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Alternative Disjunctions

in Egyptian Arabic

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requirements for the degree Master of Arts  
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by

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ABSTRACT OF THE THESIS

Alternative disjunctions

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Languages such as Chinese (Li and Thomson (1981)), Finnish (Haspelmath (2007)), Basque (Saltarelli (1988)), and Malagasy (Keenan, p.c.), among others, have been described as having two disjunctive lexical items where one, the *interrogative disjunction* is restricted to questions and the other, the *standard disjunction* occurs in all clause types. In this paper, I look at two such items in Egyptian Arabic—*wallaa* and *aw*—that conform to Haspelmath’s descriptions of interrogative and standard disjunctions, respectively. Using Inquisitive Semantics (Ciardelli et al. (2012), Groenendijk and Roelofsen (2009), Ciardelli and Roelofsen (2011), *inter alia*), the differences between *wallaa* and *aw* can be captured as a difference in inquisitiveness. While this analysis accounts for the observed data in Egyptian Arabic, it also explains why the cross-linguistic data patterns as it does.

# 1 Introduction

Languages such as Chinese (Li and Thomson (1981)), Finnish (Haspelmath (2007)), Basque (Saltarelli (1988)), among others, have been described as having two disjunctive lexical items where one is restricted to questions. Haspelmath (2007) refers to these as *interrogative disjunctions* and *standard disjunctions*. He describes the distribution of interrogative and standard disjuncts as a subset relation, with standard disjunctions occurring in all clause types and interrogative disjunctions being restricted to interrogative clauses. These disjunctions also differ in their interpretation.

This description of interrogative and standard disjunctions raises a few questions. Haspelmath (2007) defines alternative and polar questions in terms of their answers; alternative questions must be answered with one of the disjuncts, and polar questions with *yes* or *no*. More recently, Roelofsen and van Gool (2010) has provided a much richer typology of question types—also in terms of response patterns—but van Gool and Roelofsen’s typology is more articulated. For example, Haspelmath’s category of alternative questions corresponds to two classes for van Gool and Roelofsen, closed alternative questions and open alternative questions, see section 2.2 for a more complete description.

Finally, in all of the languages surveyed with more than one disjunctive lexical item, the item used in declarative clauses is the one that is also used in polar questions. We can imagine a language with a different pairing, where the disjunction used in declaratives is also used in alternative questions and a separate lexical item is used in polar questions, but this pattern is unattested. Haspelmath’s typology describes, but does not explain this pattern.

In this paper, I look at two disjunctive lexical items in Egyptian Arabic to address

the issues above. The words *wallaa* and *aw* conform to Haspelmath’s descriptions of interrogative and standard disjunctions, respectively. I show that when more data is considered, it is clear that the distribution of these lexical items does not conform to the subset relation Haspelmath describes, rather their distribution is disjoint. In addition, *wallaa* and *aw* exhibit a restriction on what they can disjoin.

Using Inquisitive Semantics (Ciardelli et al. (2012), Groenendijk and Roelofsen (2009), Ciardelli and Roelofsen (2011), *inter alia*), the differences between *wallaa* and *aw* can be captured as a difference in inquisitiveness. That is, a *wallaa*-phrase always proposes multiple possibilities in the common ground and is therefore always inquisitive. While an *aw*-phrase can only propose one possibility in the common ground, making it non-inquisitive. While this analysis accounts for the observed data in Egyptian Arabic, it also explains why the cross linguistic data patterns as it does. If the difference between interrogative and standard disjunctions is actually inquisitive and non-inquisitive disjunctions then it is predicted that the disjunction that occurs in declaratives will always occur in polar questions, whereas the one that cannot occur in declarative clauses will always occur in alternative questions. This analysis also makes predictions about other constructions (wh-questions, polar alternative questions, disjoined interrogatives, etc.), which will need to be tested empirically on other languages.

