The Turkish Q-particle *mI* has traditionally been analyzed as a focus-sensitive operator (Kornfilt 1997, Göksel and Kerslake 2005). Again, it is not entirely clear what this implies for the pragmatics of narrow *mI* PolQs. Kamali and Büring (2011) investigate this issue by drawing a direct comparison with Turkish contrastive topic questions (hencefort: CT-Qs). Consider the PolQs in (47).

- (47) a. Ali iskambil oynadi mi?
 Ali cards play.PST MI
 ‘Did Ali play cards?’ [sentence final *mI* PolQ]
- b. Ali iskambil_F mi oynadi↓?
 Ali cards MI play.PST
 ‘Was it Ali who played cards?’ [narrow *mI* PolQ]
- c. Ali iskambil_{CT} oynadi_F mi↑?
 Ali cards play.PST MI
 ‘As for Ali, did he play cards?’ [CT PolQ]

The data in (47) show that there is a difference between CT-marking and focus-marking in questions - something that cannot be observed in English. While in English declaratives, CT and focus are marked by distinct accents, there is no reported phonological difference between the two in questions (Kamali and Büring 2011). Likewise, CT and focus do not differ in Turkish in terms of accents. Instead, the position of the Q-particle *mI* reveals whether a question involves CT-marking or focus-marking.¹⁰ The only phonological difference between (47-b) and (47-c) is that CT-PolQs always end in a final rise, while narrow *mI* PolQs end in a final fall.

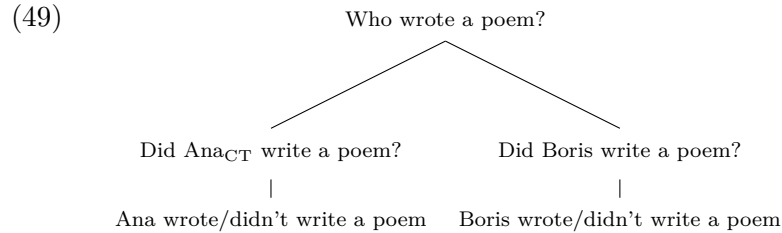
To model the meaning difference between PolQs with narrow *mI* PolQs and CT PolQs, Kamali and Büring (2011) make use of the notion *strategy*, which is a discourse tree, similar to the QUD trees we saw before, with at least two layers. It is known that declarative CT constructions signal that the speaker has a strategy (Büring 2003). Consider the example in (48).



The main idea in Kamali and Büring (2011) is that parallel to their declarative counterparts, CT PolQs signal an underlying strategy. Importantly, the authors define a ‘proper strategy’ as a QUD structure in which the intermediate QUDs (*What did Ana write, What did Boris write?*

¹⁰Note that this observation also shows that the composition of AltQs involves focus-marking and not CT-marking, as suggested in Hoeks (2019) and Hoeks (2021). These accounts predict AltQs in Turkish and Macedonian to have two accents and one final sentence Q-particle.

are independent of each other. That is, the positive or negative answer to such an intermediate question does not reveal anything about the other intermediate questions. This is illustrated in (49).



Apropos narrow *mI* PolQs, Kamali and Büring (2011) argue that this question form is used when a speaker does not have a proper strategy, i.e. the intermediate questions are not independent of each other. From here, it follows that narrow *mI* PolQs give rise to a uniqueness presupposition, since in a unique context the intermediate questions are dependent on each other. With respect to the semantics of *mI* and its relation to focus, Kamali and Büring (2011) remain unclear. The authors tentatively propose that *mI* is structurally attached to the constituent that is in focus.¹¹

Just as for the English accent, there are cases in which the placement of *mI* is ambiguous between different types of focus-marking. Placing the pitch accent on a particular constituent XP may signal focus on that XP or a larger constituent containing that XP (Selkirk 1995). In the same way, the location of *mI* next to a given constituent can mark focus for that constituent, or for a larger constituent. To illustrate this, let us briefly consider PolQs with sentence-final *mI*. In such cases, the lexical item preceding *mI* (*oynadi* in (47-c)) always receives a focal accent. The authors do not make explicit whether they interpret this as broad focus on the entire phrase. In subsequent work Kamali (2015) observes that, for example, attaching *mI* to the object can be exploited to express different types of focus. Consider the following example.

(50) (Kamali 2015, ex.4,p.2)

Ali dün yemek mi yap-tı?
 Ali yesterday dinner MI make-PST

i. 'Is what Ali made yesterday dinner?' [object *mI*]

¹¹See Kamali and Krifka (2020) for a recent proposal of Turkish *mI* and its focussing effects.

- ii. ‘Is what Ali did yesterday cooking dinner?’ [VP-*mI*]
- iii. ‘Is what happened Ali making dinner yesterday?’ [broad *mI*]

To summarize, the main idea in Kamali and Buring (2011) is that CT-PolQs signal a *proper strategy* and that narrow *mI* PolQs are used when a *strategy* is lacking. As a result narrow *mI* PolQs give rise to a uniqueness presupposition. In the following section, I proceed with the examination of this claim and its theoretical implications.

6.4 Focus and uniqueness

Let us take a closer look at the presumed uniqueness presupposition of PolQs with narrow *mI*, as described by Kamali and Buring (2011). To be precise, the authors describe the presupposition as ‘asking for an exclusive answer in relation to the focused element’. I make use of the definition in (45), repeated below as (51).

- (51) **Uniqueness:** There is exactly one relevant and epistemically live true focus alternative contained in the QUD.

Kamali and Buring (2011) support their proposal with the data in (52) and (53).

- (52) a. Bu Kupa‘da en çok gol-ü MESSI mi at-tı?
 this cup-LOC most many goal-ACC Messi MI score-PST
 ‘Did MESSI score the most goals in this World Cup?’
- b. #Bu Kupa‘da en çok golü MESSI attı mı?
 this cup-LOC most many goal-ACC Messi score MI
 ‘Did MESSI score the most goals in this World Cup?’

(Kamali 2015, ex.24,p.8)

- (53) Context: After World Cup 2010 where 145 goals were scored by different players.

- a. ÖZİL gol at-tı mı
 Özil goal score-PST MI
 ‘Did ÖZİL score a goal?’

- b. #ÖZİL mi gol at-tı?
 Ozil MI goal score-PST
 ‘Did ÖZİL score a goal?’ (Kamali and Büring 2011, ex.26,p.9)

In (52), the context is constructed such that there is one unique individual that reflects a true answer to the question - there can only be one top scorer. In such a context, a PolQ with adjacent *mI*, as in (52-a) is felicitous, while a CT PolQ (with broad *mI* and a focal accent on a smaller constituent), as in (52-b) is not acceptable. In contrast, in (53), the context makes explicit that there are multiple true answers to the question. Here, the PolQ with adjacent *mI* in (53-a) is infelicitous and the PolQ in (53-b) is perfectly fine. Contrary to what Kamali and Büring (2011) claim, the data in (52) and (53) are not convincing evidence that *mI* gives rise to a uniqueness presupposition. Instead, the data show two things. First, a CT-utterance is not compatible with a context like (52) in which there is only one unique true answer. This is unsurprising, as a CT-accent always reflects a strategy, and thus needs something to contrast with (Büring 2003). Second, the data in (53) demonstrate that uniqueness is a factor licensing local *mI*. However, the data do not show that this is the only condition that licenses narrow *mI* and, as we will see later, it is not the only one. In other words, there is a relation, but the given data are not sufficient to show there is a **correlation**. To show there is a correlation, we would need to see data that show that narrow *mI* always gives rise to uniqueness. So far, such data have not been given in the literature. I thus conclude that the claim that narrow *mI* PolQs always results in a uniqueness presupposition is preliminary. A closer examination of the licensing conditions of narrow *li* PolQs is required. I proceed with the description of two empirical studies that carried out such an examination: a pilot study by Karatas (2017) on Turkish and a study by Jordanoska and Meertens (2020) on Macedonian. Both studies fail to assess a correlation between locally attached Q-particles and uniqueness. Instead, there seems to be a relation between local Q-particles and speaker bias and expectations.

6.4.1 Karatas (2017)

To start, Karatas (2017) investigates the felicity of various Turkish PolQs in different contexts in a small pilot study. The author compares the felicity ratings of different Turkish PolQs in various contexts. A survey was conducted in which 15 participants were asked to pick the best question in the given context. There were two factors: ‘question type’ and ‘context type’. The factor ‘question type’ had four levels: neutral, narrow-*mI*, pseudo-cleft and CT. Examples of the question types are given in (54). The factor context type also included four levels: neutral, unique, contrastive, and bias-conflict, as exemplified (55).

- (54) a. Ali iskambil oynadi mi?
Ali cards play MI
‘Did Ali play cards?’ [neutral]
- b. Ali mi iskambil oynadi?
Ali MI cards play
‘Was it Ali who played cards?’ [narrow-*mI*]
- c. Ali mi-ydi iskambil oyna-yan
Ali MI-be.PST cards play-SBJV
‘Was the one who played cards Ali?’ [pseudo cleft]
- d. ALI iskambil oynadi mi
Ali cards play.PST MI
‘And for Ali, did he play cards?’ [CT]
- (Karatas 2017)

- (55) a. [unique]

In a bar, we saw that multiple friends of Ali are playing cards. We couldn’t identify the guy who is facing the wall. The same evening a friend of Ali’s is saying that Ali won three times in a row. From that, I infer, that the guy we couldn’t identify, was Ali. I ask:

- b. [contrastive]

A colleague is telling me, that he saw Furkan, Mehmet, Burak, and Göhkan play cards. I know that Ali was hanging out with these guys and ask about him, because he was not mentioned. I ask:

- c. **[neutral]** A colleague is telling me that he was at the bar with Ali. Ali often plays cards, so I ask, whether he also played today. I ask:
- d. **[bias conflict]**
 Ali doesn't normally play cards. Now Ali's sister is telling her mother that she saw Ali playing cards. Their mother clearly understood what was said. She asks:

(Karatas 2017)¹²

The results were as follows: In neutral contexts, neutral questions were favored over other question types 98% of the time; In contrastive contexts, 87% of the picks were CT-questions, and neutral questions are the other 13%. In exclusive contexts, we find neutral PolQs in 7% of the cases, narrowly attached *mI*-questions in 22% of the cases, and pseudo clefts were picked 71% of the time. Finally, in [epistemic bias]-contexts, narrowly attached *mI* was chosen 91% of the time. Note that the data provided by Karatas (2017) are not sufficient to make robust claims. I treat the resulting scores as indicators and pointers for future research. Now, if the main meaning contribution of PolQs with narrow *mI* is to generate a uniqueness presupposition, we would expect them to pattern with pseudo-clefts, that are known to give rise to uniqueness presuppositions (Horn 1981, and lit. thereafter). The results of Karatas (2017) show a very different distribution of pseudo-clefts and PolQs with narrow *mI*. First, narrow *mI* PolQs were chosen less than pseudo clefts in unique contexts. Second, narrow *mI* PolQs were favored over other question types in bias conflict contexts, in which no uniqueness was encoded.¹³ The felicity of narrow *mI* PolQs in bias conflict contexts has been confirmed by multiple native speakers. Moreover, Göksel and Kerslake (2005) report that narrow *mI* PolQs are used to express surprise. Based on Karatas's (2017) findings, Göksel and Kerslake (2005), and multiple native speaker reports, I conclude that narrow *mI* does not give rise to a uniqueness presupposition by default. Instead, local *mI* is compatible with both a uniqueness reading and a bias conflict reading. The final interpretation seems to be dependent on the boundary tones, as we will see in section 7.2.2. I return to this issue in section

¹²The contexts are translated from the German examples given in Karatas (2017).

¹³This context does not suggest a uniqueness presupposition for the property [$\lambda x.x$ played cards]. At most, one could construct uniqueness from this context to suggest a uniqueness presupposition for the property [$\lambda x.you$ saw x playing cards].

7.2. First, we continue with an empirical study that investigates locally attached *li* in Macedonian.

6.4.2 The Q-particle *li* in Macedonian PolQs: an empirical study

This subsection describes an empirical examination of the pragmatic licensing conditions of narrow *li* PolQs in Macedonian, based on joint work with Izabela Jordanoska (Jordanoska and Meertens 2020). As a starting point, consider the full paradigm in (56). (56-a), (56-b), and (56-c) are repeated from section 6. The Macedonian CT PolQ in (56-d) patterns with the Turkish CT PolQs described by Kamali and Buring (2011): There is an accent on a smaller constituent and a sentence final particle. Like Turkish, Macedonian also employs ‘pure’ pseudo clefts, witness (56-e).

- (56) a. Saka-š musli?
 want-PRS.2SG muesli
 ‘Do you want muesli?’ [Intonation]
- b. Dali saka-š musli?
 DALI want-PRS.2SG muesli
 ‘Do you want muesli?’ [sentence initial *(da)li*]
- c. Musli li saka-š?
 muesli LI want-PRS.2SG
 ‘Do you want MUESLI?’ [narrow-*li*]
- d. MUSLI, saka-š li?
 muesli want-PRS.2SG LI
 ‘As for muesli, DO you want it?’ [CT]
- e. Musli e toa što saka-š?
 muesli be.PRS.3SG that what want-PRS.2SG
 ‘Is it muesli that you want?’ [pseudo cleft]

(based on the examples in Rudin et al. (1999, p.579))

As discussed in the previous section, the pragmatic distribution of the questions in (56) has hitherto not been examined empirically. The first goal of the study is to fill this empirical gap. The second goal is to gain insights in the relation between the position of Q-particles and question meaning, i.e. the role of focus-marking.

6.4.2.1 Hypotheses

In order to gain a better understanding of the pragmatic contribution of locally attached *li*, we formulated two hypotheses, as defined in (57).

- (57) a. Hypothesis 1: UNIQUENESS
XP-LiQs signal that there is a UNIQUENESS PRESUPPOSITION with respect to the constituent that *li* is attached to.
- b. Hypothesis 2: SURPRISE
XP-LiQs signal that the speaker is SURPRISED about the constituent that *li* is attached to.

The UNIQUENESS-hypothesis is motivated by the observation that narrow Q-particles result in a uniqueness presupposition in Sinhala and Tamil and the claims by Kamali and Büring (2011) concerning Turkish and Dukova-Zheleva (2010) concerning Bulgarian. The primary motivations for the SURPRISE-hypothesis are the suggestions by Rudin et al. (1999) and Lazarova-Nikovska (2003) that PolQs with narrow *li* attached to the verb bring about a surprise effect. Moreover, naturally uttered PolQs with narrow *li* are often used to express surprise. Take a look at the following example.

- (58) *Context:* Mira, Jovana and Stojan are in the same room. Mira is sitting with her back towards the staircase and suddenly hears someone going up the stairs. She asks: ‘Jovana where are you going?’ Then she turns around and sees Jovana is still in the room. She asks:

O, Stojan li otide?

Oh, Stojan LI go.PST.3SG

‘Oh, did STOJAN leave?’

(Izabela Jordanoska, p.c.)

Within this study, we defined *surprise* as a mismatch between a negative epistemic bias and a positive evidential bias (cf. Sudo (2013) and Domaneschi et al. (2017)). A speakers epistemic bias contains her expectations based on world knowledge and personal beliefs. Evidential bias is

contextual evidence gained from direct observations. An example to illustrate these concepts in English is given in (59).

(59) Do athletes smoke?

(negative) epistemic bias: Athletes don't smoke cigarettes.

(positive) evidential bias: You see an athlete smoking a cigarette.

6.4.2.2 Methodology

We tested our hypotheses in a rating study. Two factors were manipulated. First, the form of the target question, which came in three conditions: *XP-liQ*, *DaliQ* and *pseudo-cleft*. The second factor was the context type, which also came in three conditions: Unique+Surprise, Non-Unique+Surprise and Neutral.

27 experimental items were distributed in 7 lists with a Latin square design, together with 8 fillers that served as controls. Each trial consisted of a context and a question. Participants were asked to rate the naturalness of a question in a context on a 1 (min) – 5 (max) Likert scale. They were given two test trials before the actual trials. The survey was conducted online using SoSci Survey (Leiner 2014).

The stimuli were presented in written form in Macedonian Cyrillic.¹⁴ Below is an example of each context type .

(60) **Uniqueness + Surprise:** Your friend bought a necklace with a precious stone. You don't recognize the stone, but you are sure it isn't ruby, because it is not red. Then your friend starts talking about how expensive ruby is. You ask her:

Non-Uniqueness + Surprise: Your friend bought a necklace with multiple precious stones, such as amethyst, sapphire, pink quartz and some more. You think it doesn't contain ruby, because none of the stones is red. Then your friend starts talking about how expensive ruby is. You ask her:

Neutral: Your friend bought a necklace with multiple precious stones, such as amethyst,

¹⁴I'm giving the Latin transliterations in this section.

sapphire, pink quartz and some more. You ask her:

- a. Rubin li ima vo ġerdan-ot?
ruby LI have.PRS.3SG in necklace-DEF.3SG.M
XP-LiQ: ‘Is there RUBY in the necklace?’
- b. Dali ima rubin vo ġerdan-ot?
DALI have.PRS.3SG ruby in necklace-DEF.3SG.M
DaliQ: ‘Is there ruby in the necklace?’
- c. Rubin e toa što e vo ġerdan-ot?
ruby be.PRS.3SG that what be.PRS.3SG in necklace-DEF.3SG.M
CleftQ: ‘Is it ruby that is in the necklace?’

As controls we used felicitous and infelicitous *which* questions, see (61).

- (61)
- a. **Good control**: You are at the market. There are multiple types of peppers at one stand. You ask: Which of these peppers are spicy?
 - b. **Bad control**: You are at a party and there aren’t a lot of women there, only 5, and all of them are wearing blue lipstick. You ask your friend: Which of these women is wearing blue lipstick?

We tested 49 native speakers of Macedonian with a mean age of 38.4. The participants’ regional and dialectal background was varied: There were 22 speakers with the central dialect (mostly from Skopje), 21 speakers with the eastern dialect (mostly from Štip), and 6 with different dialects. Two participants were living outside of North Macedonia at the time of the survey.

6.4.2.3 Results and Discussion

The overall findings are plotted in Fig. 6.1.¹⁵

¹⁵I thank the editors of the proceedings of FDSL 13, in particular Nicole Hockmann, for helping me with beautifying the figures in this section.

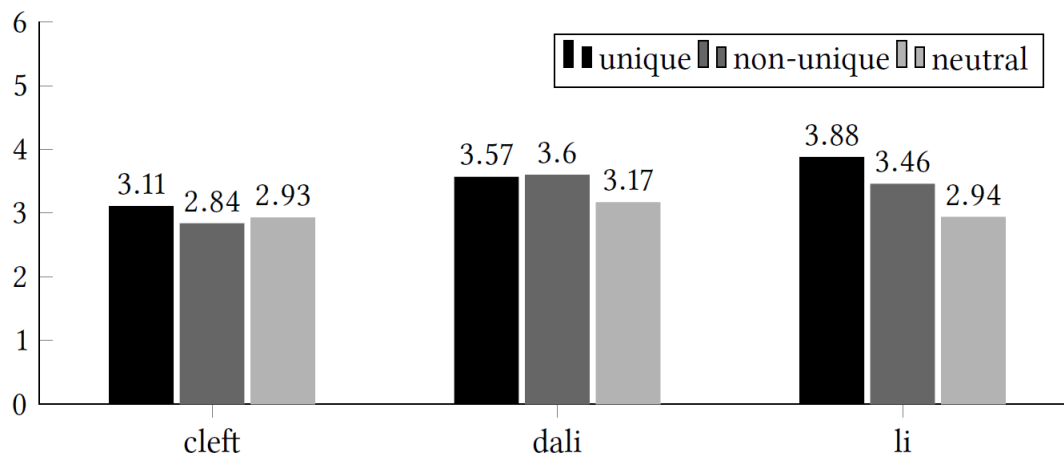


Figure 6.1: Overall ratings.

The responses were analyzed with a mixed ANOVA, using the RStats package (R Core Team 2013). The factors were Question Type (3 levels: XP-LiQ, DaliQ, CleftQ) and Context Type (3 levels: Unique+Surprise, Non-Unique+Surprise and Neutral). The test revealed significant effects of Question Type, Context Type, and the combination of Question Type and CONTEXT TYPE. This lead us to follow up with pairwise comparisons (one-way ANOVA, again using RStats) between these factors, focussing on the drawn hypotheses. The comparison of *li* and *dali* in Unique and Non-Unique contexts is plotted in Fig. 6.2.

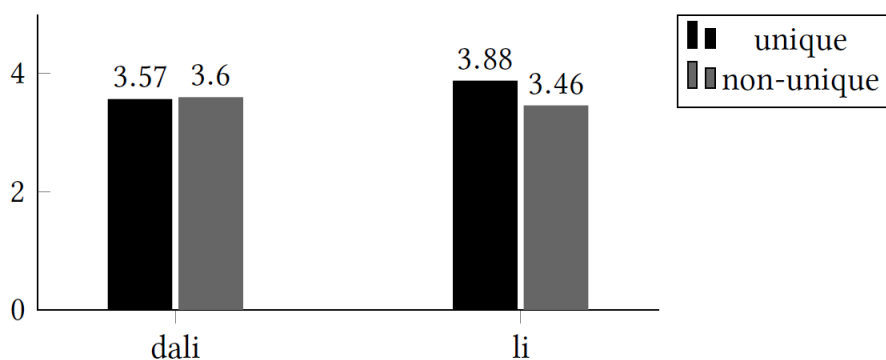


Figure 6.2: *Dali* vs. *li*.

No significant differences between *li* and *dali* were found between Unique or Non-Unique contexts. This shows that uniqueness does not have an effect on the felicity of the location of the

Q-particle *li*.

Next, in Fig. 6.3, there are the results of the ratings of *li* questions in Unique+Surprise, Non-Unique+Surprise and Neutral contexts.

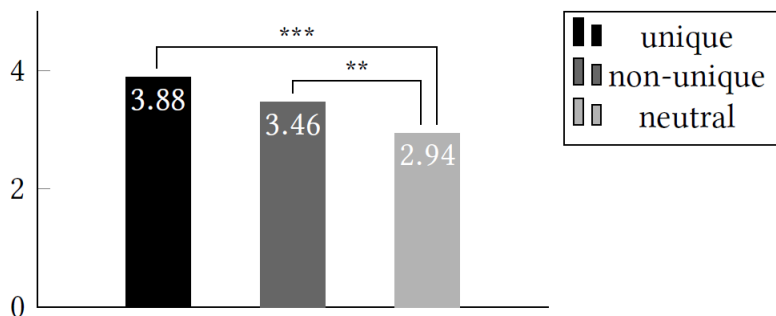


Figure 6.3: *Li* across contexts.

The results reveal that narrow *li*Qs get significantly higher ratings in surprise contexts. There is a significant difference between the ratings of narrow *li*Qs in Surprise+Unique contexts and Neutral contexts ($p < 0.005$). In addition, there is a significant difference between the ratings in Surprise+Non-Unique contexts and Neutral contexts ($p < 0.05$). Hence, narrow *li*Qs get significantly higher ratings in surprise contexts across the board.

An anonymous reviewer for the FDSL proceedings pointed out that uniqueness seems to play a role in the licensing of *li*, because the significance of the effect is higher for Unique+Surprise than for Non-Unique+Surprise. As suggested by the same reviewer, we applied a two-factor ANOVA (using the RStats package) to the two relevant context types: Unique+Surprise and Non-Unique+Surprise. This test revealed no significant differences between the rankings of narrow *li*Qs and *dali*Qs in surprise contexts.

The pseudo clefts got varying rankings from 1-5 across contexts. We attribute this remarkable finding to an experimental flaw. Another possibility is that there is a strong speaker variance concerning the acceptability of clefts. It was decided to leave this for further research.