## 2 Disjunction Typology

Disjunctions are part of a larger class of lexical items called coordinators, which serve to associate or coordinate two units. Haspelmath (2007) defines coordination as a “syntactic construction in which two or more units of the same type are combined



into a larger unit and still have the same semantic relations with other surrounding elements”. While much variation exists across languages, Haspelmath (2007) gives some basic types of coordinators as conjunctive coordination ‘and’, disjunctive coordination ‘or’, adversative coordination ‘but’, and causal coordination ‘for’. While all coordinate two units, they express different semantic relationships between them. This section will review Haspelmath’s discussion of the ways in which coordinators, focusing on disjunction, can vary across languages and within a single language.

If a language has multiple lexical items that encode disjunction, there is a finite set of ways that those disjunctions tend to differ. One of the main distinctions is between *interrogative* and *standard* disjunctions. In the Finnish example below, the interrogative disjunction *vai* is used in a question, whereas the standard disjunction *tai* can be used in either a question or an assertion.

- (1) Mene-t-kö teatteri-in **vai** lepo-puisto-on?  
 go-2SG-Q theater-ILL or rest-garden-ILL  
 ‘Are you going to a theater or to a park?’ (Haspelmath (2007) 69)
  
- (2) Anna-n sinu-lle kirja-n **tai** albumi-n.  
 give-1SG you-ALL book-ACC or album-ACC  
 ‘I’ll give you a book or an album.’

A question that contains an interrogative disjunction has a distinct interpretation from a question that contains a standard disjunction. An interrogative containing a standard disjunction is interpreted as a polar question, because the addressee can respond with *yes* and *no*. An interrogative containing an interrogative disjunction is interpreted as an alternative question, because addressee is asked to choose one of the alternatives in the response. This is shown in the Basque data from (Saltarelli 1988:84) reproduced below. In (3), the standard disjunction *ala* occurs in a polar

question and in (4), the interrogative disjunction *edo* occurs in an alternative question.

- (3) Te-a    **ala** kafe-a    nahi duzu?  
tea-ART or coffee-ART want you.it  
'Do you want tea, or coffee?(=Do you want tea or do you want coffee?)'
- (4) Te-a    **edo** kafe-a    nahi duzu?  
tea-ART or coffee-ART want you.it  
Do you want tea, or coffee?(=Do you want either tea or coffee?)'

Another possible distinction that can hold between disjunctive items is that of inclusive and exclusivity. Inclusive disjunction is true if one or both of the disjuncts is true. Exclusive disjunction is true if one but not both of the disjuncts is true. However, Haspelmath states that no language has been proven to make a lexical distinction between inclusive and exclusive disjunction. It has been claimed that Latin *aut* and *vel* make this distinction, but upon further investigation this seems to not be the defining feature between the two items (Dik 1968, Kuhner & Stegmann 1914).

## 2.1 Coordinators in the scope of negation

Haspelmath notes that some European languages have disjunctions that occur only in the scope of negation, such as English *neither...nor*. It is unclear if this is a property unique to European languages or if it is simply due to the lack of description of other languages. (5) can be paraphrased using disjunction, as in *John didn't eat cake or cookies*, and with conjunction, as in *John didn't eat cake and John didn't eat cookies*.

- (5) John ate neither cake nor cookies.

Coordinators that occur in the scope of negation can be related to either conjunction or disjunction in languages, yielding the same interpretation. This may be linked to the equivalence between wide scope negation over disjunction and narrow scope negation over conjunction (De Morgan’s Law). In (6), the left column shows the contrastive negative coordinator (the coordinator that occurs in the scope of negation) and the right column shows semantically related lexical items. In (a)<sup>1</sup> the negative contrastive coordinator is similar to the languages’ disjunction. In (b), it is instead related to conjunction and in (c) it shows no visible connection with related lexical items.

a.	English	<i>neither...nor</i>	<i>either...or</i>
	German	<i>weder...noch</i>	<i>etweder...oder</i> ‘either or’
	Swedish	<i>varken...eller</i>	<i>antigen...eller</i> ‘either or’
(6)			
b.	Latin	<i>ne-que...ne-que</i>	<i>-que</i> ‘and’
c.			
	Italian	<i>né...né</i>	<i>e</i> ‘and’, <i>o</i> ‘or’, <i>non</i> ‘not’
	Dutch	<i>noch...noch</i>	<i>en</i> ‘and’, <i>of</i> ‘or’, <i>niet</i> ‘not’
	Maltese	<i>la...u lanqas</i>	<i>u</i> ‘and’, <i>jew</i> ‘or’, <i>ma</i> ‘not’

Haspelmath (2007)

Languages that do not have specialized coordinators that occur under the scope of negation use either conjunction (i.e. Indonesian) or disjunction (i.e. Lezgian) to express the same meaning.

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<sup>1</sup>Russian and French can also be added to this list (Keenan, p.c.)

## 2.2 Types of questions with disjunction

A disjunction in an interrogative can be interpreted as different types of questions that can be differentiated by their response patterns. In this section, I will discuss the range of disjunctive questions in English, as presented in Roelofsen and van Gool (2010). A previous example of this was shown for Finnish and Basque, where the presence of a particular lexical item determines whether the disjunctive question can be answered with *yes* and *no*. Note that the distinctions among different types of disjunctive questions can be lexical, intonational, or even syntactic. The English data below features intonational distinctions and the EA data in section 3 shows a lexical distinction.

In English the disjuncts can either be considered one intonational “block” or as separate phrases<sup>2</sup>. This intonational difference divides polar questions (as in (7)) from alternative questions (as in (8) and (9)). A further distinction can be made within alternative questions. (8) with a rising intonation on the second disjunct is an open alternative question. It differs from (9) (which has falling intonation on the second disjunct) in the *no* response.

BLOCK INTONATION

(Data from Roelofsen & van Gool 2010)

- (7) Does Ann or Bill play piano?
- a. No.  $\Rightarrow$  neither
  - b. Yes,  $\Rightarrow$  at least one
  - c. (Yes,) Ann does.
  - d. (Yes,) Bill does.

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<sup>2</sup>Term established in Pruitt (2007)

#### RISING INTONATION ON THE SECOND DISJUNCT

- (8) Does Ann $\uparrow$  or Bill $\uparrow$  play piano?
- a. No.  $\Rightarrow$  neither
  - b. #Yes.
  - c. Ann does.
  - d. Bill does.

#### FALLING INTONATION ON THE SECOND DISJUNCT

- (9) Does Ann $\uparrow$  or Bill $\downarrow$  play piano?
- a. #No.
  - b. #Yes.
  - c. Ann does.
  - d. Bill does.

Since intonational patterns may vary across languages, I will instead use response patterns as the main indication for question type. The response pattern given for (7) will be indicative of a *polar question*. That of (8) will be considered an *closed alternative question* and (9) a *open alternative question*. The last category of disjunctive questions is what I will call *polar-alternative questions*. In polar-alternative questions the second disjunct is a negation. As shown in (10), these questions pattern with polar questions in their response patterns. The addressee can respond with *yes* or *no*.

- (10) Does Ann play the piano $\uparrow$  or not $\downarrow$ ?
- a. No.  $\Rightarrow$  Ann doesn't play the piano.
  - b. Yes.  $\Rightarrow$  Ann plays the piano.

- c. (Yes,) Ann does.

However, these questions (at least in English) pattern with closed alternative questions with regards to their intonational pattern. A polar-alternative question is ungrammatical with a block intonation (as in a.) or a rising second disjunct (as in b.).

- (11) a. #Does Ann play the piano-or-not?  
 b. #Does Ann play the piano↑ or not↑?

Below is a summary of basic response patterns for each of the disjunctive question types. This way of classifying question types is based on the way they effect discourse.

	polar Q	open alt-Q	closed alt-Q	polar alt-Q
<i>yes</i>	✓	*	*	✓
<i>no</i>	✓	✓	*	✓
either disjunct	✓	✓	✓	✓

It is possible that languages with multiple lexical items for disjunction might group these categories in many ways. However, we will see for Egyptian Arabic that the functions of the lexical items are grouped in a very specific way. The grouping is straightforward when we consider the shared semantic properties amongst the above categories.

### 3 Core Data

#### 3.1 Introduction to EA

The Arabic language is a semitic language that is comprised of many dialects that vary from one another. There are a few important distinctions that must be made

when studying Arabic. The first is between Modern Standard Arabic (MSA) and the various dialects. MSA is taught in schools and conforms to rules set by Arab grammarians (Aboul-Fetouh (1969)). The dialects vary between countries and between regions. In this paper, I focus on an urban dialect spoken in the northern parts of Egypt.