Finally, we did not find any significant differences between speakers of the different dialect groups. Because the sample size of this study was too small to draw conclusions from this result, we leave the issue of regional variation for future research.

Altogether, we found no effect of uniqueness on the ratings of narrow *li* PolQs. Instead, the results show better ratings for narrow *li* PolQs in surprise contexts. This supports the SURPRISE-hypothesis.

6.5 Conclusion

Before moving to the analysis of Q-particles in the next chapter, let us take stock of what we have seen so far with regard to the pragmatics of PolQs with narrow Q-particles. We started with an in-dept investigation of the contribution of locally attached Q-particles in PolQs, which was used as a window into the contribution of Q-particles in AltQs. I provided an empirical examination and concluded that PolQs with locally attached Q-particles exhibit a more complex distribution than previously reported. In particular, I put forward partially novel data showing that the Q-particles in Turkish and Macedonian do not always give rise to a uniqueness presupposition. Recall that for Sinhala and Tamil a solid existence/uniqueness presupposition, similar to pseudo clefts, has been reported for questions with local Q-particles (Slade 2011). From here, there are two possible theoretical routes.

The first is to argue that the nature of the Q-particles and thus the underlying structure of AltQs in Sinhala and Tamil on the one hand is different from Turkish and Macedonian on the other hand. A second possibility is to take the underlying principle to be the same in all four languages, and to assume that the uniqueness presupposition in Sinhala and Tamil is the result of an additional ingredient, i.e. uniqueness is lexicalized on top of the base meaning. In fact, for Sinhala it is known that there is a relation between the uniqueness/existence presupposition and inflection on the verb: An *-a* suffix on the verb is the unmarked standard form, while an *-e* suffix signals existence (Slade 2011). In what follows, I take the second route and from this point on assume that the core meaning contribution of the Q-particles is the same across Sinhala, Tamil, Turkish and Macedonian. The main motivation for this decision is that, though there are important differences between languages, the common pattern is striking.

The question is where to go from here. Based on the observation that local Q-particles do not give rise to a uniqueness presupposition in Turkish and Macedonian, I discard the idea that the

meaning of AltQs is derived from two uniqueness presuppositions. In other words, it is not the case that AltQ meaning can semantically be derived from the disjunction of two clefts ('Was it cards or was it football that Ali played?'). Instead, I argue for an extension of the analysis of the multiple accent in chapter 4 and propose that the role of the Q-particles is to signal the structure of the overarching QUD. As we will see in the next section, such an analysis is compatible with the fact that in PolQs there is a relation between narrow Q-particles and surprise, as well as uniqueness.

Chapter 7

Q-particles II: analysis of AltQs, PolQs and *Wh*Qs

7.1 Aims

In this chapter, I am aiming for a unified analysis of Q-particles across question types in Sinhala, Tamil, Turkish, and Macedonian. The distribution of the Q-particles in said languages, as described in the previous chapter, is summarized in Table 7.1.

	Sinhala <i>də</i>	Tamil <i>aa</i>	Turkish <i>mI</i>	Macedonian <i>li</i>
<i>Wh</i> Qs	✓ (4)	×(19)	×(30)-(34) (echo)	×(42) (what the hell)
PolQs broad → neutral	✓ (7)	✓ (20)	✓ (54-a)	✓ (37) (optional)
PolQs local → focus	✓ (8)	✓ (21)	✓ (54-b)	✓ (38) (optional)
AltQs (...Q or ...Q)	✓ (9)	✓ (23)	✓ (23)	×(41-b) (repeat question - speaker dependent)
existence presupposition for local Q	✓	✓	×	×

Table 7.1: Distribution of Q-particles in Sinhala, Tamil, Turkish and Macedonian.

The idea in this chapter is that the Q-particles in all four languages have the same semantic core. On top of this core, languages can lexicalize additional properties. This is reminiscent of the crosslinguistic picture of Negative Polarity Items (NPIs) and Free Choice Items (FCIs) items. There are languages that lexically encode the NPI and FCI properties separately. In Italian, for example, there are NPI items that disallow FCI uses (*mai*) and there are FCI items that disallow NPI uses (*qualunque*). In languages like English, we find items like *any* that has both properties (FCI disallowing NPI and NPI disallowing FCI). The idea is that languages can ‘decide’ to lexicalize semantic properties on different lexical items, or to express these properties in one item, on top of a common core meaning (Chierchia 2006).

The Q-particle languages in Table 7.1 are divided in three color coded groups. The main contribution of this chapter is to show the core meaning they have in common. The Q-particles in Tamil and Turkish, marked in yellow, only express this core meaning, whereas the Q-particles in Macedonian and Sinhala are used to express additional features on top of this. I argue that the common denominator (and in Tamil and Turkish the only contribution) of the Q-particles is to indicate the shape of the QUD. Q-particles are focus-marking and the placement of the Q-particles indicates what constituent is focused (broad vs. narrow focus). Parallel to the function of the multiple accent in English, as modelled by Bäuerle (1979), Roberts (1996), and Biezma (2009) (see chapter 4) and building on previously published work with Sophie Kutscheid (née Egger) and Maribel Romero (Meertens et al. 2019), I propose that the position of the Q-particle indicates the location of the *wh*-phrase in the immediately dominating question in the QUD stack.

I then turn to the additional properties that are lexicalized on the Q-particles In Macedonian and Sinhala. I propose that in Macedonian (marked in blue) the Q-particle *li* expresses *emphasis*, on top of its focus contribution. Concerning Sinhala (marked in red), we will see that analyzing the Q-particle *də* involves multiple variables that cannot be accounted for in this dissertation. For the details of the analysis, I will mostly refer to Romero and Meertens (2020). The relevance for this chapter is that *də* does not only establish a link between focus alternatives and the \sim -operator to shape the QUD, but also mediates between focus alternatives and the Q-operator to generate *WhQ* meaning.

The chapter is structured as follows. In section 7.2, we begin with the core proposal, which is that the placement of the Q-particle signals the shape of the overarching QUD. I discuss the emphatic properties of Macedonian *li* and section 7.4 serves as an intermediate summary. I then turn to the role of Q-particles in *Wh*Qs in section 7.5 and discuss three accounts for Q-particles in Sinhala: Cable (2010), Slade (2011) and Weerasooriya (2019). I show that both the choice function analysis, as proposed by Cable (2010) and Slade (2011), as well as the PPI analysis put forward by Weerasooriya (2019) do not capture the AltQ and PolQ data in a satisfactory way. In section 7.6, I sketch what an extension of the analysis presented in this chapter to *Wh*Qs could look like and argue that such an analysis circumvents problems that arise for the existing accounts. In short, I argue that in Sinhala, the alternative set that is triggered by the Q-particle can associate with both the \exists -operator and the Q-operator. I conclude in section 7.7.

7.2 Proposal: Q-particles and discourse structure

7.2.1 The contribution of Q-particles

We start with the analysis of the pragmatic contribution of Q-particles in PolQs and AltQs. The goal here is to account for (i) the meaning effect of the placement of Q-particles in PolQs, as described in chapter 6 and (ii) the placement of multiple Q-particles in AltQs. This section is based on previously published work with Sophie Kutscheid (née Egger) and Maribel Romero (Meertens et al. 2019).

I model the meaning contribution of the Q-particles analogous to the contribution of the focal accent in English in chapter 4. I refer back to section 4.4.4. Key of the analysis is that (i) discourse is structured in a stack of hierarchically ordered QUDs (Roberts 1996, Büring 2003), and (ii) the position of focus-marking determines the general shape of the QUD (Bäuerle 1979, Roberts 1996, Biezma 2009). Parallel to the multiple accent in English, the Q-particles contribute focus-marking and thus indicate the shape of the QUD. Within the current section, I concentrate on Turkish. Yet, the core idea can be extended to Macedonian, Sinhala and Tamil.

Before moving on to the analysis of Turkish PolQs and AltQs, there is one more issue that

needs to be addressed. Recall that in chapter 4, we derived AltQ meaning from the **interaction** between multiple accents and the final falling boundary tone. So far, I have ignored the role of boundary tones in Turkish. This means that, in order to develop an analysis of Turkish that mirrors the analysis of English accents, we are still missing a crucial component of the analysis: the role of boundary tones.

7.2.2 Boundary tones in Turkish

Let us take a moment to consider the role of the boundary tones in Turkish. It is known, that in general both PolQs and AltQs end in a final fall in Turkish. Furthermore, there is typically a high rise just before *mI*, followed by a fall (Göksel and Kerslake 2005). Let us take a closer look at the discussed question types. First, consider the PolQ with sentence final *mI* in Fig. 7.1.¹

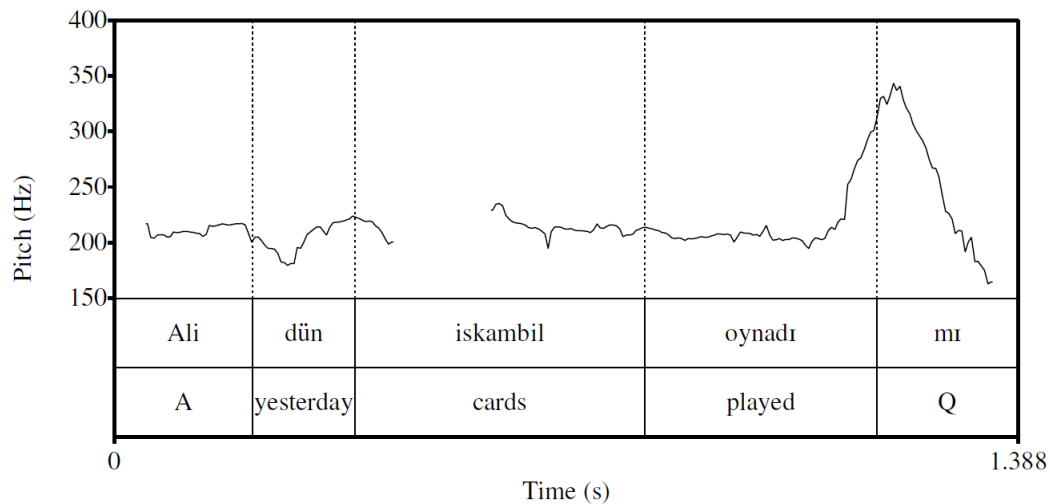


Figure 7.1: Pitch contour of a Turkish PolQ with sentence final *mI* (Kamali and Büring 2011, p.4)

Likewise, narrow *mI* PolQs are characterized with a rise before *mI* and a final falling boundary

¹Kamali (2015) does not use the label broad focus for sentence-final *mI*. She points out that in (1), a broad focus interpretation is available.

- (1) Ali dün yemek mi yap-tı
 Ali yesterday dinner MI make-PST
 'Is what happened Ali making dinner yesterday?'

I leave the meaning difference between utterance with 'broad' *mI* and sentence final, 'superbroad' *mI* for future work and refer the reader to Kamali (2015) for a discussion of these data.

tone (Kamali and Büring 2011), though not always, as we will see shortly. Witness Fig. 7.2.

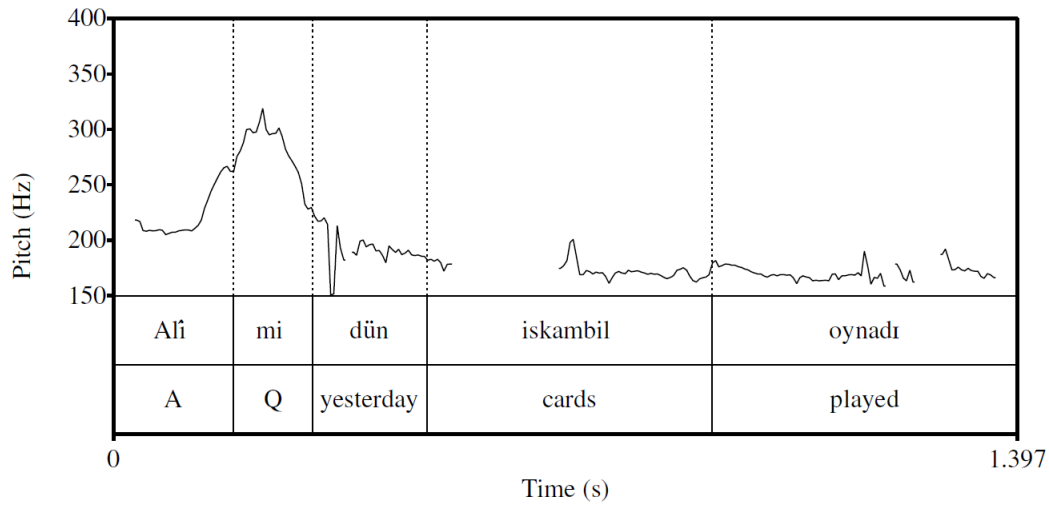


Figure 7.2: Pitch contour of a Turkish PolQ with narrow *mI* (Kamali and Büring 2011, p.4)

Disjunctive PolQs follow the pattern we saw for plain PolQs with broad *mI*. There is a rise before *mI* followed by a final falling boundary tone. This is illustrated in Fig. 7.3. The recording is elicited from an informant.

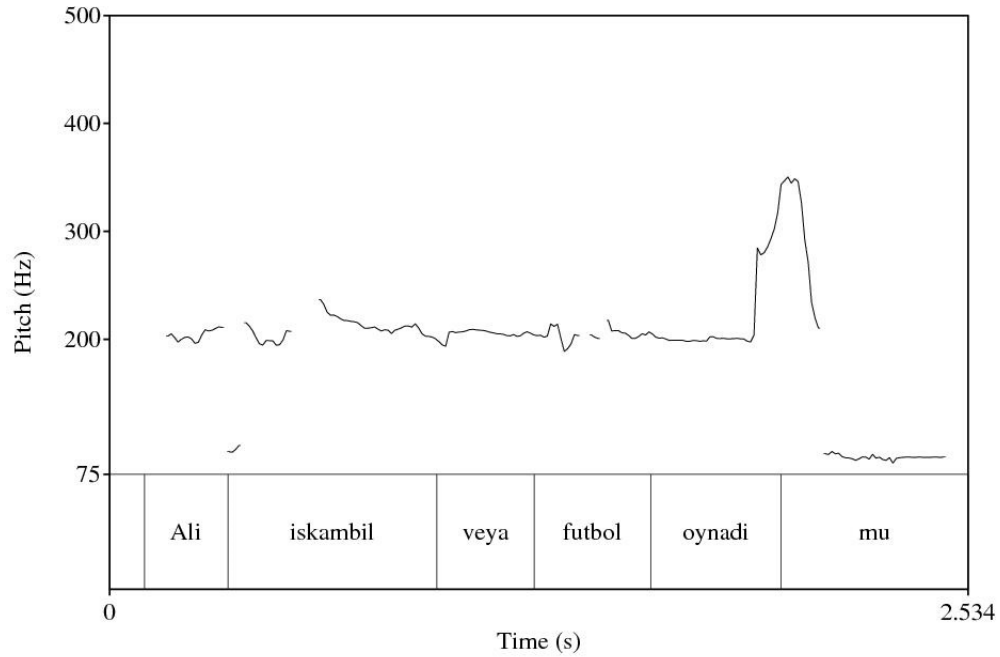


Figure 7.3: Pitch contour of a Turkish disjunctive PolQ.

Finally, Turkish AltQs pattern with English AltQs. There is a focal accent in each disjunct and a final falling boundary tone. Note that, again, *mI* is preceded by a high rise and ends in a fall. Consider Fig. 7.4. Again, this is elicited from an informant.

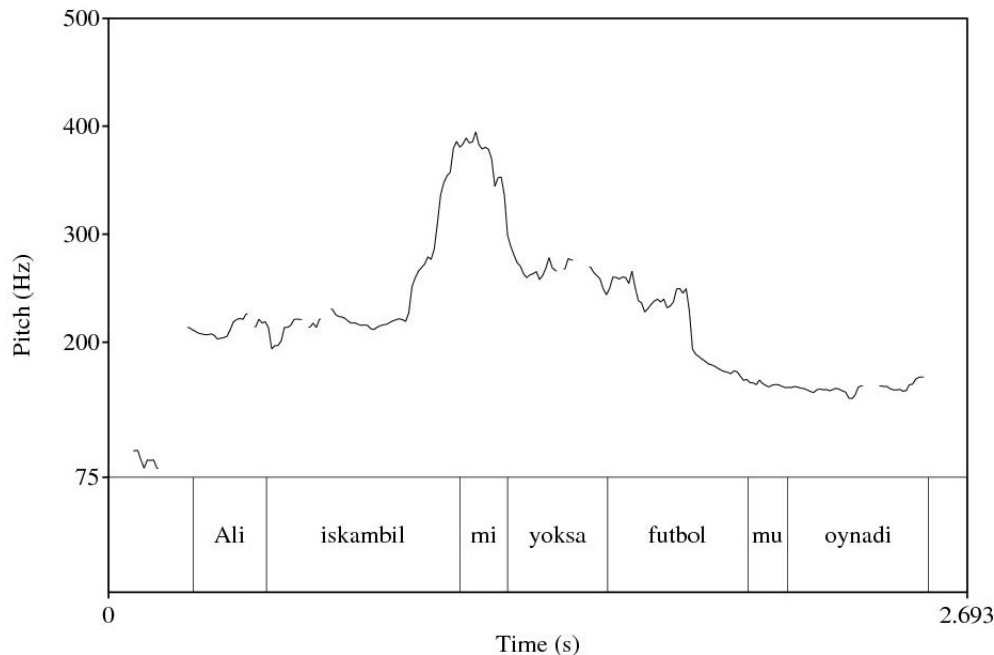


Figure 7.4: Pitch contour of a Turkish AltQ.

We observe that, in general, Turkish PolQs end in a final fall. In chapter 4, the final fall is analyzed using the account in Westera (2017) and Westera (2018), in which the final fall is taken to signal that the speaker believes that there are no other relevant and epistemically live alternatives available than the ones expressed. At first sight, this line of work cannot successfully be extended to the Turkish data.² The assumption that the final fall signals that no other alternatives are relevant and possible would result in an analysis in which all PolQs signal exhaustivity, which is not a desirable outcome. However, a closer examination of Turkish boundary tones reveals that there is a relation between exhaustivity and boundary tones in Turkish. The crucial observation is that there exist particular Turkish PolQs that end in a final rise: CT PolQs (Göksel and Kerslake 2005, Kamali and Büring 2011) and PolQs with *narrow mI* that express surprise or disbelief (Göksel and Kerslake 2005). The relevant examples are given in (2).

²Though Westera (2017) suggests that rationality-based analyses, like his own, generalize well cross linguistically, the author makes no hard claims about the crosslinguistic validity of his account and points out that the details of a possible extension will depend on the intonational phonology of a language. Likewise, related accounts of the final fall by Roelofsen and van Gool (2010) and Biezma and Rawlins (2012) do not argue that their analysis of the final fall is expected to be applicable across languages.

- (2) a. Context: Ali never plays. Now Ali’s sister is telling her mother that she saw him play cards. His mother asks:
- ALI mi iskambil oynadi?
 Ali MI cards play.PST
 ‘Did ALI play cards?’ (cf. (Karatas 2017))
- b. A colleague is telling me that he saw Furkan, Mehmet, Burak, and Gökhan play cards. I want to ask about the other guys of the friend group and start with Ali.
- ALI iskambil oynadi mI?
 Ali cards play.PST MI
 ‘And for Ali, did he play cards?’

Crucially, the questions in (2) have in common that they explicitly require alternatives to be available. In CT PolQs, there is a mandatory *strategy* that involves other alternatives. In surprise PolQs, the focus-marked alternative is contrasted with less surprising alternatives. Hence, such alternatives have to be available in the QUD. These data suggest a relation between the final fall and the unavailability of alternatives in the QUD. Questions that require alternatives to be available always end in a final rise.

The question remains why standard PolQs in Turkish end in a final falling boundary tone. Recall that according to Westera (2017) and Westera (2018), the final fall signals that no other alternatives than those mentioned are contained in the QUD, while the rise leaves the presence of other alternatives open (there might be other alternatives). In chapter 4, this was illustrated by the example repeated below as (3).

- (3) a. Are you from Denmark↑? → other alternatives are relevant and live
 b. Are you from Denmark↓? → no other alternatives are relevant and live

Looking at the empirical picture, we observe that narrow *mI* in PolQs may convey surprise (in which case there is a final rise) and may convey *uniqueness* (in which case there is a final fall). It is clear that explicitly non-exhaustive PolQs, such as CT PolQs or surprised PolQs end in a final rise (Kamali and Büring 2011, Göksel and Kerslake 2005). The implication is that there

is a difference between how we model the final rise in Westera’s (2017) framework (see chapter 4, section 4.5.1) in English and in Turkish. Whereas in English the final rise signals that there **might** be alternatives in the QUD outside of the mentioned ones, in Turkish the final rise indicates that there **must** be other alternatives in the contexts.³ In the terminology of Westera (2017) and Westera (2018), this means that the rise in Turkish signals that the speaker explicitly signals that she did not obey the A-Maxims. The picture is less clear for the final fall in Turkish. I consider two possibilities. **Possibility A** is that the final fall in Turkish empirically is like the final fall in English and signals that the mentioned alternatives cover the entire QUD. If this is the case, we can model the final fall in Turkish similar to the final fall in English. That is, it signals that the speaker believes she obeyed the A-Maxims. **Possibility B** is that in Turkish the final fall is the default strategy. Recall that in chapter 4 and 5, we argued that in English the final rise is the default form, that is both compatible with exhaustive and non-exhaustive contexts. If Possibility B holds, the theoretical implication would be that in Turkish the final fall signals that the speaker believes that her utterance might be compliant with the A-Maxims.

Exploring the difference between the role of the boundary tones in Turkish and English outscopes the current goals. The investigation of socio-cultural factors could be a promising direction for future research. From the perspective of Westera (2017) and Westera (2018), one could argue that there are cultural reasons why the final fall is unmarked in standard PolQs in Turkish. For example, it could be the case that smoothness or politeness are more important for English speakers than for Turkish speakers. Alternatively, it could be that Turkish speakers care more about strict relevance. An empirical investigation of these issues would teach us a lot about the crosslinguistic implementation of frameworks such as the programme proposed by Westera (2017) and Westera (2018). I leave this issue for future work. In what follows, I give the results for both possibilities and show that the fact that typically Turkish PolQs receive a final fall does not pose big problems for the goals of this dissertation. Whether the final fall signals exhaustivity in PolQs or not, the proposed analysis nevertheless successfully derives the difference between AltQs and

³Note that the only case in which the rising boundary tone in English signals that there *might* be other alternatives, as opposed to *must*, is cases in which the speaker is not sure what the QUD is. The fact that the rise has a stronger effect in Turkish could be derived pragmatically, for example due to socio-cultural reasons. I leave this for future work.

disjunctive PolQs.

7.2.3 Analysis: focus and QUDs in Turkish

Let me turn to the analysis of the discourse structures of PolQs and AltQs in Turkish. The baseline of the analysis can be directly extended to Macedonian, Sinhala, and Tamil. The analyses here are parallel to what we saw for English in section 4.6 in chapter 4. The ingredients are as follows. First, the Q-particle contributes focus-marking. I make use of Rooth's (1992) analysis of focus. Second, the free variable C refers to the immediate motherQ in the QUD. Third, the value of C is shaped by \sim that attaches to the IP node of the question. Fourth, C (hence, the QUD) is restricted via the (un)satisfaction of A-Maxims indicated by boundary tones (Westera 2017, 2018). As stated above, I leave open what exactly this implies for falling PolQs. In the relevant cases, I will give both **possibility A** and **possibility B**.