The following is a chart of the consonant phonemes of Egyptian Arabic. /t, d, s, z, l, r/ have emphatic counterparts /ṭ, ḍ, ṣ, ḏ, ḷ, ṛ/, which are velarized or pharyngealized (Abdel-Massih (1975)). The emphasis of a consonant spreads to the entire syllable. The phonemic status of the emphatic consonants is still debated Aboul-Fetouh (1969).

EGYPTIAN ARABIC CONSONANT PHONEMES

	Labial	Labio-dental	Dental	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	b		t d		k g			ʔ
Fricative		f	s z	ç		x ʁ	ħ ʕ	h
Trill			r					
Lateral			l					
Nasal	m		n					
Semi-vowel	w		y					

Chart adapted from Gamal-eldin (1967)

Egyptian Arabic has a phonemic contrast for length for vowels. There are three short vowels /i, a, u/ and five long vowels /i:, e:, a:, u:, o:/ Hanna (1967). Consonants also contrast for length.

In Egyptian Arabic, intonation plays a crucial role in determining a sentence's

form. As shown in (12), to denote that a sentence is interrogative (at least) two strategies can be employed, intonation (b) or a question particle and intonation (c). I will use the up arrow ‘↑’ to denote a rise in intonation and a down arrow ‘↓’ to denote a fall in intonation. The question particle *hal*, is a borrowing from Modern Standard Arabic and restricted to formal or educated speech. For this reason, I will focus on the questions marked with intonation.

- (12) a. Eind-ak kalb.  
           have-2sg.fem dog
- b. Eind-ak kalb↑?  
           have-2sg.fem dog
- c. Hal eind-ak kalb↑?  
           Q have-2sg.fem dog

There are multiple ways of expressing a disjunction in Egyptian Arabic (EA). The focus of this section will be the differences between two lexical items: *aw* and *wal-laa*. While these lexical items show basic behavior of what has been called standard and interrogative disjunction, the next section shows that their distribution is more complex than that described for standard and interrogative disjunctions. EA also has a third disjunction *walaa*. *Walaa* has many uses, one being an NPI disjunction. A discussion of this lexical item can be found in Appendix A.

### 3.2 *Aw* and *Wallaa*

In declarative clauses, as in (13), *aw* is grammatical, but *wallaa* is not. While another disjunctive lexical item—namely *walaa*—is sensitive to the polarity of a declarative clause, *aw* and *wallaa* show no distinction in distribution in negative and positive



declarative clauses.

- (13) Hoda akel-a-t            basbousa aw/\*wallaa kunafa.  
Hoda eat-sg.fem-PAST basbousa or            kunafa  
*Hoda ate basbousa or kunafa.*

In non-*wh* interrogative clauses, both *wallaa* and *aw* are grammatical, although they occur in different question types. The basic distinction, stated in Haspelmath (2007) is that an interrogative containing standard disjunction (*aw*) is a polar question, whereas one containing an interrogative disjunction (*wallaa*) is an alternative question.

An interrogative containing *aw*, as in (14), is interpreted as a polar question. That is, in (14) the addressee can respond with *Iowa* ‘yes’ or *la?* ‘no’. The addressee can also respond with one of the two disjuncts or with *el etnatin* ‘both’.<sup>3</sup>

- (14) Eind-i-k            kalb aw oṭṭa?  
have-sg.masc-2 dog or cat  
*Do you have a dog or a cat?*
- a. ✓Iowa (yes)
  - b. ✓La? (no) *meaning neither*
  - c. ✓kalb (dog)
  - d. ✓El etnain (both) POLAR QUESTION

*Wallaa* can also occur in interrogatives, as in (15). However, an interrogative clause containing *wallaa* is interpreted as a closed alternative question, and not a polar question. Unlike (14), the addressee cannot respond with *Iowa* ‘yes’ or *la?* ‘no’.

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<sup>3</sup>Some speakers allow (14) to have an alternative interpretation when *aw* is heavily stressed. However, Gary and Gamal-eldin (1982) claims that an interrogative with *aw* is never interpreted as an alternative question.

Rather, the addressee can respond by choosing one of the two disjuncts, or with *el etnain* ‘both’.

(15) Eind-i-k            kalb wallaa oṭṭa?  
 have-sg.masc-2 dog or    cat  
*Do you have a dog or a cat?*

a. #Iowa (yes)

b. #La? (no) *meaning neither*

c. ✓kalb (dog)

d. ✓El etnain (both)

CLOSED ALTERNATIVE QUESTION

These are not the only distinctions that hold between interrogative clauses containing *aw* and *wallaa*. First, polar-alternative questions, such as (16), are grammatical with *wallaa*, but not with *aw*. This construction is much like a closed alternative question in that the speaker is splitting the common ground into two alternatives, and much like a polar question in that the addressee can respond with *Iowa* ‘yes’ and *la?* ‘no’.

(16) Hoda min Amrika wallaa/\*aw laa/eh?  
 Hoda from America or            not  
*Is Hoda from America (United States) or not/what?*

a. ✓Iowa (yes)

b. ✓Laa (no)

c. #Amrika (America)

If we compare of the lexical differences of *wallaa* and *aw* with the intonational differences of English, we find a parallel. In EA, *wallaa*, which occurs in closed alternative questions must occur in the polar-alternative question, not *aw* which occurs in polar questions. In English, the intonation that is associated with closed alternative questions (falling tone on the second disjunct) must also be used in polar-alternative

questions, this is shown below in (17). Intonations associated with other question types, polar and open alternative questions, are not grammatical in polar-alternative questions.

- (17) a. Do you have a car<sup>↑</sup> or not<sup>↓</sup>?                    CLOSED ALTERNATIVE QUESTION  
 b. #Do you have a car-or-not?                    POLAR QUESTIONS INTONATION  
 c. #Do you have a car<sup>↑</sup> or not<sup>↑</sup>?                    OPEN ALTERNATIVE QUESTION

In the chart below, we see the markers of closed alternative-questions and polar questions in the two languages. In both languages, those form used for closed-alternative questions is the same as that used for polar alternative questions.

	EA	English
<b>closed alternative question</b>	<i>wallaa</i>	falling intonation on 2nd disjunct
polar question	<i>aw</i>	block intonation
open alternative question		rising intonation on 2nd disjunct
<b>polar-alternative question</b>	<i>wallaa</i>	falling intonation on 2nd disjunct

Another construction that *wallaa* can occur in and *aw* cannot is the disjunction of two questions. *wallaa* and *aw* can both disjoin full clauses, as in (18) and (19).

- (18) Baa? il-ʔarabiyya aw rahan            il-beet.  
 sold the-car            or mortgaged the-house  
*He had sold the car or mortgaged the house.*

Adapted from Abdel-Massih et al. (1981)

- (19) Baa? il-ʔarabiyya walla rahan            il-beet?  
 sold the-car            or            mortgaged the-house  
*Did he sell the car or did he mortgaged the house?*

Adapted from Abdel-Massih et al. (1981)

Only *wallaa*, not *aw*, can disjoin two interrogatives, as in (67). In this case, (67) is seen as a sort of threat. The speaker is offering two opposing options for the addressee.<sup>4</sup>

- (20)    ʔaiz takamil akl-ik           wallaa/\*aw ʔaiz-nii.SUB   haddrab-ik.OBJ?  
           want finish    food-sg-masc or                    want-masc-1sg hit-2sg.mas  
           *Do you want to finish your food or do you want me to hit you?*

The final interrogative construction in which *aw* and *wallaa* differ is wh-questions. In wh-questions, *aw* is grammatical and *wallaa* is not. This is shown in (21).

- (21)    Miin eind-u            kalb \*wallaa/aw oṭṭa?  
           who have-3sg.masc dog or                    cat  
           *Who has a dog or a cat?*

While wh-questions may be seen as a type of alternative question, the alternatives originate from the wh-item *miin* ‘who’ and not from the disjunction. In the case of (21), the so called choice is not based on the disjuncts of *wallaa*, and *wallaa* is judged as ungrammatical.