Let us start with PolQs with sentence-final mI . Here, we assume that mI attaches to the entire IP. The \sim -operator is attached at IP-level, as shown in (5-a). This generates the general shape of C , i.e. of the immediately higher QUD. The final result is given in (5-b), in which it is stated that the QUD needs to be a subset of the set of alternatives as generated by focus. Now, it is not clear what the contribution of the final fall is in Turkish. For possibility A, the final signals that no other relevant epistemically live alternatives other than the one expressed by the original IP are contained in the QUD. The result is given in (5-c) and the corresponding tree in (6). The result for possibility B is given in (5-d)- (7). In this case, the final fall does not explicitly signal that the spelled-out alternative exhausts the QUD.

- (4) Ali iskambil oynadi mi↓?
 Ali cards play.PST MI
 'Did Ali play cards?' for contour see 7.1
- (5) a. LF: $[Q[IP \text{Ali play cards}]_F \sim C]$
 b. $[[C] / \text{QUD}] \subseteq [[[\text{Ali played cards}]_F]^f] = \{\text{a played cards, b danced, s sang, ...}\}$
 c. **possibility A**
 $[[C] / \text{QUD}] = \{\text{a played cards, } \cancel{\text{b danced}}, \cancel{\text{s sang}}, \dots\}$

= ‘What_{a played cards} happened?’ (see (6))

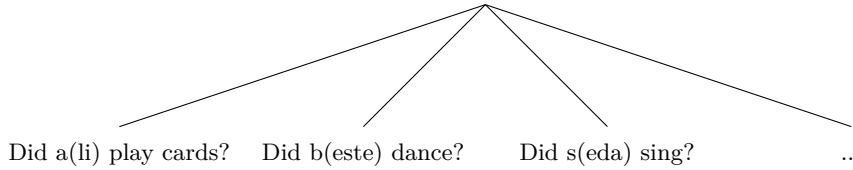
d. **possibility B**

[[C]] / QUD = {a played cards, b danced, s sang,...}
 = ‘What_{a played cards, b danced, s sang,...} happened?’ (see (7))

(6) What_{a played cards} happened?

|
 Did a(li) play cards?

(7) What_{a played cards, b danced, s sang,...} happened?



The second case consists of PolQs with narrow *mI*. Let me start with the narrow *mI* PolQs that end in a final fall, as in (8) (see Fig. 7.2). Here, *mI* is adjacent to the subject *Ali*, which means that the QUD consists of propositions that share the VP property of the IP and differ solely with respect to the value of the subject, see (9-b). Again, there are two possible ways to analyze the final fall. Within possibility A, the QUD is further constrained so as to include only the expressed alternative *ali played cards*, since the speaker used a final fall. The corresponding QUD is given in (10). This analysis predicts that narrow *mI* PolQs with a final fall give rise to exhaustivity à la Westera (2017). If, instead, possibility B is the right analysis for Turkish, the QUD is not restricted. In that case, the final fall signals that the speaker might believe she obeyed the A-Maxims, i.e. that there are no other relevant live alternatives contained in the QUD. Possibility B is given in (9-d) and the corresponding tree in (11).

(8) Ali mi iskambil oynadı↓?
 Ali MI cards play.PST
 ‘Was it Ali who played cards?’ (for contour see 7.2)

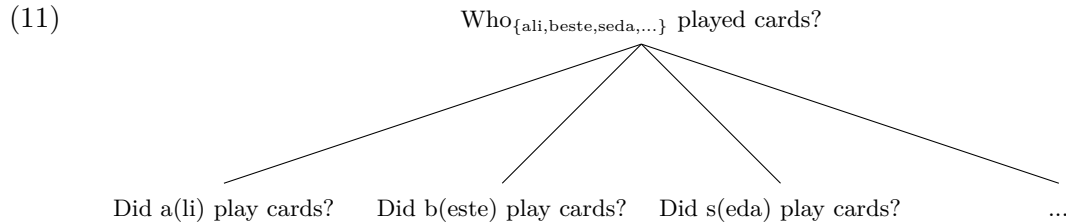
(9) a. LF: [Q [_{IP} Ali_F play cards] ~ C]
 b. [[C]] / QUD ⊆ [[Ali_F played cards]]^f = {a play cards, b play cards, s play cards,...}
 c. **possibility A**

$$\begin{aligned} \llbracket C \rrbracket / \text{QUD} &= \{a \text{ played cards, } b \text{ played cards, } s \text{ played cards, } \dots\} \\ &= \text{'Who}_{\{a\}} \text{ played cards?} \end{aligned} \quad (\text{see (10)})$$

d. **possibility B**

$$\begin{aligned} \text{QUD} &= \{a \text{ played cards, } b \text{ played cards, } s \text{ played cards, } \dots\} \\ &= \text{'Who}_{\{a,b,s,\dots\}} \text{ played cards?} \end{aligned} \quad (\text{see (11)})$$

(10) Who_{a} played cards
 |
 Did a(li) play cards?

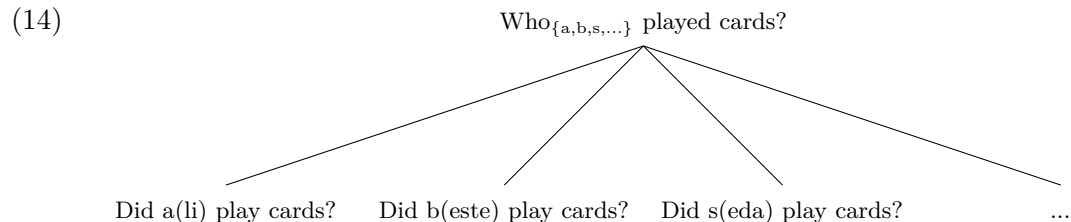


As observed by Göksel and Kerslake (2005), narrow *mI* PolQs can also be pronounced with a final rise, in which they come with a feeling of surprise (see (12)). The first two steps of the analysis parallel the previous case, i.e. (13-a) and (13-b) are analogous to (9-a) and (9-b). The analysis deviated from the previous case in the final step (see (13-c)). Given that the utterance is pronounced with a final rise, we know that the QUD obligatorily contains other alternatives than the mentioned ones. This is shown in (14)

(12) Ali mi iskambil oynadi↑?
 Ali MI cards play.PST
 'Was it Ali who played cards?'⁴

(13) a. LF: [Q[*IP*Ali_F play cards] ~ C]
 b. $\llbracket C \rrbracket / \text{QUD} \subseteq \llbracket \text{Ali}_F \text{ played cards} \rrbracket^f = \{a \text{ play cards, } b \text{ play cards, } s \text{ play cards, } \dots\}$
 c. $\llbracket C \rrbracket / \text{QUD} = \{a \text{ played cards, } b \text{ played cards, } s \text{ played cards, } \dots\}$
 $= \text{'Who}_{\{a,b,s,\dots\}} \text{ played cards?}$

⁴see (Göksel and Kerslake 2005, p.258) for an explanation of the contours.



We have now arrived at the crucial case: disjunctive questions. Let me start with disjunctive PolQs, as in (15). First of all, PolQ semantics in this case is secured via the chosen disjunction form *veya*. As we will see in chapter 8, I argue that disjunction forms like *veya* force association with the \exists -operator. I refer back to chapter 2 for an explanation of how I derive PolQ and AltQ semantics from the association properties of disjunction. The relevant point here is that *veya* forces a PolQ denotation for the question in (15). Concerning the prosody, disjunctive PolQs are analogous to plain PolQs with broad *mI* and end in a final fall (see 7.3). As stated above, I remain neutral as to whether this question type receives an exhaustive interpretation in line with Westera’s (2017) account of the final fall and give both possibilities. In disjunctive PolQs, the Q-particle appears sentence final. This signals that the entire IP is focused, parallel to what we saw in (5). This means that the alternatives are computed based on the entire IP, as exemplified in (16-b). The two options concerning the interpretation of the final boundary tone are given in (16-c) and (16-d). In (16-c), the final fall is analyzed following Westera (2017) and Westera (2018) and signals that the QUD only contains the spelled-out alternative. In (16-d), the analysis given reflects a non-exhaustive analysis of the final fall in Turkish. No matter whether the final fall signals that no other alternatives are relevant and possible (possibility A) or whether it is the default in Turkish (possibility B), the focus alternatives are different from the cases with narrow focus. Moreover, under both analytical possibilities for Turkish, both the final fall and the final rise are coherent with the PolQ semantics, according to the ingredients presented in chapter 4, section 4.7.

- (15) Ali iskambil veya futbol oynadi mu↓?
 Ali cards or_{decl/pol} football play.PST MI?
PolQ: ‘Is it true that Ali played cards or football?’ (for contour see 7.3)

- (16) a. LF: [Q[[_{IP}∃_i [Ali or_i Beste play cards]_F]]~ C]]
 b. [[C]] / QUD ⊆ [[[Ali or Beste played cards]_F]]^f = {a or b played cards, it rained, c

talked to a crocodile,...}

c. **possibility A**

$\llbracket C \rrbracket / \text{QUD} = \{\text{a or b played cards, it rained, c talked to a crocodile,...}\}$ (see (17))

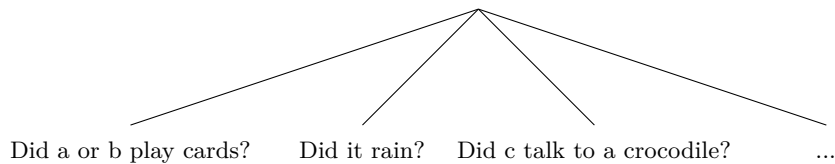
d. **possibility B**

$\llbracket C \rrbracket / \text{QUD} = \{\text{a or b played cards, it rained, c talked to a crocodile,...}\}$ (see (18))

(17) What happened_{a or b played cards}

|
Did a(li) or b(este) play cards?

(18) What happened_{a or b played cards, it rained, c talked to a crocodile,...}



In chapter 4, I provided an analysis for disjunctive PolQs, in which the disjunctive phrase was narrowly focused. The Turkish counterpart of this PolQ type and the corresponding analysis are given in (19)-(22).

(19) Ali iskambil veya futbol mu oynadi↓?
Ali cards or_{decl/pol} football MI play.PST?
PolQ: ‘Was it [cards or football] that Ali played?’

(20) a. LF: $[Q[[IP\exists_i \llbracket [\text{Ali or}_i \text{ Beste}]_F \text{ played cards} \rrbracket] \sim C]]$

b. $\llbracket C \rrbracket / \text{QUD} \subseteq \llbracket \llbracket [\text{Ali or Beste}]_F \text{ played cards} \rrbracket \rrbracket^f = \{\text{a or b played cards, c or d played cards, e and f played cards,...}\}$

c. **possibility A**

$\llbracket C \rrbracket / \text{QUD} = \{\text{a or b played cards, e or d played cards, e and f played cards,...}\}$
(see (21))

d. **possibility B**

$\llbracket C \rrbracket / \text{QUD} = \{\text{a or b played cards, c or d played cards, e and f played cards,...}\}$
(see (22))

(21) What happened_{a or b played cards}
 |
 Did a(li) or b(este) play cards?

(22) What happened_{a or b played cards, c or d played cards, e and f played cards,...}

```

graph TD
  Root["What happened_{a or b played cards, c or d played cards, e and f played cards,...}"]
  Root --- Node1["Did a or b play cards?"]
  Root --- Node2["Did c or d play cards?"]
  Root --- Node3["Did e and f play cards?"]
  Root --- Node4["..."]
  
```

Finally, consider the analysis of Turkish AltQs in (24). The AltQ denotation of the utterance is secured by the used disjunction form *yoksa*, as will become clearer in chapter 8. Note that *yoksa* is optional, but that *veya* can never occur in AltQs. Concerning the discourse structure, the two crucial aspects are the multiple instances of *mI* and the final falling boundary tone. The multiple Q-particles are modelled as multiple foci at LF, one per disjunct. Based on arguments presented in chapter 3, we assume that the disjunction involves partially elided IP-sized disjuncts (cf. Han and Romero (2004b)(a.o.)). There is a \sim at the top of each disjunct, as illustrated in (24-a). Thus, each focus-marking and associated \sim -operator will contribute separately to the shaping of the QUD, as sketched in (24-b). Concerning the final fall, again, there are two analytical possibilities. For possibility A, the analysis proceeds in a straightforward fashion: the final fall signals that there are no further relevant epistemically live alternatives contained in the QUD. The resulting QUD structure is given in (24-c) and the corresponding tree in (25). Possibility B results in the QUD in (24-d). The ‘...’ in brackets are used to express that the QUD is **optionally** exhaustive.

(23) Ali iskambil[↑] mi (oynadi) yoksa futbol mi oynadi[↓]?
 Ali cards MI play.PST or_{alt} football MI play.PST
AltQ: ‘Which one did Ali play: cards or football?’ (for contour see 7.4)

(24) a. LF: [Q[[_{IP1} Ana wrote a poem_F] \sim C] or [[_{IP2} Ana wrote an essay_F] \sim C]]
 b. $\llbracket C \rrbracket \subseteq \llbracket IP1 \rrbracket^f = \llbracket IP2 \rrbracket^f = \{a \text{ wrote a poem, } a \text{ wrote an essay, } a \text{ wrote a dissertation, ...}\}$
 c. **possibility A**
 $\llbracket C \rrbracket = \text{QUD} = \{a \text{ wrote a poem, } a \text{ wrote an essay, } \cancel{a \text{ wrote a dissertation, ...}}\}$

Secondly, the proposed analysis captures the difference between disjunctive PolQs (broad focus) and AltQs (two instances of narrow focus). The multiple Q-particles in Turkish, Macedonian, Sinhala and Tamil have the same function as the multiple accent in English: indicating what the QUD looks like. This QUD places restrictions on the semantic denotation of an utterance, via coherence requirements and determines the final interpretation of a sentence. Before wrapping up the sections devoted to the role of Q-particles in PolQs and AltQs, we turn to a number of open issues in the next section.

7.2.4 Comparison with Kamali and Büring (2011)

Let us briefly go back to Kamali and Büring's (2011) analysis. Recall that the authors argue that narrow *li* PolQs indicate the utterance lacks a proper *strategy*. The key idea within Kamali and Büring (2011) - that the placement of the Q-particle in questions directly reflects discourse structure - is maintained in the current account, presented in the previous section. In addition, Kamali and Büring's (2011) analysis of CT PolQs is fully compatible with the present account. However, the current approach deviates from Kamali and Büring (2011) concerning the role of focus-marking. Kamali and Büring (2011) propose that PolQs with narrow focus are used when a speaker has no *strategy*, which results in a uniqueness presupposition. The current account argues, following Bäuerle (1979), Roberts (1996), and Biezma (2009) that focus in questions reflects the shape of the immediately dominating question in the QUD stack.

There are two advantages of the current account as compared to Kamali and Büring (2011). First, the current account offers a unified analysis of the contribution of focus-marking. This means that there is a clean parallel between declaratives and interrogatives. In both cases, focus-marking indicates the location of the *wh*-phrase in the overarching QUD. This is illustrated in (27) and (28), repeated from chapter 4.

- (27) a. What did Ana write? Ana wrote a POEM.
 b. #What did Ana write? ANA wrote a poem

- (28) a. What did Ana write? Did Ana write a POEM?

- b. What did Ana write? Did ANA write a poem?

Within Kamali and Büring's (2011), there is no such parallel, as narrow focus in declaratives does not give rise to a uniqueness presupposition. On top of that, the current analysis of the Q-particles is parallel to the analysis of the focal accents that we saw in chapter 4. Again, Kamali and Büring's (2011) analysis cannot be extended to languages like English, as focus-marking via prosody does not generate a uniqueness presupposition. This takes us to the second point, the current account offers an explanatory account of the licensing conditions of various PolQ types. The combination of the current analysis of focus-marking in questions and the effects of boundary tones à la Westera (2017) explains why narrow *mI* PolQs with a final fall come with an exhaustive flavor, and why the same question type with the intention to express surprise end with a final rise. Hence, the current account has an advantage, because it models the final boundary tone and, accordingly, accounts for the different pragmatics of rising and falling narrow *mI* PolQs. This allows us to not only account for uniqueness, but also for surprise PolQs.

In short, the current analysis builds on the idea by Kamali and Büring (2011) that the placement of the particle is related to the underlying discourse structure. The main difference is that I take the role of focus to shape the QUD, and take the reported uniqueness effects to be the result (or rather: one of the results, together with surprise marking) of the interaction between boundary tones and the placement of the Q-particle.

7.3 Effects beyond QUD marking

The analysis presented in this chapter leaves a number of issues unsolved. Most of these issues directly relate to the bigger questions addressed in this dissertation: What parts of AltQ composition do languages have in common and can we unify this? I argued in the previous section that a major advantage of the current account is that it allows us to analyze languages that rely on different surface strategies (English - prosody, Turkish - Q-particles) using the same compositional ingredients. What the current account, in its current shape, does not account for are the differences between languages. Thus, while the analysis successfully unifies the core ingredients that result

in AltQ meaning, it leaves open how to account for certain differences. In what follows I discuss three particular issues: (i) the tendency towards uniqueness in Turkish and (ii) the optionality of the Q-particles in Macedonian.

7.3.1 A tendency towards uniqueness

Although we showed that uniqueness is not the only licenser for narrow Q-particles in Turkish and Macedonian, it is clear that at least in Turkish, there is a tendency towards the uniqueness interpretation of narrow *mI* PolQs. I derive this from the explicitly shaped QUD, that I argue is very compatible with uniqueness and surprise effects. The issue is that we do not necessarily get these effects from English focus-marking, that in the current account are analyzed as having exactly the same function. Compare the narrowly focused questions in Turkish and English:

- (29) Ali mi iskambil oynadi?
 Ali MI cards play.PST
 ‘Was it Ali who played cards?’
 → uniqueness/surprise (Kamali and Büring 2011, Göksel and Kerslake 2005, Karatas 2017)
- (30) Did ALI play cards?
 → not necessarily uniqueness/surprise

While in Turkish PolQs with narrow focus come with uniqueness or surprise, this is not necessarily the case in English. What complicates the comparison is the key insight from Kamali and Büring (2011): In English, the effect of the accent on Ali in (30) is ambiguous between *Ali_F* and *Ali_{CT}*, while in Turkish it is clear that the Q-particle invokes *Ali_F*. A potential route towards solving this issue is to investigate how to combine the insights from Kamali and Büring (2011) with the developments in Westera (2017) and Westera (2018). I leave this for future work.

7.3.2 Non-canonical question effects in Macedonian

Recall that in Macedonian, the Q-particle *li* is neither mandatory in PolQs, nor in AltQs. These facts do not pose a problem for the current analysis. It is likely that in Macedonian, the focal

accent and the placement of *li* both contribute focus-marking in questions. Possibly, Macedonian marks various aspects of what we know as focus using different strategies. That is, Macedonian differentiates on the surface between the standard focus effects within the Roothian tradition (computing alternatives) and the empathic effects of focus. It is known in the literature that prosody can be used to express what is labelled ‘emphasis for intensity’: emphasis that gives prominence to linguistic elements not by directly contrasting them to alternatives (Frey 2010, Beltrama and Trotzke 2019, a.o.). In languages like German, emphasis for intensity is conveyed by focus fronting, i.e. preposing the focused element. Consider (31).

(31) Context for (32) and (33):

Bayern München and Hansa Rostock are two German football teams. Most Germans interested in football know that Bayern München is likely to win its matches and Hansa Rostock is likely to lose them.

(32) (Frey 2010, ex.19,p.1422)

- a. Wie hat Bayern München gespielt?
How has Bayern München played
‘How did Bayern Munich play?’
- b. GeWONnen hat Bayern München
WON has Bayern München
‘Bayern München has WON.’
- c. Bayern München hat geWONnen
Bayern München has WON
‘Bayern München has WON’.

(33) (Frey 2010, ex.20,p.1422)

- a. Wie hat Hansa Rostock gespielt?
How has Hansa Rostock played
‘How did Hansa Rostock play?’
- b. #GeWONnen hat Hansa Rostock
WON has Hansa Rostock
‘Hansa Rostock has WON.’
- c. Hansa Rostock hat geWONnen
Hansa Rostock has WON

‘Hansa Rostock has WON’.

Frey (2010) observes that focus fronting the element is only felicitous when its content is compatible with the expectations, as in the case of Bayern München in (32-b). If the answer is not compatible with the expectations, as in (33-b), preposing the element results in infelicity.

In Macedonian, the narrow placement of *li* conveys this emphatic layer of focus. I leave the precise implementation and formulation of the effect for future work, but want to point out that the AltQ data are fully compatible with the analysis presented in this chapter. If *li* is an emphatic Q-particle, indicating emphatic focus, explains that the placement of multiple Q-particles is marked in neutral AltQs, but less marked in AltQs with an insistent flavor. In the insistent or repeat cases conveying emphasis for intensity is a natural move to put pressure on the addressee.

Finally, recall briefly that in Turkish, the Q-particle *mI* can be attached to *wh*-elements to express a non-canonical echo meaning. A potential route to analyze this is that *mI* in *Wh*Qs in Turkish conveys emphasis, analogous to Macedonian *li* in PolQs and AltQs.

7.4 Intermediate summary

So far, I discussed the effects of the position of Q-particles on the final meaning of PolQs and AltQs. An in-dept investigation of the contribution of locally attached Q-particles in PolQs was used as a window into the contribution of Q-particles in AltQs. I provided an empirical examination and concluded that PolQs with locally attached Q-particles exhibit a more complex distribution than previously reported. In particular, I put forward partially novel data showing that the Q-particles in Turkish and Macedonian do not always give rise to a uniqueness presupposition. Based on this I concluded that the contribution of the Q-particles in AltQs is not related to uniqueness. Rather, the placement of the Q-particles indicates the location of the *wh*-phrase in the overarching QUD. The interaction between this QUD-shaping function of Q-particles and boundary tones results in the interpretation of PolQs and AltQs. A major selling point of the current account is that it unifies the role of focus in two ways. First, the presented account does not attribute a special role to focus in interrogatives. Instead, focus in both declaratives and questions signals the shape of the QUD.

Thus, there is a unified account of focus across clause types. Second, the current analysis brings together focus-marking via focal accents like in English and focus-marking via Q-Particles like in Turkish. Hence, it offers an unified analysis of focus-marking across several languages, and thus the multiple accents in English and the multiple Q-particles in the described languages - Sinhala, Tamil, Turkish, and Macedonian.

What lies ahead of us is the second issue of this chapter: the appearance of Q-particles in *Wh*Qs in Sinhala.

7.5 Q-particles in *Wh*Qs: previous accounts

We pursue the line of the previous sections and aim for a unified analysis of Q-particles. By unified I specifically mean unified across languages, but also language internally, across question types. Recall from section 6.2 that Q-particles also mandatorily appear in *Wh*Qs in Sinhala. As we will see, the distribution of Q-particles in Sinhala has not gone unnoticed in the literature. The challenge we face is how to bring together insights from previous literature and insights from previous sections in this chapter.

Before we continue, I have to make a disclaimer. The current challenge involves a number of variables that I do not address in this chapter. This means that this chapter does not do justice to the full complexity of the picture and is intended as a first step in fitting in the Sinhala data into the unified picture drawn in this dissertation. The aim is to show that (i) the link between Q-particles in *Wh*Qs on the one hand and PolQs and AltQs on the other, **conceptually** can be captured under the current analysis of Q-particles and that (ii) such an analysis would mean an improvement of existing accounts in the literature. In Romero and Meertens (2020), we attempt to control for at least some of the variables that are left unmentioned here and present a further developed proposal that is in line with the ideas sketched in this chapter.

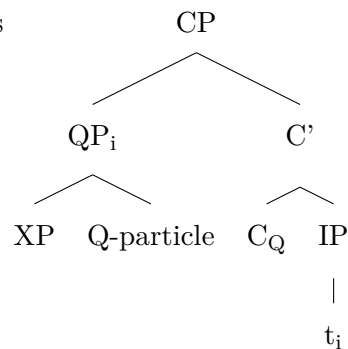
To start with, let us turn an overview of three recent accounts on the Q-particle *də*. I start with Cable (2010), who concentrates on Q-particles in *Wh*Qs. I then turn to Slade (2011), who aims for a unified account of *də* in *Wh*Qs, AltQs, PolQs, and indefinites. Finally, I discuss a recent account account of *də* in declaratives by Weerasooriya (2019).