### 3.2.1 Embedded clauses

The same patterns hold in embedded environments. While *aw* can occur in all embedded clauses, *wallaa* can occur in only embedded alternative questions. Embedded clauses can be both interrogative and declarative. In EA, the complementizers *law* ‘if’ and *hal* ‘Q-particle’ head embedded interrogative clauses, as in (22). In EA, embedded declarative clauses are headed by the complementizer *ʔin* ‘that’, as in (23).

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<sup>4</sup>Unfortunately, (67) is interpreted as a rhetorical question and so I do not have data on the response patterns for these disjoined questions. (19) on the other hand, is not a rhetorical question and does have a possible response pattern. This data still needs to be gathered.

(22) Hoda saʔal-a-t law/hal Fiona rashah-a-t Morsi.  
 Hoda ask-fem-PAST if/Q Fiona vote-fem-PAST Morsi  
*Hoda asked if Fiona voted for Morsi.*

(23) Hoda ʔal-a-t ʔin Fiona rashah-a-t Morsi.  
 Hoda say-fem-PAST that Fiona vote-fem-PAST Morsi  
*Hoda said that Fiona voted for Morsi.*

Both *aw* and *wallaa* can occur in an embedded interrogative clause, as in (24). If the embedded clause is declarative, as in (25) which contains the non-interrogative complementizer *ʔin* ‘that’, *wallaa* is ungrammatical while *aw* is still good. That is, *aw* can occur in all embedded clauses, *wallaa* can only occur in interrogative ones.

(24) Hoda saʔal-a-t law Fiona rashah-a-t Morsi wallaa/aw Ali.  
 Hoda ask-fem-PAST if Fiona vote-fem-PAST Morsi or Ali  
*Hoda asked if Fiona voted for Morsi or Ali.*

(25) Hoda ʔal-a-t ʔin haad kisib, lakin ma.ʔal-a-t.š ʔin  
 Hoda say-sg.fem-PAST that someone won, but NEG.say-sg.fem-PAST that  
 Morsi \***wallaa/aw** Ali kisib.  
 Morsi or Ali won  
*Hoda said that someone won, but she didn't say that Morsi or Ali won.*

There is a further distinction that can be made within interrogative embedded clauses. They can take the form of a polar question or an alternative question. For example, (26) is ambiguous between a polar and an alternative reading. Under the polar question interpretation, Hoda asked if either of the two candidates, Morsi or Shafiq, won. Under the alternative reading, Hoda asked which of the two candidates, Morsi or Shafiq, won.

(26) Hoda asked if Morsi or Shafiq won.

The sentence (24) with *aw* is similarly ambiguous. However, with *wallaa* only the alternative question reading is available.

### 3.2.2 Restrictions on disjuncts

*Wallaa* and *aw* have different restrictions on the elements they disjoin. Both can disjoin a range of syntactic categories: noun phrases, prepositional phrases, verb phrases, etc. Both disjunctions also obey Hurford's constraint. That is, they cannot disjoin two elements if one element is entailed by the other. This is shown in (27) in which *having a dog* is entailed by *having an animal*.

- (27) Eind-ik            kalb ??wallaa/??aw hayawaan?  
       have-2sg.masc. dog or                    animal  
       *Do you have a dog or an animal?*

This generalization was noticed in Hurford (1974) for English *or*. The constraint is reproduced below. I take Hurford's constraint as a restriction on logical entailment. In terms of possible worlds, the constraint states that the worlds that make one disjunct true cannot be a subset of the ones that make the other disjunct true.

HURFORD'S CONSTRAINT: The joining of two sentences by *or* is unacceptable if one sentence entails the other; otherwise the use of *or* is acceptable.

Hurford (1974)

*Wallaa* is sensitive not only to logical entailment of its disjuncts, but also entailment within a discourse, whereas *aw* does not show a similar sensitivity. The disjuncts of *wallaa* must be not only logically independent, but also independent after contextual restriction has narrowed the set of worlds in question. For example, in (28), *wallaa* is ungrammatical, while *aw* is grammatical.

- (28) Eind-ik      awlad    aw/??wallaa ahfed?  
 have-2sg.ma children or                      grandchildren  
*Do you have children or grandchildren?*
- (29) Eind-ik      gowez    sufir    aw/??wallaa ekama?  
 have-2sg.ma marriage travel or                      visa  
*Do you have a passport or a visa?*

The disjuncts *having children* and *having grandchildren* are logically independent, yet speakers judge this sentence as ungrammatical with *wallaa*—or rather very offensive—because it requires that the common ground contain worlds where the two disjuncts are independent, namely worlds where the children are deceased. A less contentious example is shown in (29), while *having a visa* and *having a passport* are logically independent, having a passport is conventionally required to have a visa.

This constraint relies on a notion of contextual restriction which is outside the scope of this paper. For the current purposes, I assume that the context is narrowed to the set of worlds that the speakers believe to be viable possibilities for the actual world. It seems as if speakers are narrowing the context to reflect their expectations of how the actual world might be. Given this rough approximation of contextual restriction, the Dependency Constraint is defined below.

- (30)    DEPENDENCY CONSTRAINT In a given context, the disjunction of two elements is infelicitous if one disjunct entails the other.

Since questions with *wallaa* as closed alternative questions and questions with *aw* as polar questions, the same paradigm can be reproduced using English counterparts. In (31), both polar questions and closed alternative questions are ungrammatical with a disjunction whose disjuncts are not logically independent.

- (31)    Disjuncts that violate HURFORD'S CONSTRAINT

- a. ??Do you have a dog-or-an animal? POLAR QUESTION
- b. ??Do you have a dog↑ or an animal↓? CLOSED ALT QUESTION

In (32), polar questions are grammatical with disjuncts that are logically independent but violate the Dependency constraint (are not independent in context). However, alternative questions with disjuncts that violate the Dependency constraint are ungrammatical.

- (32) Disjuncts that violate DEPENDENCY CONSTRAINT
- a. ✓Do you have children-or-grandchildren? POLAR QUESTION
  - b. ??Do you have children↑ or grandchildren↓? CLOSED ALT QUESTION

The parallel between English intonation and EA lexical items suggest that this is a general property that holds for types of questions, rather than unique properties of *wallaa* and *aw*.

### 3.3 Comparison to English and *wallaa* in declaratives

While *aw* seems to behave similarly to English *or*, *wallaa* behaves similarly to stressed *or*. In (33), we see that without previous discourse *or* can be stressed in interrogatives (a) but not in declaratives (b and c). This mirrors the data for *wallaa* in section 3.

- (33)
- a. Does Angela have a dog **or** a cat?
  - b. \*Angela has a dog **or** a cat.
  - c. \*Angela doesn't have a dog **or** a cat.

In (34), an addressee responding to an assertion with *aw* can negate *aw* only by using *wallaa*. Similarly, for English in (36), an addressee can only negate unstressed *or*, by using stressed *or*.



- (34) Omar eind-ik aribiya aw/\*wallaa bait.  
 Omar have-2sg.ma car or house  
*Omar has a car or a house.*

*Omar overhears from across the room and shouts:*

- (35) Ma.ein-ii.sh aribiya wallaa/\*aw bait, eind-ii el etnain.  
 NEG.have-1sg car or house, have-1sg the two  
*I don't have a car **or** a house, I have both!*

- (36) a. A: Angela has a cat \***or**/or a dog.  
 b. B: She doesn't have a cat **or**/\*or a dog, she has both.

It has been suggested that the examples in (34) and (36) contain metalinguistic negation. *wallaa* and stressed *or* are used in (37) without of a linguistic antecedent.

*Scenario: Mother tells son that he is finally old enough to get a pet. One day they are walking down the street and they see puppies and kittens for sale. The mother suggestively points to the boxes of furry animals.*

- (37) ?ana miš ?aiyz kalb wallaa oTTa, ?aiyz farr.  
 I NEG want.sg.m dog or cat, want.sg.m mouse  
 I don't want a dog or a cat, I want a mouse!

- (38) I don't want a dog **or**/?or a cat, I want a mouse.