7.5.1 Cable (2010)

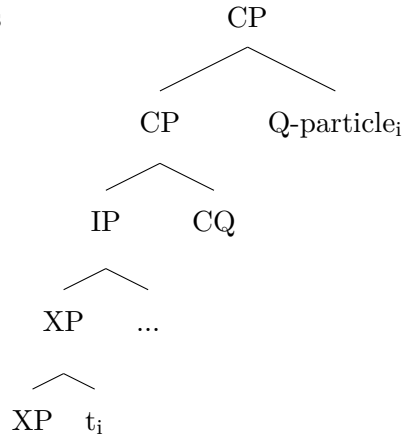
Cable (2010) compares three Q-particles, Japanese *ka*, Tlingit *sá*, and Sinhala *də*. His account focuses on Q-particles in *Wh*Qs and does not include an analysis of the appearance of the Q-particles in PolQs or AltQs. Instead, the author assumes that the Q-particles in PolQs and AltQs are morphologically and semantically distinct, but homophonous particles.

Concerning *Wh*Qs, Cable (2010) makes a crucial distinction between what he labels Q-adjunction and Q-projection languages. In Q-adjunction languages, the Q-particle directly adjoins its sister. In Q-projection languages, Q projects an XP-level category and takes its sister as its complement. The relevance lies in what happens when the Q-particle is targeted for syntactic movement. In Q-adjunction languages, the Q-particle moves on its own, whereas in QP-projection languages the entire QP, including the *wh*-element, moves - i.e. the Q-particle pied-pipes the entire phrase. This is visualized in (34) and (35). Sinhala and Tlingit are Q-projection languages, whereas Japanese is a Q-adjunction language.

(34) Q-projection languages



(35) Q-adjunction languages



Importantly, this analysis implies that *wh*-movement is not movement of the *WhP* per se but of the QP containing the *WhP*. According to Cable (2010), movement is triggered by the need to check a syntactic feature in the left periphery of *WhQs*.

As for the semantics, Cable (2010) makes use of the Alternative Semantics theory of focus (see chapter 2, section 2.6), in which a focused constituent gives rise to a set of alternatives $\llbracket \cdot \rrbracket^f$. Furthermore, the author follows Beck (2006) and takes *wh*-elements to be inherently focus-marked and to lack an ordinary value $\llbracket \cdot \rrbracket^o$. Following Hagstrom (1998) and Yatsushiro (2001), Cable (2010) proposes that the Q-particle *də* bears an index ranging over choice functions. A choice function is a function that takes a set and returns a member of that set, see (36).

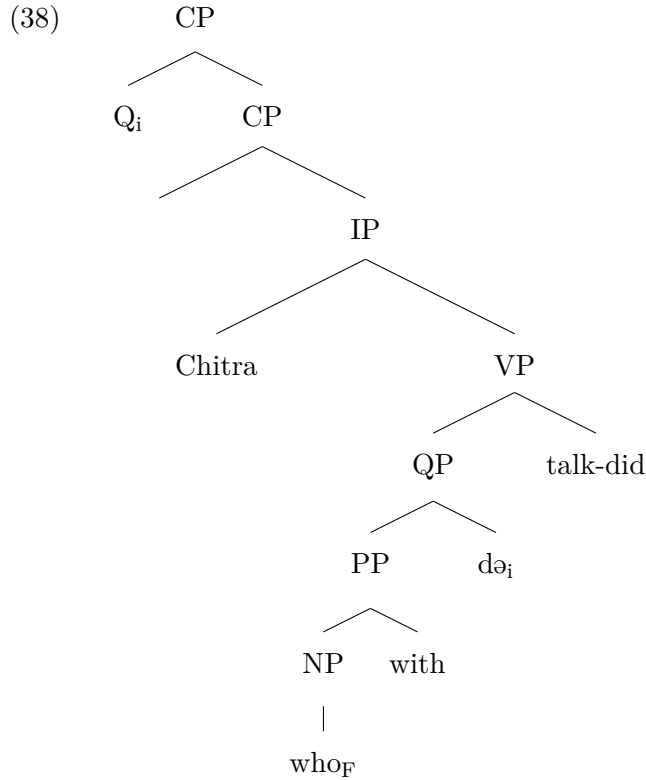
$$(36) \quad \llbracket \text{Q-particle} \rrbracket^g = \lambda g \lambda i \in D_{cf}$$

The Q-particle is analyzed as a focus-sensitive operator, i.e. the choice function calls for the Roothian value $\llbracket \cdot \rrbracket^f$ of its syntactic sister and selects an element of that set. The choice function introduced by the index of *də* is eventually bound by the Q-operator. Observe that this has an important implication: Focus marking is not only involved in calculating information structure alternatives, but is directly related to the semantics of questions. The syntactic tree and semantic derivation for the example *WhQ* in (37) are given in (38) (39) respectively.

(37) (Kishimoto 2005, ex.23,p.13)

Chitra kauru ekka də kata kale
 Chitra who with Də talk did

‘Who did Chitra talk with?’



- (39)
- a. $\llbracket \text{who}_F \rrbracket^f = \{\text{Chitra, Guna, Mathu, ...}\}$
 - b. $\llbracket \text{who}_F \text{ with} \rrbracket^f = \{\text{with Chitra, with Guna, with Mathu, ...}\}$
 - c. $\llbracket [\text{who}_F \text{ with}] \text{ d}\partial_1 \rrbracket = f(\{\text{with Chitra, with Guna, with Mathu, ...}\})$
 - d. $\llbracket \text{Chitra} [\text{who}_F \text{ with}] \text{ d}\partial_1 \text{ talk-did} \rrbracket = \lambda w. \text{TALK}_w(\text{chitra}, f(\{\text{with Chitra, with Guna, with Mathu, ...}\}))$
 - e. $\llbracket Q_1 \text{ Chitra} [\text{who}_F \text{ with}] \text{ d}\partial_1 \text{ talk-did} \rrbracket = \lambda p: \exists f [p = \lambda w'. \text{TALK}_{w'}(\text{chitra}, f(\{\text{with Chitra, with Guna, with Mathu, ...}\}))]$
 $= \{\text{that Chitra talked with Chitra, that Chitra talked with Guna, that Chitra talked with Mathu, ...}\}$

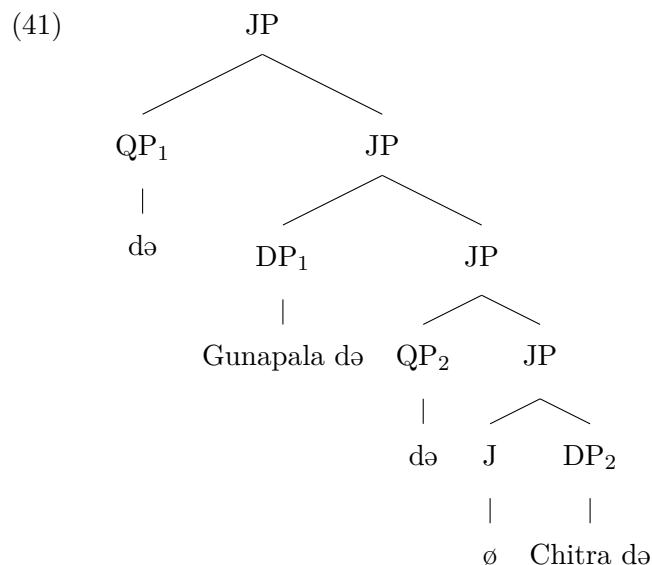
The analysis in (38) and (39) shows that $d\partial$ takes the focus-semantic value of its sister, via the Alternative Semantics system. The indexes on Q and $d\partial$ illustrate the dependency that in Cable's

(2010) analysis is realized via the choice function. Let us now turn to the account of Slade (2011).

7.5.2 Slade (2011)

Slade (2011) aims for a semantically unified analysis of Q-particles in *Wh*Qs, AltQs, PolQs, *wh*-indefinites, and disjunctive constructions, concentrating on the Sinhala Q-particles *də* and *hari* (see (10) and (11)). Slade (2011) builds on previous literature, including Cable (2010), and analyzes *də* as a variable over choice functions (cf. (36)).⁵ In extending the choice function analysis of *də* to AltQs and PolQs, Slade (2011) encounters two major challenges. The first challenge concerns the multiple occurrences of Q-particles in AltQs. In uttering an AltQ, a speaker offers the choice between the two propositional alternatives that are contained in the Hamblin set. Intuitively, we would expect one single choice function ranging over that set, but we observe two Q-particles. To tackle this issue, Slade (2011) firstly proposes the syntax for disjunctive phrases in (41). I will illustrate Slade’s (2011) account for AltQs using the example in (40).

- (40) Gunəpalə də Chitra də gamətə giyē?
 Gunapala də Chitra də village.DAT go.PAST.E
 ‘Was it Gunapala or Chitra who went to the village?’ (Slade 2011, ex.65,p.104)



⁵Note that a key difference is that Cable (2010) assumes *wh*-phrases to lack an ordinary value, while Slade (2011) argues that they bear an ordinary value. This is crucial for unifying the analysis of *də* in *Wh*Qs and *wh*-indefinites. I refer the reader to Slade (2011) for the analysis. For a recent discussion on this topic, see Beck and Reis (2018).

Regarding disjunction, Slade (2011) proposes that the head of the Junctor Phrase (JP) is an unpronounced J whose function it is to perform a union operation over a set containing the higher disjunct and a set containing the result of the choice function applied to the lower disjunct. A simplified definition is given in (42). For AltQs, this leads to the simplified denotation in (43), where *f* means choice function.

$$(42) \quad \lambda x_e. \lambda f_{\langle et, e \rangle}. \lambda y_e. \{y\} \cup \{f\{\lambda z_e. z\}(x)\}$$

$$(43) \quad \lambda w. f_1(\{\text{Gunapala}\} \cup \{f_2(\{\text{Chitra}\})\}) \text{ went to the village in } w$$

The choice function in the second disjunct, f_2 , is applied to a singleton, in this case the set containing the element *Chitra*. Since the choice function takes a set and returns a member of that set, f_2 will always return *chitra*. This is not a desirable result, especially because there is no rationale or deeper explanation justifying this redundant use of $d\emptyset$.

The second challenge in extending the choice function analysis concerns PolQs. Intuitively, PolQs offer the choice between a confirmation or rejection of the introduced proposition. In other words, they call for a *yes* or a *no*. Consider the PolQ with narrow focus in (8), repeated below as (44).

$$(44) \quad \begin{array}{l} \text{Chitra ee potə də kieuwe?} \\ \text{Chitra that book } D\emptyset \text{ read.E} \\ \text{'Was it that book that Chitra read?'} \end{array} \quad (\text{Kishimoto 2005, ex.21a,p.11})$$

According to the choice function analysis, (44) gives a choice between the members of the set $\{\text{chitra, gunapala, mathu, ...}\}$. Slade's (2011) solution is to analyze PolQs as partially elided AltQs. This means the PolQ in (45-a) is analyzed as having the underlying structure in (45-b).

$$(45) \quad \begin{array}{l} \text{a. Chitra that book } d\emptyset \text{ read} \\ \text{b. [Chitra that book } d\emptyset \text{ read] (or) not Chitra that book } d\emptyset \text{ read} \end{array}$$

Let us take a second to consider the implications of the choice function analysis for disjunctive PolQs, like the one in (10), repeated below as (46)

- (46) oyaa maalu.hari mas.hari kanəwa.də
 you fish.HARI meat.HARI eat.A.Də
 ‘Is it true that you ate meat or fish?’

Slade (2011) explicitly provides an analysis for disjunctive PolQs, but by transferring his analysis of PolQs as elided AltQs to the question in (46), we are left with the underlying structure in (47).

- (47) you fish.hari meat.hari eat.A.də ~~or not you fish.hari meat.hari eat.A.də~~

I have to mention that Slade (2011) takes both *hari* and *də* to be choice functions. The implication of Slade’s (2011) analysis of the particles and of the underlying structure of PolQs comes with the implication that disjunctive PolQs, again, offer the choice between a *yes* and a *no*, contain six choice functions. This is not a feasible result.

Let us now continue with Weerasooriya (2019) who argues for an analysis of *də* in declaratives that does not involve a choice function.

7.5.3 Weerasooriya (2019)

Weerasooriya (2019) approaches the Q-particle *də* from a different angle and mainly focuses on its occurrence of in declaratives. Although the author does not actively argue against Cable (2010) and Slade (2011), he shows that the choice function analysis of Q-particles does not advance the central issue he is concerned with. In short, Weerasooriya (2019) compares the distribution and the inference patterns of the Q-particles *də* and *hari* in environments containing negation, modals, quantifiers, and intensional operators. Based on this comparison, Weerasooriya (2019) proposes that *hari* and *da* are alternative-sensitive particles (cf. Slade (2011)). He furthermore observes that *hari* and *da* are not licensed in the immediate scope of negation, based on which he proposes that both particles are positive polarity items (PPIs). Finally, he argues, building on Spector (2014) that *hari* and *də*, being PPIs, associate with an exhaustivity operator.

For the data and the analysis, I refer to Weerasooriya (2019). The relevance for the purpose of this dissertation lies in the fact that there are constructions with *də*, outside of the domain of AltQs that require a different analysis than the plain choice function.

Concerning AltQs, an implementation of Weerasooriya’s (2019) proposal that Sinhala Q-particles are PPIs and associate with an exhaustivity operator is not feasible. There are various disjunctive constructions across languages that are analyzed as PPIs that associate with an exhaustivity operator, for example French *ou...ou* and German *entweder...oder*. When these complex disjunction constructions appear in interrogatives, they never give rise to AltQ meaning, unlike the questions with multiple Q-particles in Sinhala and the other languages discussed in this chapter. This is illustrated for German in (48) and (49).

(48) #Jan hat entweder Dominik oder Mario gesehen, und vielleicht sogar beides
 Jan had or Dominik or Mario seen, and maybe even both
 ‘Jan either saw Dominik or Mario, and maybe even both’

(49) Hat Jan entweder Dominik oder Mario gesehen?
 Has Jan or Dominik or Mario seen
 ‘Did Jan see either Dominik or Mario?’

Thus, while Weerasooriya (2019) nicely accounts for the distribution of *də* and *hari* in declaratives, his analysis cannot be directly extended to AltQs. Note that this is not an issue for Weerasooriya’s (2019) in particular, but rather for the entire body of literature concerned with complex disjunction, including Spector (2014) and Bayrılı (2017).

7.5.4 Why we need a unified account

Before turning to the island data for PolQs and AltQs in the next section, let us ask ourselves the question why we want a unified account of *də* across sentence types at all. Recall that Cable (2010) simply assumed that *də* in AltQs and PolQs is a semantically distinct homophone of *WhQ də*. This assumption is based on the observation that in Tlingit, PolQs are composed using a different Q-particle: The Q-particle *sá* appears in *WhQs*, while *gé* is used in PolQs. This is illustrated in (50) and (51).

(50) Daa *sá* *i* *éesh* *al’óon*?
 what *SÁ* your father he.hunts.it
 ‘What is your father hunting?’ (Cable 2010, ex.9,p.7)

- (51) Lingít gé x'eeya.áxch?
 Tlingit GÉ you.understand.it
 'Do you speak Tlingit?' (Cable 2010, note 21,p. 214)

There are two main reasons for arguing against the idea of two distinct, homophonous particles.⁶ Many languages employ particles that are surface identical across *Wh*Qs, *Pol*Qs and disjunction (see also Szabolcsi (2018) and Bailey (2013)). This points towards a unified account.

There is a final argument in favor of a unified analysis of Q-particles, that only concerns Sinhala *də*. Weerasooriya (2019) demonstrates that the Q-particles *hari* and *də* are structurally consistent across contexts in their inference patterns. Thus, we have two arguments in favor of a unified account: (i) the observation that the occurrence of Q-particles in disjunction and interrogatives is a solid pattern across languages, and (ii) Weerasooriya's (2019) observation that *də*'s inference patterns are structural across contexts. This leads me to pursue the line of Slade (2011) and Weerasooriya (2019) and assume there is only one Q-particle *də*.

7.5.5 Intermediate summary

Thus far, we have seen that both Cable (2010) and Slade (2011) argue for a two-legged approach in which it is *də*'s task to take the focus alternatives of its sister to the binder in CP via a choice function. As shown by Weerasooriya (2019), the choice function analysis is not advantageous for the analysis of *də* in declaratives. Moreover, I put forward three arguments against a non unified analysis of *də*.

To my knowledge, the only available unified account of *də* across interrogative types is provided by Slade (2011). I have demonstrated that Slade's (2011) account faces two problems. First, the contribution of the second occurrence of *də* in *Alt*Qs is always semantically vacuous. Second, *Pol*Qs intuitively do not ask to choose from a set of alternatives. In the next section, I sketch how the analysis presented in this chapter could be extended to *Wh*Qs to circumvent this issue.

⁶There are languages that employ two distinct but homophonous elements in questions. In Hindi/Urdu, for example, the Q-particle *kyaa* occurs in *Alt*Qs, *Pol*Qs, and *Wh*Qs. While it functions as a Q-particle in *Alt*Qs and *Pol*Qs, it translates as *what* in *Wh*Qs. Note that these two instances of *kyaa* are realized with different prosodic characteristics (Butt et al. 2017). Given that for Sinhala (i) *də* no such prosodic differences have been reported and (ii) *də* functions as a Q-particle in *Wh*Qs and not as a *wh*-element a distinct analysis of polar *də* and *wh-də* cannot be motivated.

7.6 Towards a solution

In this section, I outline what an extension of the current account to *Wh*Qs could look like. As mentioned before, there are a number of variables that are not addressed here. For the full picture, I refer to Romero and Meertens (2020). What I want to convey in this section is that a first and crucial step towards a unified analysis of Q-particles Sinhala and similar languages -i.e. languages that use Q-particles in *Wh*Qs - is to ‘liberate’ the role of the Q-particle. We can maintain the idea from Cable (2010) and Slade (2011) that the Q-particle serves as a mediator between two legs of a semantic dependency. But, crucially, the Q-particle does not just mediate between the focus value and the Q-operator, but also between the focus value and the \sim -operator. To see this, recall the proposed LFs for PolQs and AltQs in Q-particle languages, as given in (52).

- (52) a. PolQ LF: $[Q [[IP \exists \text{Ali saw } [Chitra_F \text{ d}\partial]]] \sim C]$
 b. AltQ LF: $[Q [IP [[IP_1 \text{Ali saw } [Chitra_F \text{ d}\partial]] \sim C] \text{ or } [[IP_2 \text{Ali saw } [Guna_F \text{ d}\partial]] \sim C]]]$

Above, I argued that in both AltQs and PolQs, $d\partial$ invokes the focus value of the constituent it is attached to. This focus value is then manipulated by the \sim -operator to check discourse congruence. For the derivations, I refer back to section 7.2.

The question is now what role the focus value plays in *Wh*Qs. Following Beck (2006) and Cable (2010), among others, I take focus in *Wh*Qs to be directly related to question meaning. The focus value triggered by the presence of $d\partial$ is manipulated by the Q-operator. Consider the LF in (53).

- (53) *Wh*Q LF: $[Q [IP \text{Ali saw } [QP \text{whom } d\partial]]]$

In the analyses of Beck (2006) and Cable (2010), *wh*-phrases trigger focus alternatives and lack an ordinary value. The focus value of the *wh*-phrase needs to be closed off by a focus-sensitive operator, which is Q. Note that in order to implement this, the Q-operator needs to be modified. So far in this dissertation, the Q-operator is not taken to be focus-sensitive. Modification could be realized by using Beck’s (2006) Q-operator, in which Q turns the focus-semantic value into the

ordinary semantic value.⁷ The lexical entries for *who* and *Q* are given in (54) and (55).

(54) a. $\llbracket \text{who} \rrbracket^o$ is undefined

b. $\llbracket \text{who} \rrbracket^f = \{x \in D_e\}$

(55) a. $\llbracket Q \phi \rrbracket^o = \llbracket \phi \rrbracket^f$

b. $\llbracket Q \phi \rrbracket^f = \{\llbracket Q \phi \rrbracket^o\}$

The derivation of the *WhQ* then proceeds as in (57) and (56).

(56) a. $\llbracket [\text{IP Ali saw whom } d\partial] \rrbracket^o$ is undefined

b. $\llbracket [\text{IP Ali saw whom } d\partial] \rrbracket^f = \{\text{Ali saw } x: x \in D_e\}$

(57) a. $\llbracket [\text{CP } Q [\text{IP Ali saw whom } d\partial]] \rrbracket^o = \{p: p=\lambda w.\text{Ali saw } x \text{ in } w \mid x \in D_e\}$

b. $\llbracket [\text{CP } Q [\text{IP Ali saw whom } d\partial]] \rrbracket^f = \{\{p: p=\lambda w.\text{Ali saw } x \text{ in } w \mid x \in D_e\}\}$

I refer to Romero and Meertens (2020) for the implementation and full analysis of this idea. The take-home message here is that liberating the upper leg of the semantic dependency -i.e. allowing association with both \sim (in *AltQs* and *PolQs*) and *Q* (in *WhQs* - is a promising route towards a unified analysis of *d∂* across question types.⁸ An account along these lines combines insights from Hagstrom (1998), Cable (2010) and Slade (2011) with insights from the literature on *Q*-particles in *PolQs*. An advantage is that we circumvent the problems with Slade's (2011) account for *PolQs* and *AltQs* and offer an explanation of (i) the mandatory multiple *Q*-particles in *AltQs* and (ii) A *PolQ* denotation that intuitively corresponds to *PolQ* meaning. In both cases, the position of the *Q*-particle is directly related to discourse structure, which is crucial for *AltQ* and *PolQ* composition.

Recall briefly that I drew a parallel between the lexicalized material on *NPIs* and *FC* items on the one hand and the *Q*-particles on the other. I argued that languages might encode more or fewer properties on their *Q*-particles. Consider Table 7.2.

Here, we observe that, in order to establish a connection between the focus-semantic meaning

⁷For reasons of convenience, I use Rooth's (1992) notion of focus here. In Beck (2006), this is realized making use of a Kratzerian approach to focus.

⁸In fact, a closer look at the Sinhala data show that in *AltQs*, both the *Q*-operator and the \sim -operator associate with the focus alternatives. For the relevant data and an analysis, I refer to Romero and Meertens (2020)

	QUD via \sim	Wh-meaning via Q
Sinhala	<i>də</i>	<i>də</i>
Tamil/Turkish	aa/mI	\emptyset
Tlingit	<i>gé</i>	<i>sá</i>

Table 7.2: The association properties of Q-particles crosslinguistically.

of the *wh*-phrase and the Q-operator, languages can (i) not express this lexically (Tamil, Turkish), (ii) employ a special particle encoding this particular relation (Tlingit), or (iii) use a liberal version of the PolQ/AltQ particle (Sinhala).

7.7 Conclusion

In this chapter, I put forward a unified analysis of the contribution of Q-particles in Sinhala, Tamil, Turkish, and Macedonian. I proposed that the common denominator in all four languages is that the placement of the Q-particles indicates the location of the *wh*-phrase in the overarching QUD. The interaction between this QUD-shaping function of Q-particles and boundary tones results in the interpretation of PolQs and AltQs, parallel to what we saw for English in chapter 4. I argued that while for Turkish and Tamil, this is the end of the story, Macedonian and Sinhala encode additional properties on their Q-particles *li* and *də*. In Macedonian, *li* is used to mark *emphasis*, which explains the insistent flavor of AltQs with multiple instances of *li*. In Sinhala, the focused constituent, as signalled by *də* associates both with the \sim -operator and the Q-operator.

The current account brings together insights from various corners of the literature and brings us a step closer to a unified analysis of Q-particles across languages. Moreover, the current analysis unifies focus marking via focal accents like in English and focus marking via Q-Particles. The result is a unified approach of the role of focus marking in questions, across different surface strategies.

We now turn to the next chapter that is concerned with interrogative disjunction forms in AltQs.

Chapter 8

Disjunction forms

8.1 Aims

There is a wide array of languages that makes use of specialized interrogative disjunction forms to compose AltQs. A non-exhaustive list of languages that rely on this strategy includes Basque (Saltarelli 1988), Mandarin Chinese (Erlewine 2014), Finnish (Kaiser 2003), Estonian, Lithuanian, Malagasy (Rajemisa-Raolison 1971), and Egyptian Arabic (Winans 2019). Typically, PolQs are composed using the standard disjunction forms, that are also used in declaratives. This is exemplified for Finnish in (1). I use the subscript *altq* to indicate interrogative disjunction and *stan* to indicate standard disjunction.

(1) *Finnish*

- a. Haluatko sokeiria **vai** kermaa?
Want.2SG sugar **or_{altq}** cream
'Do you want sugar or cream?' [AltQ - Finnish]
- b. Haluatko sokeiria **tai** kermaa?
Want.2SG sugar **or_{stan}** cream
'Do you want sugar or cream?' [PolQ - Finnish]

In this chapter, I argue that the disjunction forms in Finnish and similar languages express the association properties of disjunction. This is in line with recent, independently developed accounts by Erlewine (2017), Winans (2019) and Lohiniva (2020). In short, interrogative disjunction forms reflect the absence of a $[v\exists]$ feature. Due to the lack of such a feature, association with the \exists -operator cannot be realized, resulting in association with the Q-operator, hence an AltQ interpretation. I

argue that this analysis is favorable over analyses that take interrogative disjunction forms to express a [+wh] feature (Nicolae 2014, Uegaki 2014a). An important aspect is that I show that the association analysis can be nicely integrated with the analyses of prosody and Q-particles in chapters 4 and 7.

The structure of the chapter is as follows: In section 8.2, I start with an overview of the empirical facts concerning interrogative disjunction in various languages and their usage beyond purely interrogative environments. I proceed with the analysis in section 8.3. In section 8.4, I discuss an open issue: disjunction forms in AltQs in languages like Japanese and Korean. I conclude in section 8.5.

8.2 The data: disambiguation through disjunction forms

We begin with an overview of interrogative disjunction forms in different languages. I discuss data from Mandarin Chinese, Egyptian Arabic, Finnish, Basque and Turkish. After presenting the core data, I proceed with an examination of the appearance of interrogative disjunction forms, in order to understand their meaning contribution in AltQs.

8.2.1 Interrogative and standard disjunction in interrogatives

Let us take a look at standard disjunction and interrogative disjunction in Mandarin Chinese and Egyptian Arabic. In both languages, the disjunction form always forces the final interpretation of a disjunctive question. Standard disjunction is used in declaratives (see (2-a)) and PolQs, while interrogative disjunction always forces an AltQ reading. Consider the examples from Egyptian Arabic and Mandarin Chinese in (2)-(3).

- (2) *Egyptian Arabic* (Winans 2019, ex.11-12,p.4)
- a. Muhammad bihibb Amina aw/#walla Mariam.
 Mohammad like Amina or_{stan}/or_{altq} Mariam
 ‘Mohammad likes Amina or Mariam.’ [Decl]
- b. Huwwa Muhammad bihibb Amina walla Mariam?
 Q3sgm Mohammad like Amina or_{altq} Mariam

- Does Mohammad like Amina or Mariam? [✓AltQ *PolQ]
- c. Huwwa Muhammad bihibb Amina aw Mariam?
 Q3sgm Mohommad like Amina or_{stan} Mariam
 ‘Does Mohammad like Amina or Mariam?’ [*AltQ/✓PolQ]
- (3) *Mandarin Chinese* (Huang 2009, Erlewine 2014, ex.1,p.2)
- a. Zhāng Sān xǐhuān Lǐ S‘i huòzhe W’ang Wǔ
 Zhang San like Li Si or_{stan} Wang Wu
 ‘Zhang San likes Li Si or Wang Wu.’ [Decl]
- b. Zhāng Sān xǐhuān Lǐ S‘i háishi W’ang Wǔ (ne)?
 Zhang San like Li Shi or_{altq} Wang Wu Q
 ‘Does Zhang San like Li Si or Wang Wu?’ [✓AltQ / *PolQ]
- c. Zhāng Sān xǐhuān Lǐ S‘i huòzhe W’ang Wǔ ma
 Zhang San like Li Si or_{stan} Wang Wu Q
 ‘Does Zhang San like Li Si or Wang Wu?’ [* AltQ / ✓PolQ]

Now consider the example from Turkish in (4). We saw in chapters 6 and 7 that Q-particles play an important role in the composition of Turkish AltQs. On top of that, AltQs make use of the specialized disjunction form *yoksa*, while PolQs always use *veya*.

- (4) *Turkish*
- a. Ali iskambil mi (oyradi) **yoksa** futbol mu oynadi?
 Ali cards MI play.PST or_{altq} football MI play.PST
 ‘Was it cards or football that Ali played?’ [AltQ]
- b. Ali iskambil **veya** futbol oynadi mu?
 Ali cards or_{decl/pol} football play.PST MI?
 ‘Is it true that Ali played cards or football?’ [PolQ]

The pattern in Egyptian Arabic, Mandarin Chinese and Turkish, that standard disjunction in questions always forces a PolQ interpretation, does not apply to all languages that make use of interrogative disjunction forms in AltQs. In Basque, interrogative disjunction always forces an AltQ interpretation as well. However, interrogatives with standard disjunction are not restricted to a PolQ interpretation. Instead, questions containing standard disjunction are ambiguous and can receive both a PolQ and an AltQ interpretation. Consider the example in (5). As pointed out

earlier in this dissertation, this is speaker dependent. There are speakers who reject the usage of *edo* in PolQs (Saltarelli 1988).

(5) *Basque* (Saltarelli 1988)

a. Te-a **ala** kafe-a nahi duzu?
 tea-ART **or_{AltQ}** coffee-ART want you-it
 ‘Do you want coffee or tea?’ [AltQ]

b. Te-a **edo** kafe-a nahi duzu?
 tea-ART **or_{stan}** coffee-ART want you-it
 ‘Do you want coffee or tea?’ [PolQ/AltQ]

In Basque, the final interpretation of disjunctive questions with standard disjunction, for the speakers that accept this, is dependent on other factors, such as prosody and context. (5-b). Similarly, Kaiser (2003) observes that Finnish disjunctive questions containing the standard disjunction *tai* allow for an AltQ interpretation. Typically, the preferred reading for a disjunctive question with *tai* is a PolQ. However, in certain constructions the PolQ and AltQ interpretation are equally preferred for *tai* questions. Such a construction is given in (6).¹

(6) Huomasika Pekka miehen tai nainen?
 Noticed-Q Pekka.NOM man.ACC or_{stan} woman.ACC
 ‘Did Pekka notice man or woman?’ [✓PolQ/✓AltQ]

The conditions under which an AltQ interpretation is available in an interrogative containing standard disjunction vary per language, but we see a clear pattern: The languages that employ a more liberal usage of the two disjunction forms, sometimes allow for an AltQ interpretation with standard disjunction, but we never see a PolQ interpretation with a interrogative disjunction (Haspelmath 2007). To summarize, on the one hand we have languages in which standard disjunction always forces a PolQ interpretation, such as Egyptian Arab, Turkish, and Mandarin Chinese. On the other hand, we have languages in which standard disjunction (sometimes) allows for AltQ interpretations, such as Basque and Finnish. Let us now proceed with the status of interrogative disjunction forms

¹For a detailed overview and analysis of the constructions in which Finnish *tai* licenses an AltQ interpretation, see Kaiser (2003).

outside of the domain of AltQs.

8.2.2 Interrogative disjunction beyond purely interrogative environments

In certain languages, interrogative disjunction forms are licensed outside of purely interrogative environments. The distribution of interrogative disjunction in such environments opens a nice window into their meaning contribution in AltQs. To be clear, not all languages allow interrogative disjunction to appear in not purely declarative environments. In Finnish and Basque, interrogative disjunction forms can never occur outside of the domain of AltQs. (Kaiser 2003, Hakulinen and Karlsson 1988, Lohiniva 2020, de Rijk and de Coene 2008). In contrast, Mandarin Chinese *háishi* and Egyptian Arabic *walla* can appear outside of the domain of AltQs (Erlewine 2017, Winans 2019).

In Egyptian Arabic, *walla* appears in the antecedent of counterfactual conditionals (Winans 2019). Consider the example in (7).²

- (7) Laq kaan $\text{\textcircled{f}}$ nduhum maya aw/walla bebsi, $\text{\textcircled{z}}$ ištariit
If was have water or_{stan}/or_{altq} pepsi, buy
'If they had had water or pepsi, I would have gotten it'

(Winans 2019, ex. 37,p. 15)

Interestingly, Winans (2019) observes that indicative conditionals do not allow *walla* to appear in the antecedent, as illustrated in (8).

- (8) Law $\text{\textcircled{f}}$ nduhum maya aw/*walla asiir, hat(ii).
If have water or_{stan}/or_{altq} juice get(it)
'If there is water or juice, get it'

(Winans 2019, ex. 36,p. 15)

Winans (2019) relates these data to Alonso-Ovalle's (2006) analysis of disjunction. Alonso-Ovalle (2006) analyzes counterfactual conditionals as co-relative constructions in which the set of alternatives that is produced by disjunction associates with a universal operator. We will return to this

²No meaning differences between the utterances with the different disjunction forms have been reported. I leave a proper investigation of potential meaning differences between counterfactual conditionals with *aw* and with *walla* for future work.

in section 8.3.3.

Similarly, Erlewine (2017) shows that the Mandarin Chinese interrogative disjunction form *háishi* is interchangeable with standard disjunction *huòzhe* when disjunction appears in the immediate scope of an operator whose interpretation depends only on the alternative set denotation of its scope. Erlewine (2017) discusses disjunction under universal quantification, certain negators, epistemic modals, and particular conditionals. I refer to Erlewine (2017) for a complete overview of the data.³ For the sake of illustration, consider the conditional in (9) and the epistemic modal in (10) (Huang 2010, Erlewine 2014, 2017).

- (9) yàoshì Akiu [cízhi] háishi/huòzhe [tuìxiū] dehuà, qǐng gào sù wǒ
 if Akiu resign or_{altq/stan} retire the.case please tell me
 ‘If Akiu resigns or retires, please tell me.’ (Erlewine 2014, ex. 35,p. 11)

- (10) tā kěnéng xǐhuān Zhāng Sān háishi Lǐ Sī
 s/he might like Zhang San or_{altq} Li Si
 ‘S/he might like Zhang San or Li Si’ (Erlewine 2014, ex. 35,p. 11)

In Egyptian Arabic and Mandarin Chinese, interrogative disjunction is licensed in environments in which the disjunctive set is not immediately existentially closed (Erlewine 2017, Winans 2019).

8.2.3 Interrogative disjunction as *otherwise*

There is another use of interrogative disjunction forms that, as far as I know, has received little attention in the literature so far. ? observe that in Korean, the specialized disjunction form used in AltQs can be used outside of the domain of AltQs meaning *otherwise* or *if not*. We find the same for Egyptian Arabic and Turkish. Consider the data from Turkish in (11) and from Egyptian Arabic in (12). The latter is elicited from an informant.

- (11) Turkish *yoksa* (Göksel and Kerslake 2005, p. 454)

³Native speakers have reported some issues with the judgments in Erlewine (2017). In particular, speakers simply do not accept *háishi* in the environments of which Erlewine (2017) claims it to be available. This complicates the question of whether there are meaning differences between *huòzhe* and *háishi* in those contexts. In the case where *huòzhe* and *háishi* are undoubtedly interchangeable, according to my informants, no meaning difference between the two have been reported. I leave the potential meaning differences between standard disjunction and interrogative disjunction in conditional environments in Mandarin Chinese and Egyptian Arabic for future research.

Şimdi çalışma **yoksa** zamanımız kalmayacak
now work or_{altq} our.time will.not.stay
'Work now, otherwise we won't have time'

(12) Egyptian Arabic *walla*

Nadaf otak **walla** mish hageblak ice-cream
clean room or_{altq} not get ice-cream
'Clear up your room, otherwise you don't get ice cream'

This usage of interrogative disjunction beyond AltQs is not available for Mandarin Chinese. Neither is it possible in Basque and Finnish, where interrogative disjunction only appears in AltQs.

In the next section, we turn to the analysis of standard and interrogative disjunction forms.

8.3 Analysis: interrogative disjunction

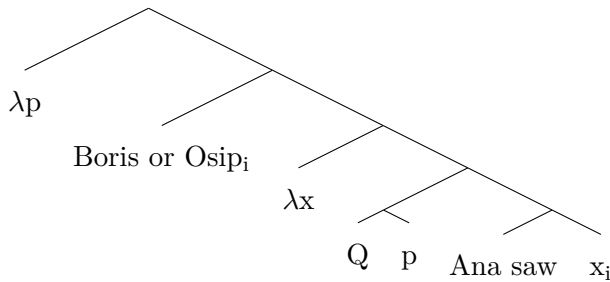
This section is concerned with the modelling of interrogative disjunction forms. I first discuss the account by Uegaki (2014a) that interrogative disjunction forms bear a [+wh] feature. I argue against this and, instead, argue for an association analysis of interrogative disjunction forms, in line with Erlewine (2017) and Winans (2019), .

8.3.1 Previous accounts: Uegaki (2014a)

The analysis proposed by Uegaki (2014b) focuses on the size of the disjuncts, as briefly discussed in chapter 3, section 3.2.4. The main point is that, in Japanese, AltQs are the disjunction of two full PolQs. In subsequent work, Uegaki (2014a) addresses the role of interrogative disjunction in detail. The author argues for a hybrid typology, in which there are two strategies to compose AltQs: (i) disjoining two PolQs, and (ii) scope shifting (cf. Nicolae (2014)). Concerning strategy (i), the idea is that in languages like Japanese the scope shifting possibility is not available. In those languages, AltQs are thus derived from disjoining PolQs. Important evidence put forward by Uegaki (2014b) is, that in Japanese, the disjunction form *soretomo* is used in AltQs, an item that is known to only disjoin large disjuncts. For more discussion of the large-disjuncts analysis by Uegaki (2014b) and Uegaki (2014a), I refer back to chapter 3, section 3.2.4.

Concerning strategy (ii), for languages such as Basque and Finnish, the proposal is similar to Nicolae’s (2014) account. For a brief review of Nicolae (2014), I refer the reader back to section 3.2.1 in chapter 3. The fundamental idea is that, in AltQs, disjunction undergoes movement that is triggered by the presence of a [+wh] feature on the disjunction. Via this movement, disjunction takes scope over the Q-operator. This mechanism produces an AltQ interpretation. In PolQs, disjunction does not undergo movement, meaning that disjunction takes narrow scope. Hence, the English disjunction *or* is ambiguous between [-wh] and [+wh]. Uegaki’s (2014b) account is similar in the sense that the interpretation of disjunctive questions is considered an issue of scope: A disjunctive phrase needs to take scope over the Q-operator at LF to receive an AltQ interpretation. Unlike Nicolae (2014), Uegaki (2014b) takes into account the crosslinguistic variation when it comes to disjunction forms. The author proposes that the disjunctive phrase in English optionally carries a [+wh] feature. The presence of this feature is a necessary condition for the disjunctive phrase to out-scope the Q-operator. Thus, in AltQs in English, there is a [+wh] feature, which is the trigger for LF movement of the disjunctive phrase (see (13)). In disjunctive PolQs, the disjunctive phrase lacks such a feature and carries [-wh], leaving the disjunctive phrase in situ at LF.

(13) AltQ: Did Ana see Boris or Osip? (cf. Uegaki (2014b))



With respect to the crosslinguistic data, Uegaki (2014b) argues that in Finnish and Basque, the [+wh] feature is lexically encoded in the disjunction form. The interrogative disjunctions *vai* (Finnish) and *ala* (Basque), mandatorily carry a [+wh] feature and disjunctive phrases containing such markers always undergo movement at LF (as in (13)). Languages like Japanese lack the possibility of carrying a [+wh] feature on a disjunctive phrase. In those languages, an AltQ interpretation is established via a completely different route: by disjoining two full PolQs. Uegaki

(2014b) himself shows that the large disjuncts analysis of AltQs cannot be extended to Basque and Finnish. The author points out that his account of AltQs, as the disjunction of two PolQs, predicts that a specialized disjunction marker α can be used in an AltQ if and only if α can be used in an overt disjunction of PolQs. Recall that in Finnish, both *tai* (standard disjunction) and *vai* (interrogative disjunction) can be used in AltQs. This raises the prediction that *tai* can also appear in an overt PolQ disjunction. This prediction is not borne out in Finnish, as shown in (14) (Uegaki 2014a).⁴

- (14) Haluatko kahvia vai/*tai haluatko teetä?
 want.Q coffee or_{stan}/or_{altq} want.Q tea
 ‘Do you want coffee, or do you want tea?’

Uegaki’s (2014b) generalization is summarized in 8.1. Note that an extension of Nicolae (2014) would yield the same result.

	[+wh]	[-wh]
English	or	or
Egyptian Arabic/ Mandarin Chinese	walla haishi	aw huozhe
Basque/ Finnish	edo/ala tai/vai	edo tai

Table 8.1: The *wh*-analysis (Uegaki 2014b).

In the next subsection, I proceed with two arguments against a *wh*-analysis of AltQs.

8.3.2 The *wh*-analysis does not work

There are two main arguments against the *wh*-analysis of interrogative disjunction forms. First, recent work by Erlewine (2017) and Winans (2019) shows that the *wh*-analysis cannot account for the appearance of interrogative disjunction forms in not purely interrogative environments. Second, I show that interrogative disjunction forms simply do not look like *wh*-phrases, in terms of overt

⁴Importantly, these data are presented in Uegaki (2014a) as preliminary. The author also puts forward data from Basque, that I left out here, as it is not clear whether the elicited speakers have access to a strict or a flexible *edo* (standard disjunction). I leave the liberal standard disjunction forms in both Finnish and Basque, and speaker’s tendencies towards them in various contexts open for the future. Insights in these distribution patterns is crucial for the tests Uegaki (2014a) performs and their theoretical implications.

movement and morphological build-up. From the perspective of the *wh*-analysis, we would expect some reminiscence, at least in some languages. I show that this expectation is not met. This leads me to conclude that the *wh*-analysis is not on the right track and that the data call for an alternative analysis.

8.3.2.1 Occurrence outside of the domain of AltQs

Typically, interrogative disjunction does not appear outside of the domain of AltQs. This is naturally explained within the *wh*-analysis: If interrogative disjunction forms carry a [+wh] feature, they are banned from non-interrogative environments. However, as shown by Erlewine (2017) and Winans (2019), there are non-interrogative environments in which we find interrogative disjunction forms. These environments normally do not license *wh*-phrases, which poses a problem for the *wh*-analysis (Erlewine 2017, Winans 2019).

As previously described, we find instances of Egyptian Arabic *walla* in the antecedent of counterfactual conditionals (Winans 2019). Consider example (7), repeated here as (15) .

- (15) Laq kaan ʕnduhum maya aw/walla bebsi, ʔištariit
 If was have water or_{stan}/or_{altq} pepsi, buy
 ‘If they had had water or pepsi, I would have gotten it’

(Winans 2019, ex. 37,p. 15)

Counterfactual conditionals do not normally license *wh*-elements. Compare (16-a) to (16-b).

- (16) (Winans 2019, ex. 50,p. 21)

- a. ✓If the store had had something, I would have gotten it.
 b. *If the store had had what, I would have gotten it.

On top of that, the *otherwise* use of *walla* (see (12)) is also not compatible with a [+wh] analysis. In languages like English, *otherwise* is not interchangeable with *wh*-phrases and the two items do not appear in the same environments. Consider (17).

- (17) a. Ali eats porridge for breakfast, or otherwise yoghurt.

- b. Clear up your room, otherwise you don't get dinner.
- c. *Ali eats porridge for breakfast, or what yoghurt.
- d. *Clear up your room, what you don't det dinner.

The examples in (17-c) and (17-d) are ungrammatical and do not make sense. In addition, there is no rationale behind using a *wh*-phrase to express *otherwise*, in the sense that *otherwise* expresses *wh*-properties.

Concerning Mandarin Chinese, the interrogative disjunction *háishi*, appears in the antecedent conditionals (see (9), repeated below as (18)) and under modals (see (19)) (Erlewine 2014, Huang 2010).

(18) yàoshì Akiu [cízǐ] háishi [tuìxiū] dehuà, qǐng gàosù wǒ
 if Akiu resign or_{altq}retire the.case please tell me
 'If Akiu resigns or retires, please tell me.' (Erlewine 2014, ex. 35,p. 11)

(19) tā kěnéng xǐhuān Zhāng Sān háishi Lǐ Sǐ
 s/he might like Zhang San or_{altq} Li Si
 'S/he might like Zhang San or Li Si' (Erlewine 2014, ex. 35,p. 11)

Again, these environments do not license traditional *wh*-elements, as illustrated in (20).

- (20) a. *If Akiu does what, please tell me.
- b. *S/he might like who.⁵

In sum, Erlewine (2017) and Winans (2019) convincingly show that there are environments in Egyptian Arabic and Mandarin Chinese that do license interrogative disjunction, but that do not license *wh*-elements. These environments are the antecedent of counterfactual conditionals in Egyptian Arabic and the antecedent of conditionals and embedded under a modal in Mandarin Chinese.

⁵The available interpretation of this example as an echo question is not relevant for the argument and I will therefore not discuss it here.

8.3.2.2 *Wh*-phrases and interrogative disjunction are inherently different

A second argument against a *wh*-analysis of interrogative disjunction is of a more elementary nature. If disjunctive phrases containing interrogative disjunction are *wh*-phrases, we expect them to behave like *wh*-phrases, and to look like *wh*-phrases.

First, as pointed out by Winans (2019), we do not find instances of overt movement of disjunctive phrases containing interrogative disjunction. From the viewpoint of the *wh*-analysis, this is surprising, because we know that in many languages, *wh*-phrases overtly move. There is no obvious reason why disjunctive phrases would not display overt movement.

Second, there is no evidence for the presence of a [+wh] feature in terms of morphological transparency or other usage. In fact, the pattern that manifests itself crosslinguistically is that interrogative disjunction forms contain what I label an ‘exclusion meaning component’. For example, Winans (2019) mentions that it is likely that Egyptian Arabic *walla* was derived from *wa+illa* ‘and else’. Furthermore, in Finnish, *vai* can also be used as a colloquial question marker, as illustrated in (21) (Koivisto 2017).

- (21) Onks Seija lähteny jo kirjastoon opiskelemaan **vai**?
be.Q Seija left already library study.INF PRT
‘Has Seija already left for the library to study, or?’ (Hakulinen et al. 2004)

Question particles of this kind are typically not associated with *wh*-ness, but rather with disjunction forms (Bailey 2013, Slade 2011, Szabolcsi 2015). This suggests a relation between interrogative disjunction and exclusivity, rather than a [+wh] feature.

Based on previous literature and after examining a broad set of languages of various language families, we cannot detect independent evidence for the presence of a [+wh] feature on disjunctive phrases containing interrogative disjunction.

8.3.2.3 Interim summery

So far, I have shown that the *wh*-analysis fails to make the right predictions. First, it cannot account for the appearance of Egyptian Arabic *walla* and Mandarin Chinese *háiishi* in conditional

constructions. Second, we cannot find crosslinguistic evidence for the presence of a [+wh] feature, neither in the sense of detecting overt movement, nor in the morphological build-up or other usages of interrogative disjunction forms. This leads me to conclude that the *wh*-analysis is not viable. In the remainder of this section, I present an alternative proposal to account for the distribution and semantic contribution of interrogative disjunction forms across languages.

8.3.3 An association analysis

The key idea is that the difference between standard and interrogative disjunction lies in the way they interact with higher operators. Throughout the dissertation, I have derived the final interpretation of a disjunctive question from the association properties of the Hamblin set projected by disjunction (see chapter 2). I argue that in languages that employ interrogative disjunction, those association properties are lexically encoded. Similar accounts of interrogative disjunction have recently been independently developed. In particular, I refer to Winans (2019) for a similar analysis that accounts for the Egyptian Arabic data, Erlewine (2017) for an account of Mandarin Chinese in which interrogative disjunction is also connected to the association properties of alternative sets, and Lohiniva (2020) in which a similar account is developed to account for the unavailability of interrogative disjunction in unconditionals in Finnish.

8.3.3.1 Compositional ingredients

The compositional ingredients of the analysis are in line with what we have seen in the previous chapters. I take AltQs to disjoin proposition-denoting disjuncts (not full PolQs) and PolQs to disjoin surface-identical disjuncts. I refer back to chapter 3 for the arguments motivating this. Furthermore, I make use of the compositional ingredients as described in chapter 2. Let me repeat the crucial ingredients shortly. I assume a Hamblin analysis of disjunction, adapted from (Alonso-Ovalle 2006), defined in (22) (repeated from chapter 2). The resulting set of propositional alternatives can associate with various operators. In disjunctive questions, the relevant operators are the \exists -operator (see (23), repeated from chapter 2) and the Q-operator (given in (24), repeated from chapter 2).

$$(22) \quad \llbracket \alpha \text{ or } \beta \rrbracket = \llbracket \alpha \rrbracket \cup \llbracket \beta \rrbracket = \{\alpha, \beta\} \quad (\text{Alonso-Ovalle 2006})$$

$$(23) \quad \llbracket \exists \alpha \rrbracket = \{\lambda w. \exists p \in \llbracket \alpha \rrbracket : p(w)=1\} \quad (\text{adapted from Shimoyama (2006)})$$

$$(24) \quad \llbracket Q\alpha \rrbracket = \llbracket \alpha \rrbracket \quad (\text{Biezma and Rawlins 2012})$$

As we saw in chapter 2, this provides us with two possible denotations for disjunctive questions. This is exemplified in (25).

- (25) a. Disjunction associates with Q : $[Q_i \text{ Ana saw Boris or}_i \text{ Osip}]$.
 Hamblin set: $\{\lambda w. \text{Ana saw}_w \text{ Boris}, \lambda w. \text{Ana saw}_w \text{ Osip}\}$
 Interpretation: **AltQ**
- b. Disjunction associates with \exists : $[Q \exists_i [\text{IP Ana saw Boris or}_i \text{ Osip}]]$
 Hamblin set: $\{\lambda w. \exists p \in \{A \text{ saw } B, A \text{ saw } O\} : p(w) = 1\}$
 = $\{\lambda w'. A \text{ saw}_{w'} B \vee A \text{ saw}_{w'} O\}$
 Interpretation: **PolQ**

With these ingredients at hand, I propose that there are three types of disjunction: (i) interrogative disjunction, forcing association with the Q-operator (e.g. Mandarin Chinese *háishi*/Finnish *vai*), (ii) strict standard disjunction that has to be existentially bound (e.g. Mandarin Chinese *huòzhe*), and (iii) liberal standard disjunction that can associate with both \exists and Q (e.g. Finnish *tai*, English *or*). Before giving an overview of the categorization of the languages discussed in this chapter, let us turn to the next section.

8.3.3.2 Parallel with Kratzer and Shimoyama (2017)

Let us take a second to consider the parallel with Kratzer and Shimoyama's (2017) account. In chapter 2, I proposed an analysis of disjunction similar to Kratzer and Shimoyama's (2017) analysis of Japanese indeterminate phrases. Consider the indeterminate pronoun in (26).

- (26) Taro-wa \llbracket [dare-ga katta] mochi \rrbracket -o tabemasita ka?
 Taro-TOP \llbracket [who-NOM bought] rice.cake \rrbracket -ACC ate Q

‘Who_x did Taro eat rice cakes that x brought?’

Shimoyama (2006, ex. 4a,6a,p. 144)

Assuming that indeterminate pronouns denote the set of all individuals, a Japanese sentence like *Dare nemutta* (who slept) denotes a set of propositions {a slept, b slept, c slept,...}. Hence, both utterances with indeterminate phrases as well as utterances with disjunction eventually denote a set of propositional alternatives. The crucial point is that this set of propositions can expand, i.e., combine with other elements via PFA, until they are closed off by a propositional operator, such as \exists , \forall , and Q . *Dare* is not picky, in the sense that it can be bound by various operators (Kratzer and Shimoyama 2017). In that way, Japanese *dare* patterns with English *or*; it generates a set of alternatives that is ‘open-minded’ towards propositional operators. Kratzer and Shimoyama (2017) compare Japanese indeterminate phrases to the German single indefinite *irgendein*. *Irgendein* is an example of a pickier nominal and can only be bound by \exists . This is illustrated in (27).

- (27) Irgendeins von diesen Kindern kann sprechen.
IRGEND-one of these children can talk
*‘Any one of those children has the ability to talk’ (association with \forall)
(Kratzer and Shimoyama 2017, ex. 20c,p. 24)

Here we can observe a pattern with interrogative disjunction, for example Basque *ala*. Just as the indefinite *irgendein* can only be bound by \exists , *ala* can only be bound by Q .⁶ The pattern is visualized in Table 8.2.

⁶If one were to extend the association properties of German pronouns, *wer* (who) would be the equivalent of *irgendein* associating with Q . Note that not all wh-words in German are ‘picky’: *was* (what) allows association with both Q and \exists .

	association with various operators	association with specific operator
Pronouns	Japanese: <i>dare</i> [\exists, Q] (\forall)	German: <i>irgendein</i> [\exists]
Disjunction	English: <i>or</i> [\exists, Q]	Mandarin: <i>háishi</i> [Q] (\forall) ⁷ / <i>huòzhe</i> [\exists] Egyptian Arabic: <i>walla</i> [Q] (\forall) / <i>aw</i> [\exists] Turkish: <i>yoksa</i> [Q] / <i>veya</i> [\exists]
	Basque: <i>edo</i> [\exists, Q]	Basque: <i>ala</i> [Q]
	Finnish: <i>tai</i> [\exists, Q]	Finnish: <i>vai</i> [Q]

Table 8.2: Lexically encoded vs. not lexically encoded association properties .

8.3.3.3 Association properties as feature checking

The implementation of the association properties of interrogative disjunction, strict standard disjunction, and liberal standard disjunction, is realized via feature checking, following Kratzer and Shimoyama (2017). In chapter 2, I argued that English *or* optionally carries an unvalued existential feature [$v\exists$]. In her implementation of Kratzer and Shimoyama (2017), Winans (2019) applies the same mechanism of feature checking. Additionally, I assume that the \exists -operator cannot be freely adjoined in the absence of a trigger. Following Kratzer and Shimoyama (2017) and Winans (2019), I argue that the strict standard disjunction forms always bear a [$v\exists$] feature. This results in a PolQ interpretation (cf. chapter 2). Regarding the more liberal disjunction forms, I argue that they pattern with English *or* and optionally bear a [$v\exists$] feature. In case the [$v\exists$] feature is present, the disjunctive phrase associates with \exists , yielding a PolQ interpretation. When the feature is lacking, \exists cannot be adjoined. This results in association with Q ⁸, hence an AltQ interpretation. Crucially, interrogative disjunction forms always lack a [$v\exists$] feature, and thus always yield an AltQ interpretation.

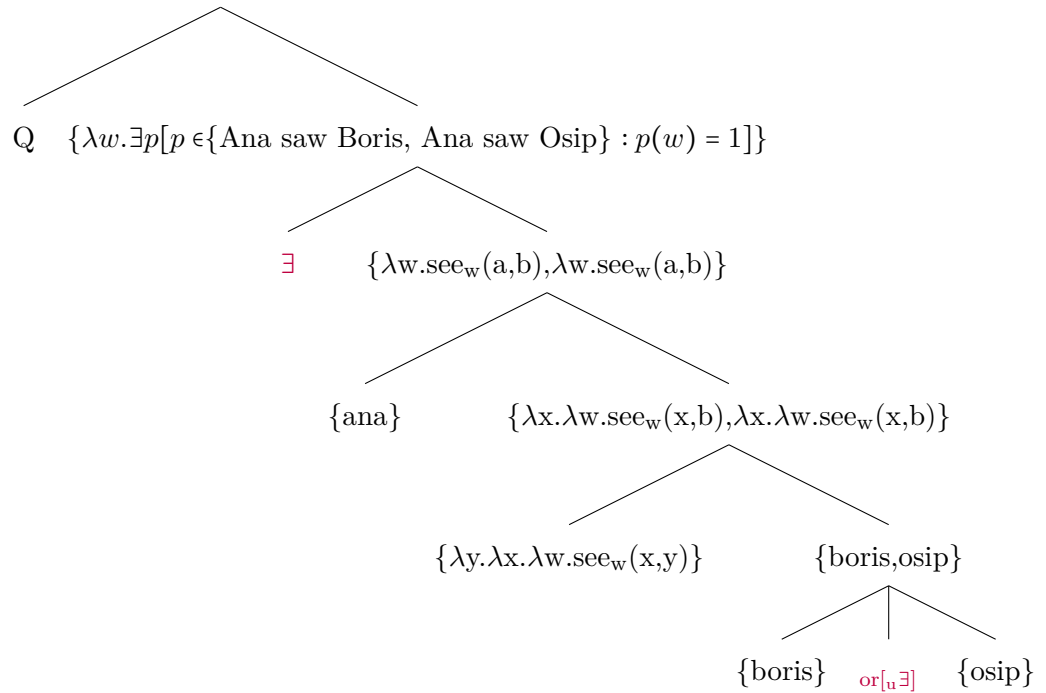
⁸The lack of a [$v\exists$] feature also allows for association with \forall , at least in certain configurations in Egyptian Arabic and Mandarin Chinese.

8.3.3.4 Analysis of disjunctive questions

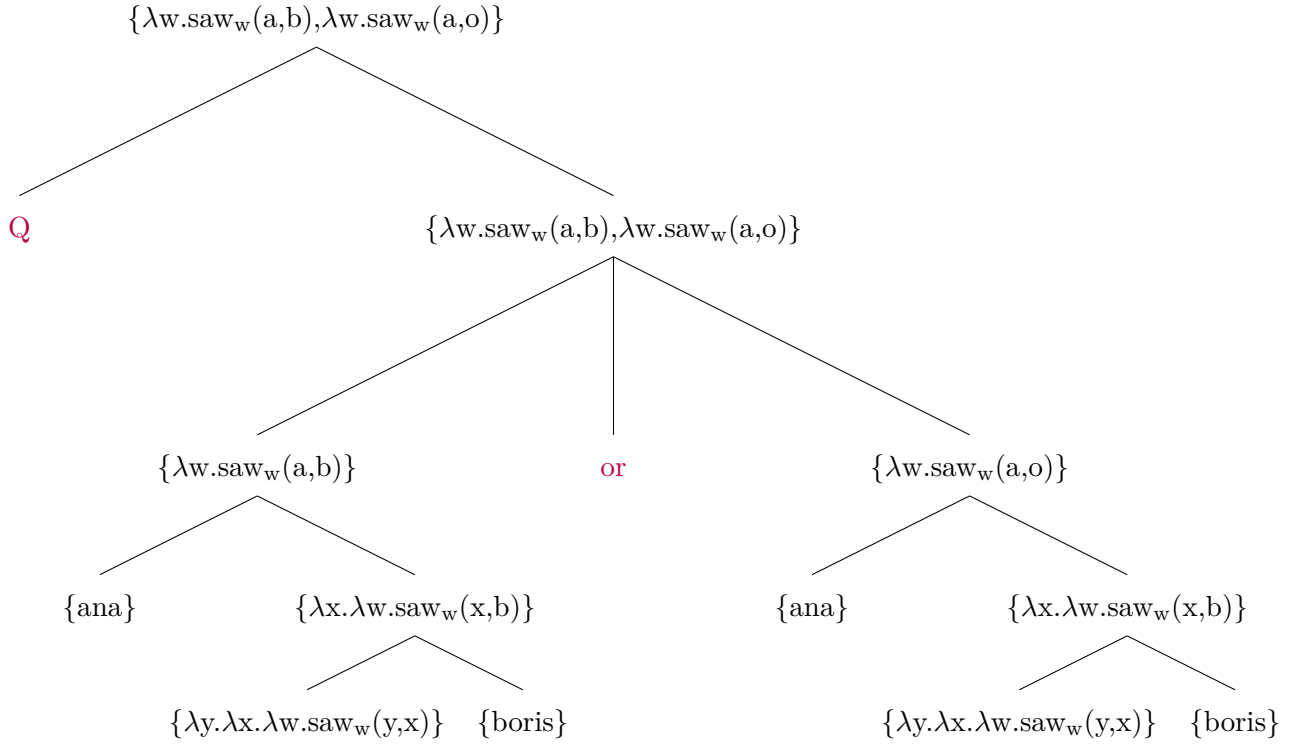
We end up with the analysis of disjunctive questions that we saw in chapter 2. The only difference is that in languages that employ interrogative disjunction, there is an uninterpretable $[\nu\exists]$ feature on the disjunction form, resulting in the unavailability of readings. For completeness, the derivations for PolQs with existential disjunctions and AltQs are given below in (28) and (29) respectively.

(28) PolQ: Did Ana see Boris {huòzhe,aw} Osip?

$\{\lambda w.\exists p[p \in \{\text{Ana saw Boris, Ana saw Osip}\} : p(w) = 1]\}$



(29) AltQ: Did Ana see Boris {háishi,walla,ala,vai} Osip?



The more liberal standard disjunction items *edo* (Basque) and *tai* (Finnish), receive the same analysis as the English disjunction *or*. That is, both (28) and (29) are available interpretations.

8.3.3.5 The association analysis: interrogative disjunction in not purely interrogative constructions

Before concluding this section, let us briefly go back to the appearance of interrogative disjunction outside of AltQs. Let me start with the appearance of the interrogative disjunction *walla* in the antecedent in counterfactual conditionals in Egyptian Arabic. As pointed out by Winans (2019), this is in line with Alonso-Ovalle’s (2006) analysis of disjunction and analysis of counterfactuals as co-relative constructions. The idea is that the set of alternatives that is produced by disjunction is bound by a universal operator \forall , instead of by \exists .

Concerning Mandarin Chinese, Erlewine (2017) and Huang (2009) observe that interrogative disjunction is licensed in a wider range of not purely interrogative constructions, including conditionals and under epistemic modals. This does not automatically follow on from the association analysis presented here. Yet, as shown in Erlewine (2017) an association analysis is more promising

than the *wh*-analysis. The idea that standard disjunction carries an $[\nu\exists]$ feature is a necessary ingredient to account for the Mandarin Chinese data. Concerning conditionals, the rationale is similar to the one for Egyptian Arabic: the alternatives projected from disjunction are bound by \forall . Concerning epistemic modals, Erlewine (2017) makes use of Aloni's (2007) account of Free Choice effects. In short, modals are defined as expressions that universally quantify over each of the alternatives in the alternative set. For the additional ingredients that are required to fully account for the Mandarin Chinese data, I refer to Erlewine (2017).

I leave the differences between these languages and how they relate to the formal definitions of the association analysis for further research. The main point here lies in the fact that the underlying idea of the association analysis is compatible with the appearance of interrogative disjunction in certain conditional contexts.

Finally, I leave open how the *otherwise* use of interrogative disjunction forms can be derived. One possibility is that the exclusivity presupposition is lexicalized and used in both AltQs and constructions containing *otherwise*.

8.3.4 Interaction with prosody and Q-particles

Let us take a step back and see how the presented analysis of interrogative disjunction forms ties in with the rest of the dissertation. In chapter 2, I argued that English *or* is ambiguous between having a $[\nu\exists]$ feature (resulting in a PolQ) and lacking one (resulting in an AltQ). In the current chapter, we saw that we have access to a set of languages that lexically encode the absence of a $[\nu\exists]$ feature. This allows us to test the predictions following on from the proposals concerning prosody and Q-particles.

In chapter 4, I proposed that the role of prosody is to shape the QUD. Following on from that, I argued in chapter 6 that the role of the Q-particles is to indicate the shape of the QUD. I proposed that what takes us from QUD (indicated by prosody or Q-particles) to semantics, are coherence requirements between prosody-discourse mapping and syntax-semantics mapping. In other words, disambiguation via prosody and Q-particles is realized indirectly via coherence requirements. For the analysis, I refer back to chapter 4. The point here is that this analysis makes

predictions for languages that rely on interrogative disjunction in combination with other cues: If there is incoherence between a QUD and a semantic denotation, we expect this to be visible. This prediction is indeed borne out. To see this, let us first take a look at Basque. Basque employs two surface strategies: interrogative disjunction and prosody. Consider (30).

- (30) a. [Te-a]↑ **ala** [kafe-a]↓ nahi duzu↓?
 tea-ART **or_{altq}** coffee-ART want you-it
 ‘Do you want coffee or tea?’ [AltQ - Basque]
- b. [Te-a **edo** kafe-a] nahi duzu↑?
 tea-ART **or_{stan}** coffee-ART want you-it
 ‘Do you want coffee or tea?’ [PolQ - Basque]

In this chapter, I have argued that *ala* lexicalizes the lack of a $[v\exists]$ feature, always forcing an AltQ denotation. In chapter 4, I proposed that this denotation is *incoherent* with PolQ prosody. Likewise, I argued that the denotation that is the result of the presence of a $[v\exists]$ feature (*edo* in Basque), forcing a PolQ denotation, is incoherent with AltQ prosody. This predicts that disjunctive questions with *ala* and PolQ prosody, as well as disjunctive questions with *edo* and AltQ prosody are unavailable. We observe in (31) that this prediction is borne out.⁹¹⁰¹¹

- (31) a. # [Te-a **ala** kafe-a] nahi duzu↑?
 tea-ART **or_{altq}** coffee-ART want you-it
- b. # [Te-a]↑ **edo** [kafe-a]↓ nahi duzu↓?
 tea-ART **or_{stan}** coffee-ART want you-it

In the same vein, the current proposal in combination with the coherence proposal makes predictions for languages that employ interrogative disjunction and Q-particles. Let us take Turkish as an example. In chapter 6, I proposed that the contribution of the Q-particle *mI* is to indicate the shape of the QUD. In the current chapter, I argued that *veya* expresses the presence of an $[v\exists]$ feature, forcing a PolQ reading. The QUD resulting from multiple Q-particles is not coherent with a PolQ denotation. We correctly predict that a disjunctive question containing *veya* and multiple

⁹Many thanks to Sergio Monforte for helping me with these data

¹⁰These judgments are elicited from speakers that reject *edo* in AltQs.

¹¹In recent experimental work on four variants of Arabic, Bani Younes (2020) shows that the empirical picture is more complicated if phonological cues are mixed with lexical cues. I leave this for future work.

Q-particles is unavailable in Turkish. Witness (32).

- (32) #Ali iskambil mi (oynadi) **veya** futbol mu oynadi?
Ali cards MI play.PST or_{altq} football MI play.PST
‘Was it cards or football that Ali played?’ [AltQ]

Altogether, the current proposal that is in line with Winans (2019), Erlewine (2017), and Lohiniva (2020), combined with the coherence proposal presented in chapter 4 makes the right predictions for the unavailability of the combination of surface cues.

Before concluding this chapter, let us turn to yet another special disjunction form that is used in AltQ composition.

8.4 Disjoining large disjuncts

8.4.1 AltQ disjunction in Korean and Japanese

I mentioned in section 8.3.1 that there is a set of languages that composes AltQs using a special disjunction form that is known to disjoin clause level constituents. This is discussed in Han and Romero (2004b) for Korean *animyen* and in Uegaki (2014b) for Japanese *soretomo*. At this point, I want to emphasize that the label *interrogative disjunction* needs to be treated carefully. Haspelmath (2007) uses the term interrogative disjunction for descriptive purposes and does not provide further diagnostics to identify the formal properties of interrogative disjunction. Although sufficient for Haspelmath’s (2007) purposes, using one label for the special disjunction forms we find in AltQs in this dissertation could be misleading. It would suggest that the disjunction forms in Japanese and Korean belong to the same category as the disjunctions in languages like Turkish and Mandarin Chinese and reflect the same underlying mechanisms. The reason for considering these disjunction forms as a separate category is that they have characteristics that interrogative disjunction forms do not share. Consider the Korean example in (34).

- (33) *Animyen* in Korean (Han and Romero 2004b)

Chelswu-ka khopi-lul animyen cha-lul masi-ess-ni?
 Chelswu-NOM coffee-ACC if.not tea-ACC drink-PST-INT

‘Did Chelswu drink coffee or tea?’ [✓AltQ/*PolQ]

It is known that *animyen* is used to disjoin only clause level constituents (Han and Romero 2004b). Furthermore, the usage of *animyen* can be omitted in AltQs (Ceong 2015). On top of that, *animyen* literally translates as *if not* and can be used as a connective in declaratives and imperatives (Han and Romero 2004b).

(34) *Animyen* in Korean (Lee and Lee 2000)

animyen chasenul hana te mantule cuseyyo
 if.not car lane one more make.give

‘If not, please make another car lane more.’

Japanese *soretomo* patterns with Korean *animyen*. *Soretomo* only disjoins large disjuncts, is elidable and forces an AltQ interpretation, as is shown in (35) (Uegaki 2014b).

(35) Japanese *soretomo* (Uegaki 2014a, ex.21,p.358)

[Taro-ga] koohii-o non-da-ka] (soretomo) [~~Taro-ga~~ ocha-o non-da-ka]]
 Taro-NOM coffee-ACC drink-PST-Q or Taro-NOM tea-ACC drink-PST-Q

‘Did Taro drink coffee or tea?’ [AltQ]

Soretomo can also be used as a connective meaning ‘otherwise’. Although this usage is restricted, there are examples in the literature. See for example (36).

(36) Japanese *soretomo* (Takahashi 2012, p.171)

jiyu soretomo shi o
 liberty or death do

‘Give me liberty or give me death!’

Within this dissertation, I do not provide an analysis of AltQ meaning in Japanese and Korean and leave this for future work. The fact that the special disjunction forms *animyen* and *soretomo*

can only disjoin large (proposition denoting) constituents is fully compatible with the assumption in this dissertation that in AltQs, the disjuncts are proposition-denoting (see chapter 3). Having said that, the crosslinguistic picture, including items like *soretomo* and *animyen* does not call for a dichotomous analysis, but rather, for a unified one, as we will see in the next subsection.

8.4.2 Association and large disjuncts

Recall from section 8.3.1 that Uegaki (2014a) argues for a dichotomous analysis of AltQs, in which there are two types of disjunctions in AltQs: disjunction forms like Basque and Finnish that inherently lexicalize AltQ meaning (revised strategy (ii))¹² and forms like Japanese *soretomo* that put restrictions on the size of the disjuncts and generate AltQ meaning by disjoining two PolQs (strategy (i)). The two types of disjunction forms reflect two inherently different strategies to derive AltQ meaning. Although I leave the analysis of Japanese and Korean AltQs for future work, I want to take a moment here to take a closer look at the full empirical picture and call into question Uegaki's (2014b) distinction between strategies. In order to do so, I provide an overview of the empirical facts concerning each strategy.

We start with the characteristic properties of disjunction forms that have been analyzed as generating a 'PolQ or PolQ' semantics. A close look at the crosslinguistic paradigm reveals four properties that these disjunction forms have in common: (i) it is reported that these disjunction forms only conjoin large disjuncts, (ii) literally, the disjunction form means 'if not', (iii) disjunction forms can be used as a connective expressing 'if not' or 'otherwise' in not purely interrogative constructions, and (iv) the disjunction forms are elidable. While not all properties are equally important for the main point I want to make, I included all of them for completeness. These properties are shared by Japanese *soretomo*, Korean *animyen*, and Egyptian Arabic *walla*. Concerning Turkish *yoksa*, it has not been explicitly reported in the literature that it is restricted to clause level disjunction, but there are no examples of *yoksa* in which it appears clearly with small disjuncts. Concerning the other properties, it is clear that Turkish *yoksa* is characterized by (ii), (iii), and (iv).

¹²As explained above, Uegaki (2014a) takes this to be a [+wh] feature, while I argue it is the lack of an [v \exists] feature.

For languages relying on the strategy of lexicalizing the association properties of disjunction as a path to AltQ meaning, the most important property is (i) the appearance in environments that are linked to the \forall operator, as we saw in section 8.2.2. Apart from this, the disjunction forms (ii) cannot be elided and there is (iii) no clear morphological transparency. Property (i) is only attested for Mandarin Chinese *háishi* and Egyptian Arabic *walla*. Properties (ii) and (iii) are shared by Mandarin Chinese *háishi*, Basque *ala*, and Finnish *vai*. Egyptian Arabic *walla* shares property (ii) and cannot be elided, but does not display property (iii).

An overview is given in Table 8.3.

	item	disjunct size	usage beyond AltQs	morphological transparency	status
Japanese	soretomo	large	connective ‘otherwise’	if not	elidable
Korean	animyen	large	‘if not’	if not	elidable
Turkish	yoksa	no apparent restriction	connective ‘otherwise’	if not	elidable
Finnish	vai	no restriction	none reported	none reported	mandatory
Basque	ala	no restriction	none reported	none reported	mandatory
Mandarin Chinese	haishi	no restriction	\forall environments ¹³	none reported	mandatory
Egyptian Arabic	walla	large	\forall environments connective ‘otherwise’	or else	mandatory

Table 8.3: Disjunction forms in AltQs summarized.

From the perspective of a hybrid analysis, the picture that emerges from 8.3 is one in which Japanese, Korean and Turkish correspond to strategy (i), while Finnish, Basque, and Mandarin Chinese correspond to strategy (ii). However, a problem arises when looking at Egyptian Arabic. As shown in Table 8.3, the disjunction form in Egyptian Arabic has properties of both strategy (i) and strategy (ii). If one were to pursue a hybrid account, the question would be how to categorize Egyptian Arabic.

To get to the core of the problem, let us take a small step back. As I showed in chapter 3, there is objective evidence that AltQs consist of large disjuncts. Within this dissertation, this evidence leads to the analysis of the disjuncts as IP sized, i.e., proposition-denoting. Uegaki (2014a) interpreted this evidence as support for the ‘PolQ or PolQ’ analysis of AltQs in languages like Japanese. Languages on which AltQs cannot be analyzed as the disjunction of two full PolQs

were claimed to rely on a different strategy. In section 8.3, I argued that such languages lexicalize the need for association with particular operators on their disjunction forms. The prediction that arises from a hybrid analysis that includes (i) the disjunction of two PolQs, and (ii) the association analysis, is that there is a clear divide between languages. This prediction is not borne out: We find characteristics of both strategies in Egyptian Arabic. In other words, the evidence that led Uegaki (2014b) to analyze Japanese AltQs as the disjunction of two full PolQs can also be found in Egyptian Arabic, in which it crucially co-occurs with evidence for an association analysis (the appearance of the disjunctive phrase in the antecedent of a counterfactual conditional). I conclude that a hybrid analysis of specialized disjunction forms in AltQs is the result of misinterpreting the evidence for large disjuncts. This evidence suggests that semantically, the disjuncts are propositions (IPs), but never full PolQs (CPs). An analysis of proposition-denoting or IP-sized disjuncts in AltQs, is fully compatible with the association analysis. Hence, I argue for a unified analysis of AltQs in which (i) the final meaning is always the result of association between the set projected from disjunction and the Q-operator and (ii) the disjuncts always denote propositions, but not full PolQs.

With regard to the data in Table 8.3, I propose that there are parametric differences between languages in terms of what is lexicalized. The specialized disjunction forms in Japanese, Korean and Turkish lexicalize the size of the disjuncts, while interrogative disjunction in languages such as Finnish, Basque and Mandarin Chinese lexicalize the association properties of disjunction (the lack of an unvalued existential feature $[v\exists]$). Egyptian Arabic is a transparent language when it comes to AltQ disjunction forms and lexicalizes both the size of the disjuncts and the association properties. Strict standard disjunction forms in languages like Mandarin Chinese, Egyptian Arabic and Turkish lexicalize the association properties of disjunction (the mandatory presence of an $[v\exists]$ feature).

8.5 Conclusion

In this chapter, I discussed the role of interrogative disjunction in AltQ composition. The main point was that languages that employ specialized interrogative disjunction forms to disambiguate between AltQs and PolQs lexicalize the association properties of the Hamblin set projected by disjunction.

In particular, I proposed that standard disjunction signals the presence of a $[\nu\exists]$ feature, forcing a PolQ reading. I argued that interrogative disjunction signals the absence of such a feature, resulting in an AIQ interpretation. Following Winans (2019) and Erlewine (2017), I argued that this analysis correctly predicts the occurrences of interrogative disjunction forms in conditionals and other sentence types. I left open how to account for the differences between languages and how to account for the *otherwise* type of use of interrogative disjunction. Importantly, I showed that the proposal in the current chapter can be combined with the proposal on prosody in chapter 4 and the analysis of Q-particles in chapter 7, thus yielding the right predictions.

Chapter 9

Conclusion

9.1 Main findings

The central aim of this dissertation was to make progress in understanding the mapping from various surface strategies - prosodic, morpho-syntactic, lexical - to AltQ meaning. In order to achieve this, I carried out an extensive crosslinguistic investigation of the different surface cues. I collected data from English, Turkish, Macedonian, Sinhala, Tamil, Egyptian Arabic, Mandarin Chinese, Basque and Finnish. In addition to the elicited data, the presented analyses were informed by the literature on said languages. At various points, I brought the attention to relevant literature on languages beyond this list. To sum up, I discussed data from Dutch, Japanese, Hindi, Korean, Iron Ossetic, Russian, German, Croatian, Hausa, Bulgarian and Tlingit. This means that the ideas, proposals and analyses presented in this dissertation are motivated by data from a wide range of languages and are crosslinguistically valid. In pursuing this line towards understanding AltQs, I hope to have contributed to the development of a unified analysis of AltQs and to have provided an overview of the essential components that such an analysis should include. Let me now summarize the main findings.

The first step in developing an analysis of form to meaning mapping was taken in Part I of the dissertation, in which the aim was to gain a better understanding of the syntactic and semantic representation of AltQs. In chapter 2, I laid out the semantic and pragmatic principles that are generally assumed in the literature concerning disjunction and discourse structure. In particular, I assumed that the Hamblin denotation of an AltQ - a set containing the alternatives denoted by the disjuncts - is the result of the association between disjunction and the Q-operator. The disjunctive

set can also associate with the \exists -operator, resulting in a PolQ interpretation. I furthermore spelled out Rooth's (1992) Alternative Semantics framework and Roberts's (1996) modeling of discourse in QUDs.

Concerning the syntactic representation, I argued in chapter 3, that the disjuncts are always proposition-denoting, but never full PolQs. A review of recent literature showed that there is consensus that the disjuncts are bigger than their surface size, but their exact size is still a topic of debate in the literature. I put forward novel data concerning three construction types: AltQs, modal verbs and coordination with *because*. I investigated the scopal mechanisms of all three constructions and discovered a striking pattern: In all three coordinate constructions, the operator can appear in each disjunct. Crucially, in the case of a double occurrence of the operator, the reading resulting from a single operator is available in all three constructions. The consequence is that the most prominent argument in favor of a PolQ-sized analysis of the disjuncts in AltQs is dismantled. This led me to conclude that the disjuncts are proposition-denoting, but never full PolQs.

I then turned to Part II of the dissertation, in which we saw that languages take different pathways leading to the AltQ denotation using various, often co-occurring, strategies. Three different strategies were discussed: prosodic cues (chapters 4 and 5), the placement of Q-particles (chapters 6 and 7), and the usage of a specialized disjunction form (chapter 8).

With respect to surface marking, the most straightforward route to AltQ semantics is using a specialized disjunction form. I proposed, in chapter 8, that the association properties of disjunction are encoded on interrogative disjunction forms, used in languages like Finnish, Basque, and Egyptian Arabic. In these languages, the surface form directly governs the semantics and no further steps are required to disambiguate between AltQ semantics and PolQ semantics.

A less direct route from surface to meaning is taken by languages using prosody to get to AltQ meaning. I proposed in chapter 4 that the final fall and the multiple accent play a role in structuring discourse. Building on insights from previous literature (Bäuerle 1979, Rooth 1992, Roberts 1996, Biezma 2009), I argued that the placement of the multiple accents indicate the location of the *wh*-phrase in the overarching QUD. With respect to the final fall, I made use of the

idea of intonational compliance marking and took the final fall to signal compliance with the A-Maxims (Westera 2017, 2018). That is, the final fall signals that the speaker does not consider other alternatives than those mentioned to be possible and relevant answers to the QUD. I then proposed that the route from the QUD (as indicated by the multiple accents and the final fall) to semantic denotation was led by coherence requirements. In particular, I proposed that there always has to be a coherent relationship between QUD (motherQ) and Hamblin denotation (daughterQ), using Roberts's (1996) congruence requirements and Dayal's (1996) *Maximize Informativity* principle.

In chapter 5, I discussed two types of disjunctive questions that have received little attention in the field: OpenQs and ClassQs. First and foremost, I argued that OpenQs and ClassQs are not somewhere in the middle on the AltQ-PoLQ spectrum and that they are not hybrid forms. Instead, I showed that both types of interrogatives are semantically PolQs. Concerning OpenQs, Roelofsen and van Gool (2010), Roelofsen (2015), and Hoeks and Roelofsen (2020) made the important point that, in a compositional approach to prosody, any analysis of the prosodic cues in PolQs and AltQs should be extendable to OpenQs. Based on Arendt (2017), I first rectified the reported judgments in the literature and showed that *yes* can serve as an answer to an OpenQ, as long as the context does not require specification. Following on from there, I demonstrated that the proposal from chapter 4 can be directly extended to OpenQs and successfully accounts for the meaning effects of OpenQs, while analyzing them as PolQs semantically. Concerning ClassQs, I showed that the combination of a plateau rise and lengthening of the disjuncts results in a peculiar and, to my knowledge, not previously discussed effect. In uttering a ClassQ, a speaker signals that she expects the addressee to know that the list she initiated by naming the disjuncts contains more alternatives than the ones mentioned and indicates that these alternatives belong to a class that is shared by the speaker and the addressee. I modeled this effect as an idiosyncratic phonological cue and showed that its illocutionary flavor is incompatible with AltQ meaning. As a result, ClassQs are semantically interpreted as PolQs. The data on ClassQs also show that within the prosody-meaning interface, there are a lot of phonological cues that require proper examination.

In order to understand the path from Q-particles to AltQ meaning, I investigated the meaning contribution of locally attached Q-particles in PolQs in chapter 6. The idea was to use PolQs as

a window into the meaning contribution of Q-particles in AltQs. I presented a data overview consisting of data that has been known in the literature from Sinhala and Turkish and newly elicited data from Macedonian and Tamil. The pattern emerging in all four languages is that the local attachment of a Q-particle has a focusing effect. I then addressed the question of what this ‘focusing’ effect means in terms of usage or pragmatics. I showed that the contribution of the Q-particles in Turkish and Macedonian is not necessarily a *uniqueness* presupposition. This conclusion was based on novel empirical data from Macedonian and insights from the literature on Turkish (Karatat 2017, Göksel and Kerslake 2005). Instead, I argued that the core contribution of a Q-particle is to signal the constituent it attaches to is focus. This is fully compatible with the fact that languages like Tamil and Sinhala lexicalize uniqueness on Q-particles as an extra layer of meaning.

Based on the insights from chapter 6, I proceeded in chapter 7 with a proposal of the Q-particles that is parallel to what I argued for the multiple accent in chapter 4. In line with what Bäuerle (1979), Roberts (1996) and Biezma (2009) propose for the focal accent, I argued that the location of the Q-particle in PolQs and AltQs indicates the location of the *wh*-word in the overarching QUD. The Q-particle signals that the constituent it attaches to is focus marked and associates with the \sim -operator (cf. Roberts (1996), Biezma (2009)). The final issue in chapter 7 was how to unify this account with existing accounts concentrating on the contribution of Q-particles in *Wh*Qs. There is a prominent line of work that analyses the Q-particles in *Wh*Qs in languages like Sinhala as a variable over choice-functions (Kishimoto 2005, Cable 2010, Slade 2011). I argued that a choice function is not a necessary tool to establish a link between the Q-operator and the focus alternatives contributed by the *wh*-phrase in a Beck (2006)-style analysis of *wh*-phrases. Inspired by the basic ideas in Cable (2010) and Slade (2011), I proposed that standard Roothian focus association establishes a link between the Q-operator and the set of alternatives. The advantage is that we have an explanatory role of the Q-particles in AltQs, PolQs and *Wh*Qs.

The main message of this dissertation is that the three surface strategies that languages make use of to compose AltQs do reflect the same underlying mechanisms. In other words, AltQs are semantically a universal phenomenon, consisting of the same components in different languages.

The difference between languages does not lie in the way AltQ meaning is constructed, but in what part(s) of AltQ meaning is expressed.

Within the bigger picture, this dissertation is an ultimate attempt to bring together insights from various corners of the literature. Individual parts of meaning (exhaustivity, exclusivity, minimality) and individual surface cues (multiple accents, final fall, Q-particles, disjunction forms) have received considerable attention in the field with promising results. Much of this dissertation follows from combining previous findings, which resulted in a unified analysis of AltQs that builds on independently motivated principles and ingredients. Very broadly, I hope to have contributed to our understanding of the interaction between the principles acting on various layers of the grammar and thus to our understanding of the interfaces.

9.2 Directions for future work

As is so often the case, this dissertation has raised as many questions as it answered. I would like to take this opportunity to point out a number of outstanding questions and potentially promising directions for future work.

In chapters 4 and 5, I pursued a compositional approach to prosody and modeled the placement of the accents (multiple accents vs. block accent) and the shape of the accents (rising vs. falling). I also identified the lengthened plateau rise in disjunctive question as a surface cue that gives rise to a particular illocutionary flavor, resulting in what I labelled ‘ClassQs’. I argued that the lengthened plateau rise functions as an idiosyncratic cue, making reference to a class that is contained in the epistemic state of both the speaker and the addressee. The ClassQ data contribute to the line of work that concentrates on the relation between prosody and meaning, beyond falling and rising boundary tones. For examples of recent work within this line of research, see Jeong (2016) for an account of prosody and affective meaning, Jeong (2018) for an analysis of two types of rises in declaratives, and Kraus (2018) for an account of three contours in German discourse particles. In chapter 5, I left open whether the cue can be empirically attested outside of the domain of interrogatives, i.e., declaratives and imperatives, yielding the same effects. Furthermore, I did not address the question of whether the two cues - lengthening and the plateau shape of the accent -

can be teased apart and whether they individually can be related to parts of meaning. Following up upon these issues seems to be a promising step towards a better understanding of the broader prosody-meaning interface. Furthermore, a comparison between prosodic cues and gestures could be helpful. The meaning effects that are invoked by ClassQs are reminiscent of effects that can be expressed by gestures. One could hypothesize that particular effects could be realized by cues of different nature. For example, one can make reference to the epistemic state of the addressee by winking. Moreover, indicating that a list contains more alternatives than the ones mentioned can be done by continuous hand movements.

In chapter 8, we briefly touched on the issue of interrogative disjunction forms in conditional constructions. The crosslinguistic overview of the appearance of these forms leaves us with an interesting question for future research: What is the common denominator between the antecedent of a conditional and an interrogative? On top of that, it remains an open issue as to why languages like Finnish and Basque do not allow for interrogative disjunction forms in conditional constructions, while Mandarin Chinese and Egyptian Arabic do. Concerning Egyptian Arabic in particular, the interrogative disjunction form *walla* only appears in counterfactual conditionals. This raises the question of what components do counterfactual conditionals share with interrogative environments, and why is this not shared with indicative conditionals. The answers to these questions would be a valuable contribution to the larger enterprise of understanding the formal nature of interrogativity.

At various points in this dissertation, we encountered the issue of the multiple components of focus marking. Within this dissertation, I made use of Rooth's (1992) alternative-based approach to focus and showed that we can successfully derive AltQ meaning from this approach. However, we found that in the composition of questions in particular, the picture is more complex. The data suggest that around the core meaning of focus marking - invoking alternatives - there are various components of meaning that end up in the mixing bag of focus and languages display variation when it comes to what exactly ends up in this bag. This is best illustrated by the Q-particle data. We saw in chapter 6 and 7 that in Sinhala, Tamil, Turkish and Macedonian, Q-particles indicate what constituent is focus marked. We also saw that the languages varied in terms of what happened with the set of alternatives resulting from focus marking. For example, we saw that in Sinhala, the

focus alternatives can associate with the Q-operator, yielding *WhQ* meaning. This is not available in Tamil, Turkish and Macedonian. Furthermore, the Macedonian data suggest that the Q-particle is used to express emphatic focus, while accents are used to invoke alternatives. The crosslinguistic data also hint toward a relation between *uniqueness* and focus. Although I argued against the idea that focus in questions solely contributes *uniqueness*, it would be a strange coincidence that Sinhala and Tamil express uniqueness through focus marking, and that Macedonian and Turkish have a tendency towards uniqueness if they use focus. A final related open issue concerns focus in *WhQs*. It is a common assumption in the literature that *wh*-phrases only have a focus value (Beck 2006). We observe that if the *wh*-phrased is ‘focused’ - i.e., receives a pitch accent in English or is accompanied by a Q-particle in Turkish and Macedonian - the resulting reading is one with an echoic or what-the-hell meaning (Rudin et al. 1999, Sezer 2012, Beck and Reis 2018). This raises the question of how these emphatic question meanings can be formally derived. An overview of the potential components that languages can put in the focus mixing bag would advance the larger enterprise to theoretically model focus, and in particular, its relation with interrogativity.

A final and obvious open issue is the systematic investigation of the cues resulting in *AltQ* meaning in a variety of languages. A better understanding of the prosodic system and its role in *AltQ* composition in languages like Turkish, Sinhala or Egyptian Arabic could shed a light on some of the predictions arising from this dissertation and help us to investigate the interaction between surface strategies - a topic I mostly left untouched. Such insights would most definitely help us to understand if and to what extend the analyses offered in this dissertation can be extended and would at the same time contribute to a broader general understanding of the compositional strategies within the interrogative system.

Appendix A

Appendix

A.1 Notational conventions

Focus marking and contrastive topic marking on constituents are marked with the subscripts _F or _{CT}. Q-particles in Sinhala, Tamil, Turkish and Macedonian are glossed as the lexeme in SMALL-CAPS(Də, AA, MI, LI). Q-particles in other languages are glossed as Q. The subscripts _{alt} and _{stan} on disjunction signal interrogative disjunction and standard disjunction respectively. In Sinhala, there is *-e* or *-a* marking on the verb that is glossed as A and E. The abbreviations used in glossing examples from non-English languages are given in the table below, in line with the Leipzig Glossing Rules.

1,2,3	first, second, third person
ACC	accusative
ADV	adverbial
ART	article
CONT	continuation
COP	copula
DAT	dative
DEF	definite
ERG	ergative
F	feminine
FUT	future
IPFV	imperfective
LOC	locative
M	male
NEG	negation
NOM	nominative
NMLZ	nominalizer
PFV	perfective
PL	plural
PRS	present
PRT	particle
PROG	progressive
PTCP	participle
Q	Q-particle
SBJV	subjunctive
SG	singular
TOP	topic

Bibliography

- Aloni, M. (2007). Free choice, modals, and imperatives. *Natural Language Semantics* 15(1), 65–94.
- Alonso-Ovalle, L. (2006). *Disjunction in alternative semantics*. University of Massachusetts Amherst Amherst.
- Arendt, K. (2017). The effect of intonation on the interpretation of disjunctive questions. *Term Paper Ling315*.
- Bailey, L. (2013). Question particles: Thai, Japanese and English. *Linguistica Atlantica* 32, 34–51.
- Bani Younes, M. (2020). *The role of phonology in the disambiguation of disjunctive questions*. Ph. D. thesis, University of York.
- Banuazizi, A. and C. Creswell (1999). Is that a real question? final rises, final falls, and discourse function in yes-no question intonation. *CLS* 35, 1–14.
- Bar-Lev, M. E. and D. Fox (2020). Free choice, simplification, and innocent inclusion. *Natural Language Semantics*, 1–49.
- Bartels, C. (1999). *The intonation of English statements and questions*. New York: Garland.
- Bayırlı, I. K. (2017). On the distribution of *exh*: the case of Turkish complex disjunction. *Manuscript*.
- Beck, S. (2006). Intervention effects follow from focus interpretation. *Natural Language Semantics* 14(1), 1–56.
- Beck, S. and S.-S. Kim (2006). Intervention effects in alternative questions. *The Journal of Comparative Germanic Linguistics* 9(3), 165–208.

- Beck, S. and M. Reis (2018). On the form and interpretation of echo wh-questions. *Journal of Semantics* 35(3), 369–408.
- Beckman, M. E. and J. B. Pierrehumbert (1986). Intonational structure in Japanese and English. *Phonology* 3, 255–309.
- Belnap, N. D. and T. B. Steel (1978). The logic of questions and answers.
- Beltrama, A., E. Meertens, and M. Romero (2020). Alternative questions: Distinguishing between negated and complementary disjuncts. *Semantics and Pragmatics* 13, 5.
- Beltrama, A. and A. Trotzke (2019). Conveying emphasis for intensity: Lexical and syntactic strategies. *Language and Linguistics Compass* 13(7), e12343.
- Bhatt, R. and V. Dayal (2020). Polar question particles: Hindi-Urdu *kya*. *Natural Language & Linguistic Theory*, 1–30.
- Biezma, M. (2009). Alternative vs polar questions: the cornering effect. In *Semantics and Linguistic Theory*, Volume 19, pp. 37–54.
- Biezma, M. and K. Rawlins (2012). Responding to alternative and polar questions. *Linguistics and Philosophy* 35(5), 361–406.
- Boersma, P. and D. Weenink (2018). Praat: doing phonetics by computer[computer program] version 6.0.47. <http://www.praat.org/>.
- Bolinger, D. (1978). Yes—no questions are not alternative questions. In *Questions*, pp. 87–105. Springer.
- Bošković, Ž. and S. Franks (2000). Across-the-board movement and *lf*. *Syntax* 3(2), 107–128.
- Bruce, G. (1977). *Swedish word accents in sentence perspective*, Volume 12. Liber-Läromedel/Gleerup Malmö.
- Bäuerle, R. (1979). Questions and answers. In R. Bäuerle and U. Egli (Eds.), *Semantics from different points of view*. Berlin-Heidelberg-New York: Springer.

- Burdin, R. S. and J. Tyler (2018). Rises inform, and plateaus remind: Exploring the epistemic meanings of “list intonation” in american english. *Journal of Pragmatics* 136, 97–114.
- Büring, D. (1997). The great scope inversion conspiracy. *Linguistics and philosophy*, 175–194.
- Büring, D. (2003). On D-trees, beans and B-accent. *Linguistics and Philosophy* 26, 511–545.
- Butt, M., T. Bögel, and F. Jabeen (2017). Polar kya and the prosody-syntax-pragmatics interface. In *Proceedings of the LFG’17 Conference*, pp. 125–145.
- Bylinina, L. and R. Nouwen (2018). On “zero” and semantic plurality. *Glossa: a journal of general linguistics* 3(1).
- Cable, S. (2010). *The grammar of Q: Q-particles, wh-movement, and pied-piping*. Oxford University Press.
- Ceong, H. H. (2015). The construction of polar alternative questions: Korean a-not-a.
- Chierchia, G. (2006). Broaden your views: Implicatures of domain widening and the “logicality” of language. *Linguistic inquiry* 37(4), 535–590.
- Ciardelli, I., J. Groenendijk, and F. Roelofsen (2018). *Inquisitive semantics*. Oxford University Press.
- Condoravdi, C. and S. Lauer (2012). Imperatives: Meaning and illocutionary force. *Empirical issues in syntax and semantics* 9, 37–58.
- Cremers, A., M. Hoeks, G. Lisowski, and J. Pesetsky (2017). Experimental evidence for a semantic account of free choice. *Colloque de Syntaxe et Semantique*.
- Davidson, D. (1967). Causal relations. *The Journal of philosophy* 64(21), 691–703.
- Dayal, V. (1996). *Locality in WH quantification: Questions and relative clauses in Hindi*. Dordrecht: Kluwer.
- de Rijk, R. P. and A. de Coene (2008). *Standard Basque: A progressive grammar*. MIT Press.

- De Veugh-Geiss, J. P., S. Tönnis, E. Onea, and M. Zimmermann (2018). That's not quite it: An experimental investigation of (non-) exhaustivity in clefts. *Semantics and Pragmatics* 11.
- Dehé, N. and B. Braun (2020). The prosody of rhetorical questions in english. *English Language & Linguistics* 24(4), 607–635.
- Domaneschi, F., M. Romero, and B. Braun (2017). Bias in polar questions: Evidence from english and german production experiments. *Glossa: a journal of general linguistics* 2(1).
- Dukova-Zheleva, G. (2010). *Questions and focus in Bulgarian*. Ph. D. thesis, University of Ottawa (Canada).
- Englund, B. D. (1977). *Yes/no-questions in Bulgarian and Macedonian*. Acta Universitatis Stockholmiensis. Stockholm Slavic studies 12. Almqvist & Wiksell International.
- Erlewine, M. Y. (2014). Alternative questions through focus alternatives in mandarin chinese. In *Proceedings of the 48th Meeting of the Chicago Linguistic Society*, pp. 221–234. Citeseer.
- Erlewine, M. Y. (2017). Two disjunctions in mandarin chinese. *Ms., National University of Singapore*.
- Erlewine, M. Y. and H. Kotek (2018). Focus association by movement: Evidence from tanglewood. *Linguistic Inquiry* 49(3), 441–463.
- Erschler, D. (2018). Suspended affixation as morpheme ellipsis: Evidence from ossetic alternative questions. *Glossa* 3(1).
- Farkas, D. F. and K. B. Bruce (2010). On reacting to assertions and polar questions. *Journal of semantics* 27(1), 81–118.
- Féry, C. and F. Schubö (2010). Hierarchical prosodic structures in the intonation of center-embedded relative clauses. *The Linguistic Review* 27(3), 293–317.
- Fox, D. (2007). Free choice and the theory of scalar implicatures. In *Presupposition and implicature in compositional semantics*, pp. 71–120. Springer.

- Fox, D. (2018). Partition by exhaustification: Comments on dayal 1996. In *Proceedings of sinn und bedeutung*, Volume 22, pp. 403–434.
- Frey, W. (2010). \bar{A} -movement and conventional implicatures: About the grammatical encoding of emphasis in german. *Lingua* 120(6), 1416–1435.
- Frota, S. (2012). Prosodic representations: Prosodic structure, constituents, and their implementation. In M. E. R. Abigail C. Cohen, Marie K. Huffman (Ed.), *The Oxford Handbook of Laboratory Phonology*, pp. 255–265. Oxford: Oxford University Press.
- Göksel, A. and C. Kerslake (2005). *Turkish: A comprehensive grammar*. Routledge.
- Gračanin-Yukse, M. (2016). Size matters: The syntax of disjunctive questions. *Linguistic Inquiry* 47(2), 283–305.
- Grice, P. (1975). Logic and conversation. In P. Cole and J. L. Morgan (Eds.), *Speech Acts*, pp. 41–58. New York: Academic Press.
- Grimshaw, J. (1979). Complement selection and the lexicon. *Linguistic inquiry* 10(2), 279–326.
- Groenendijk, J. and M. Stokhof (1994). Questions, chapter 1. *Handbook of logic and language*. Elsevier Science BV.
- Groenendijk, J. A. G. and M. J. B. Stokhof (1984). *Studies on the Semantics of Questions and the Pragmatics of Answers*. Ph. D. thesis, Univ. Amsterdam.
- Guerzoni, E. (2003). *Why even ask?: on the pragmatics of questions and the semantics of answers*. Ph. D. thesis, Massachusetts Institute of Technology.
- Guerzoni, E. and Y. Sharvit (2007). A question of strength: on npis in interrogative clauses. *Linguistics and Philosophy* 30(3), 361–391.
- Gunlogson, C. (2004). *True to form: Rising and falling declaratives as questions in English*. Routledge.

- Hagstrom, P. A. (1998). *Decomposing questions*. Ph. D. thesis, Massachusetts Institute of Technology.
- Haida, A. (2009). The syntax and semantics of alternative questions in chadic.
- Hakulinen, A. and F. Karlsson (1988). *Nykysuomen lauseoppia [modern finnish grammar]*. *Helsinki: SKS*.
- Hakulinen, A., R. Korhonen, M. Vilkuna, and V. Koivisto (2004). *Iso suomen kielioppi*. Suomalaisen kirjallisuuden seura.
- Hamblin, C. L. (1976). Questions in montague english. In *Montague grammar*, pp. 247–259. Elsevier.
- Han, C.-H. and M. Romero (2004a). Disjunction, focus, and scope. *Linguistic Inquiry* 35(2), 179–217.
- Han, C.-H. and M. Romero (2004b). The syntax of *Whether/Q... Or* questions: Ellipsis combined with movement. *Natural Language and Linguistic Theory* 22(3), 527–564.
- Haspelmath, M. (2007). Coordination. *Language typology and syntactic description* 2, 1–51.
- Heim, I. (1991). Artikel und definitheit. *Semantik: ein internationales Handbuch der zeitgenössischen Forschung*, 487–535.
- Heim, I. and A. Kratzer (1998). *Semantics in generative grammar*, Volume 1185. Blackwell Oxford.
- Hirsch, A. and B. Schwarz (2020). Singular which, mention-some, and variable scope uniqueness. In *Semantics and Linguistic Theory*, Volume 29, pp. 748–767.
- Hirschberg, J. (2004). Pragmatics and intonation. *The handbook of pragmatics*, 515–537.
- Hoeks, M. (2019). Focus alternatives in alternative questions. *Talk given at InqBnb Workshop, Amsterdam*.
- Hoeks, M. (2021). The role of focus marking in disjunctive questions: A qud-based approach. In *Semantics and Linguistic Theory*, Volume 30, pp. 654–673.

- Hoeks, M. and F. Roelofsen (2020). Coordinating questions: The scope puzzle. In *Semantics and Linguistic Theory*, Volume 29, pp. 562–581.
- Homer, V. (2015). Neg-raising and positive polarity: The view from modals. *Semantics and Pragmatics* 8, 4–1.
- Horn, L. R. (1981). Exhaustiveness and the semantics of clefts. In *North East Linguistics Society*, Volume 11, pp. 10.
- Huang, R.-h. R. (2009). Delimiting three types of disjunctive scope in mandarin chinese. *UST Working Papers in Linguistics, Graduate Institute of Linguistics* 5 (National Tsing Hua University).
- Huang, R.-h. R. (2010). Disjunction, coordination, and question: a comparative study.
- Iatridou, S. and H. Zeijlstra (2013). Negation, polarity, and deontic modals. *Linguistic inquiry* 44(4), 529–568.
- Iivonen, A. and D. Hirst (1998). Intonation in finnish. *Intonation systems*, 311–327.
- Jabeen, F. (2019). *Prosody and word-order: prominence marking in declaratives and Wh-questions in Urdu/Hindi*. Ph. D. thesis, University of Konstanz.
- Jeong, S. (2016). Conventions in prosody for affective meanings: Non-canonical terminal contours in english polar interrogatives. In *Speech Prosody*, Volume 2016, pp. 907–911.
- Jeong, S. (2018). Intonation and sentence type conventions: Two types of rising declaratives. *Journal of Semantics* 35(2), 305–356.
- Jordanoska, I. and E. Meertens (2020). The pragmatic effects of macedonian *li* – an empirical study. In R. Simik (Ed.), *Proceedings of Formal Description of Slavic Linguistics (FDSL)* 13.
- Jun, S.-A. (2005). Korean intonational phonology and prosodic transcription. *Prosodic typology: The phonology of intonation and phrasing* 1, 201.
- Kaiser, E. (2003). A question of case. *Nordlyd* 31(4).

- Kamali, B. (2015). Information structure in turkish yes/no questions. In U. A. Deniz Zeyrek, Cigdem Sagin Simsek and J. Rehbein (Eds.), *Ankara Papers in Turkish and Turkic Linguistics: Proceedings of the 16th International Conference on Turkish Linguistics*, pp. 27–39.
- Kamali, B. and D. Büring (2011). Topics in questions. In *Workshop on the Phonological Marking of Focus and Topic: GLOW*, Volume 34.
- Kamali, B. and M. Krifka (2020). Focus and contrastive topic in questions and answers, with particular reference to turkish. *Theoretical Linguistics* 46(1-2), 1–71.
- Karatas, S. (2017). *Ja/Nein Fragen im Türkischen*. Ph. D. thesis, BA thesis, University of Konstanz.
- Karttunen, L. (1977). Syntax and semantics of questions. *Linguistics and philosophy* 1(1), 3–44.
- Kawashima, R. (1994). *The structure of noun phrases and the interpretation of quantificational NPs in Japanese*. Ph. D. thesis, Cornell University.
- Kishimoto, H. (2005). Wh-in-situ and movement in sinhala questions. *Natural Language & Linguistic Theory* 23(1), 1–51.
- Koivisto, A. (2017). 5. on-line emergence of alternative questions in finnish with the conjunction/particle vai ‘or’. *Linking Clauses and Actions in Social Interaction*, 131.
- Koneski, B. (1965). *Istoriја na makedonskiот јазик*. Skopje: Kočo Racin.
- Kornfilt, J. (1997). Turkish. descriptive grammars. *Routledge, London and New York*.
- Kotek, H. and M. Y. Erlewine (2016). Covert pied-piping in english multiple wh-questions. *Linguistic Inquiry* 47(4), 669–693.
- Kramer, K. (1985). *Anglisko-makedonski razgovornik*. Skopje: Univerzitet “Kiril i Metodij”, Seminar za makedonski јазик, literatura i kultura.
- Kratzer, A. (1991). The representation of focus. *Semantics: An international handbook of contemporary research*, 825–834.

- Kratzer, A. and J. Shimoyama (2002). Proceedings of the 3rd tokyo conference on psycholinguistics.
- Kratzer, A. and J. Shimoyama (2017). Indeterminate pronouns: The view from japanese. In *Contrastiveness in information structure, alternatives and scalar implicatures*, pp. 123–143. Springer.
- Kraus, K. N. (2018). *Great Intonations*. Ph. D. thesis, UC Santa Cruz.
- Krifka, M. (2006). Association with focus phrases. *The architecture of focus* 82, 105–136.
- Ladd, D. R. (2008). *Intonational phonology*. Cambridge University Press.
- Lahiri, U. (1991). *Embedded interrogatives and predicates that embed them*. Ph. D. thesis, Massachusetts Institute of Technology.
- Larson, R. K. (1985). On the syntax of disjunction scope. *Natural Language & Linguistic Theory* 3(2), 217–264.
- Lazarova-Nikovska, A. (2003). On interrogative sentences in Macedonian: A generative perspective. Technical report, RCEAL Working Papers in English and Applied Linguistics.
- Lee, I.-H. and M. Lee (2000). On the discourse analysis in korean dialogues. In *Proceedings of the 14th Pacific Asia Conference on Language, Information and Computation*, pp. 207–218.
- Leiner, D. J. (2014). SoSci survey (version 2.4. 00-i)[computer software]. Accessed Febr 20, 2015.
- Lohiniva, K. (2020). Two strategies for forming unconditionals: evidence from disjunction. In M. Baird and J. Pesetsky (Eds.), *North East Linguistic Society*, Volume 49.
- Meertens, E. (2019a). How prosody disambiguates between alternative and polar questions. In F. R. Julian J Schlöder, Dean McHugh (Ed.), *Proceedings of the 22nd Amsterdam Colloquium*, pp. 299–308.
- Meertens, E. (2019b). Prosody in disjunctive questions: Introducing class. *University of Pennsylvania Working Papers in Linguistics* 25(1), 21.
- Meertens, E., S. Egger, and M. Romero (2019). Multiple accent in alternative questions. In *Proceedings of Sinn und Bedeutung*, Volume 23, pp. 179–196.

- Meertens, E. and S. Lauer (2018). Crosslinguistic variation in a minor sentence type: Melioratives in dutch and german. In *talk presented at Workshop on non-canonical imperatives*. Humboldt-Universität, Berlin.
- Meyer, M.-C. and U. Sauerland (2016). Covert across-the-board movement revisited. *Talk given at North East Linguistic Society (NELS) 47*.
- Minova-Ćurkova, L. (1987). Partikulata *li* vo makedonskiot literaturnen jazik. *Godišen sbornik na Filološkiot fakultet na Univerzitetot Skopje 13*, 29–37.
- Morita, H. (2019). The syntax, semantics, and pragmatics of covert pied-piping in sinhala and japanese wh-questions. *Journal of East Asian Linguistics 28*(4), 307–356.
- Nicolae, A. C. (2013). Npis in strongly exhaustive and disjunctive questions. *Talk at NELS 44*.
- Nicolae, A. C. (2014). Alternative questions as strongly exhaustive wh-questions. In *Proceedings of NELS*, Volume 44, pp. 65–78.
- Nicolae, A. C. and U. Sauerland (2016). A contest of strength: or versus either–or. In *Proceedings of sinn und bedeutung*, Volume 20, pp. 551–568.
- Nilsenová, M. et al. (2006). Rises and falls studies in the semantics and pragmatics of intonation.
- Partee, B. and M. Rooth (1983). Generalized conjunction and type ambiguity. *Formal semantics: The essential readings*, 334–356.
- Pierrehumbert, J. B. (1980). *The phonology and phonetics of English intonation*. Ph. D. thesis, Massachusetts Institute of Technology.
- Podobryaev, A. (2017). On preposition stranding in alternative questions. *Talk at NELS 48*.
- Prieto, P. (2006). Phonological phrasing in spanish. *Optimality-theoretic advances in Spanish phonology*. Amsterdam/Philadelphia: John Benjamins, 39–60.
- Pruitt, K. (2007). Perceptual relevance of prosodic features in non-wh-questions with disjunction. *Manuscript, University of Massachusetts Amherst*.

- Pruitt, K. (2008). Mapping prosody to interpretation in alternative questions. In *Poster presented at the 21st CUNY Conference on Human Sentence Processing, University of North Carolina, Chapel Hill*, pp. 13–15.
- Pruitt, K. and F. Roelofsen (2011). Disjunctive questions: Prosody, syntax, and semantics. In *a seminar at the Georg August Universität Göttingen*.
- Pruitt, K. and F. Roelofsen (2013). The interpretation of prosody in disjunctive questions. *Linguistic Inquiry* 44(4), 632–650.
- R Core Team (2013). *R: A language and environment for statistical computing*. Vienna: R Foundation for Statistical Computing.
- Rajemisa-Raolison, R. (1971). *Grammaire malgache*. Centre de formation pédagogique.
- Rando, F. (1980). Intonation in discourse. *The Melody of Language*, 243–278.
- Roberts, C. (1996). Information structure in discourse: Towards an integrated formal theory of pragmatics. In J. H. Yoon and A. Kathol (Eds.), *Ohio State University Working Papers in Linguistics*, Vol. 49: *Papers in Semantics*, Columbus, OH, pp. 91–136. Ohio State University.
- Roelofsen, F. (2015). The semantics of declarative and interrogative lists. *Manuscript*.
- Roelofsen, F. and D. F. Farkas (2015). Polarity particle responses as a window onto the interpretation of questions and assertions. *Language* 91(2), 359–414.
- Roelofsen, F. and S. van Gool (2010). Disjunctive questions, intonation, and highlighting. In H. B. M. Aloni and T. de Jager (Eds.), *Logic, Language and Meaning: Selected Papers from the 17th Amsterdam Colloquium*, pp. 384–394. Heidelberg: Springer.
- Romero, M. (2015). Surprise-predicates, strong exhaustivity and alternative questions. In *Semantics and linguistic theory*, Volume 25, pp. 225–245.
- Romero, M. and E. Meertens (2020). Q-particles and islands in sinhala wh-, alternative and polar questions. *Talk given at 13th Conference on Syntax, Phonology and Language Analysis (SinFonIJA 13)*.

- Rooth, M. (1992). A theory of focus interpretation. *Natural language semantics* 1(1), 75–116.
- Rooth, M. and B. Partee (1982). Conjunction, type ambiguity and wide scope or. In *Proceedings of the first west coast conference on formal linguistics*, Volume 1. Linguistics Dept., Stanford University.
- Rudin, C., C. Kramer, L. Billings, and M. Baerman (1999). Macedonian and Bulgarian *li* questions: Beyond syntax. *Natural Language & Linguistic Theory* 17(3), 541–586.
- Rudin, D. (2018). *Rising above commitment*. Ph. D. thesis, UC Santa Cruz.
- Saltarelli, M. (1988). *Basque*. Croom Helm Ltd.
- Santorio, P. (2010). Modals are monsters: on indexical shift in english. In *Semantics and Linguistic Theory*, Volume 20, pp. 289–308.
- Sauerland, U. (2003). A new semantics for number. In *Semantics and linguistic theory*, Volume 13, pp. 258–275.
- Sauerland, U. (2004). Scalar implicatures in complex sentences. *Linguistics and philosophy* 27(3), 367–391.
- Schubiger, M. (1958). *English intonation, its form and function*. Tübingen: Max Niemeyer.
- Schwabe, K. (2004). The particle *li* and the left periphery of Slavic yes/no interrogatives. In H. Lohnstein and S. Trissler (Eds.), *The syntax and semantics of the left periphery*, pp. 385–430. Berlin, New York: Mouton de Gruyter.
- Schwarz, B. (1999). On the syntax of either... or. *Natural Language & Linguistic Theory* 17(2), 339–370.
- Schwarzschild, R. (1999). Givenness, avoidif and other constraints on the placement of accent. *Natural language semantics* 7(2), 141–177.
- Selkirk, E. (1995). Sentence prosody: Intonation, stress, and phrasing. *The handbook of phonological theory* 1, 550–569.

- Selkirk, E. (1996). The prosodic structure of function words. *Signal to syntax: Bootstrapping from speech to grammar in early acquisition* 187, 214.
- Sezer, H. (2012). Echo questions in turkish. *MA thesis at The University of Texas, El Paso*.
- Shimoyama, J. (2006). Indeterminate phrase quantification in japanese. *Natural Language Semantics* 14(2), 139–173.
- Simons, M. (2005). Dividing things up: The semantics of or and the modal/or interaction. *Natural Language Semantics* 13(3), 271–316.
- Slade, B. M. (2011). *Formal and philological inquiries into the nature of interrogatives, indefinites, disjunction, and focus in Sinhala and other languages*. Ph. D. thesis, University of Illinois at Urbana-Champaign.
- Socolof, M., A. Hirsch, and B. Schwarz (2020). Which-questions, uniqueness, and answerhood: evidence from disjunction. In *to appear in the Proceedings of NELS*, Volume 50.
- Spector, B. (2010). Topics in the semantics of interrogative clauses. Minicourse at the University of Vienna. <http://lumiere.ens.fr/~bspector/Questions2010/>.
- Spector, B. (2014). Global positive polarity items and obligatory exhaustivity. *Semantics and Pragmatics* 7, 11–1.
- Steedman, M. (2008). Information-structural semantics for english intonation. In *Topic and focus*, pp. 245–264. Springer.
- Sudo, Y. (2013). Biased polar questions and Japanese question particles. In D. Gutzmann and H.-M. Gärtner (Eds.), *Beyond expressives: Explorations in use-conditional meaning*, Current Research in the Semantics/Pragmatics Interface 28, pp. 275–295. Leiden: Brill.
- Szabolcsi, A. (2015). What do quantifier particles do? *Linguistics and Philosophy* 38(2), 159–204.
- Szabolcsi, A. (2018). Two types of quantifier particles: Quantifier-phrase internal vs. heads on the clausal spine. *Glossa: a journal of general linguistics* 3(1).

- Takahashi, H. (2012). *A cognitive linguistic analysis of the English imperative: With special reference to Japanese imperatives*, Volume 35. John Benjamins Publishing.
- Tomić, O. M. (1996). The Balkan Slavic clausal clitics. *Natural Language & Linguistic Theory* 14(4), 811–872.
- Truckenbrodt, H. (2013). An analysis of prosodic f-effects in interrogatives: Prosody, syntax and semantics. *Lingua* 124, 131–175.
- Uegaki, W. (2014a). Cross-linguistic variation in the derivation of alternative questions: Japanese and beyond. *The art and craft of semantics: A festschrift for Irene Heim*, 251–274.
- Uegaki, W. (2014b). Japanese alternative questions are disjunctions of polar questions. In *Semantics and linguistic theory*, Volume 24, pp. 42–62.
- Uegaki, W. (2018). A unified semantics for the Japanese q-particle ka in indefinites, questions and disjunctions. *Glossa: a journal of general linguistics* 3(1).
- Von Stechow, A. (1991). Focusing and backgrounding operators. *Discourse particles* 6, 37–84.
- Weerasooriya, T. (2019). *Positive Polarity and Exhaustivity in Sinhala: A Study of its Implications for Grammar*. Ph. D. thesis, Université d'Ottawa/University of Ottawa.
- Westera, M. (2017). *Exhaustivity and intonation: A unified theory*. Ph. D. thesis, University of Amsterdam.
- Westera, M. (2018). Rising declaratives of the quality-suspending kind. *Glossa*. 2018; 3 (1):[32 p.]. DOI: 10.5334/gjgl.415..
- Westera, M. (2019). Rise-fall-rise as a marker of secondary QUDs. In *Secondary Content*, pp. 376–404. Brill.
- Westera, M. (2020). Attentional pragmatics: a new pragmatic approach to exhaustivity. *Under review*.

- Westera, M. et al. (2013). Attention, i'm violating a maxim! a unifying account of the final rise. In *17th Workshop on the Semantics and Pragmatics of Dialogue (DialDam)*. University of Amsterdam Amsterdam, The Netherlands.
- Winans, L. (2019). Disjunction and alternatives in egyptian arabic. In *Questions in Discourse*, pp. 237–285. Brill.
- Wold, D. E. (1996). Long distance selective binding: The case of focus. In *Semantics and Linguistic Theory*, Volume 6, pp. 311–328.
- Yatsushiro, K. (2001). The distribution of mo and ka and its implications. *MIT Working Papers in Linguistics* 41, 181–198.
- Zimmermann, T. E. (2000). Free choice disjunction and epistemic possibility. *Natural Language Semantics* 8(4), 255–290.