In (34) and (36), the addressee negates the use of *aw/or* in favor of *wi* 'and'/*and*. However, this is clearly not the case in (37) and (38). Rather, it seems that the addressee is negating the choice between the two items.

### 3.4 Summary

*Wallaa* and *aw* seem to share a core meaning of disjunction, a closer look at the data reveals that they differ in many ways. While they overlap in distribution, only *aw* is grammatical in affirmative declaratives. On the other hand, only *wallaa* can disjoin questions. An interrogative sentence containing *wallaa* is interpreted as a closed alternative question whereas with *aw* it is interpreted as a polar question. Polar alternative questions (one in which the second disjunct is a polarity item) are only grammatical with *wallaa* and not *aw*. The distribution of *wallaa* is summarized below.

	<i>wallaa</i>	<i>aw</i>
Alternative Qs	✓	*
Polar-Alternative Qs	✓	*
Disjoining interrogatives	✓	*
Polar Qs	*	✓
Wh-questions	*	✓
Positive/negative declaratives	*	✓

Haspelmath (2007) described the distribution of interrogative and standard disjunctions in subset/superset relationship. However, *wallaa* and *aw* show a complementary distribution.

## 4 Analysis

A theory in which *aw* and *wallaa* receive the same semantic and syntactic account, differing only in that *wallaa* is restricted to interrogative clauses would not account

for the contrast above. This would not explain why *wallaa* can occur in closed alternative and polar-alternative questions, but not polar questions or wh-questions. Moreover, it would not account for the data in section 3.3, in which *wallaa* occurs in declarative clauses. An account of *wallaa* must be able to model different question types and their effects on discourse. To account for the few declarative cases, the theory should allow for the differences between question types to also be reflected in some declarative clauses.

## 4.1 Formalism

Traditional theories of disjunction state that a disjunction of two propositions ( $p \vee q$ ) is true as long as one of the disjuncts is true (p, q).

p	q	$p \vee q$
1	1	1
1	0	1
0	1	1
0	0	0

Keenan and Faltz (1985) provide a cross categorical account for disjunction. This account allows for the disjunction of categories other than propositions. They define disjunction as the least upper bound of a boolean algebra. Alonso-Ovalle (2006) argues for an alternative semantics account for disjunction to account for (i) counterfactuals with disjunctive antecedents, (ii) the exclusive component of disjunction, and (iii) disjunction in the scope of modals. He proposes a theory in which the denotation of a disjunction is a set of propositions.

This point of view is also consistent with Inquisitive Semantics (IQS). In IQS the core semantics of disjunction is to projecting alternative propositions and is there-

fore inquisitive. IQS models the discourse in the structure of these alternatives and operations that can modify their structure. It also models responses in the form of rejecting and accepting these alternatives. In section 4.1.1, I will give a brief description of IQS. In 4.2, I will show how IQS can provide insight on the distribution and interpretation of *wallaa* and *aw*. Finally, I show that the same mechanisms may be responsible for the interactions between polarity and disjunctions.

#### 4.1.1 Inquisitive Semantics

Inquisitive Semantics (IQS) is a framework based on building a common ground or information state between interlocutors<sup>5</sup>. Speaker and addressee are engaged in proposing and resolving issues. The defining aspect of the theory is that propositions have both information and inquisitive content. The informational content is the traditional notion of truth conditions, whereas the inquisitive component models the discourse effects of a proposition. This component makes it possible to model the different types of disjunctive questions in 2.2.

In inquisitive semantics asserting a proposition proposes an update on the information state. Asserting (39) would propose to eliminate worlds not compatible with (39). Uttering (40) proposes to either eliminate worlds where *Angela has a dog* or ones where *Angela doesn't have a dog*. The goal being to locate the actual world more precisely in the set of possible worlds.

(39) Angela has a dog.

---

<sup>5</sup>The discussion in this section draws from Ciardelli et al. (2012), Groenendijk and Roelofsen (2009), Ciardelli and Roelofsen (2011), *inter alia*. See references for a more complete description of the framework.

(40) Does Angela have a dog?

One attribute that sets IQS apart from other theories, is that questions and assertions denote the same semantic object. Whether embedded or not, all sentences denote propositions. Depending on the semantic properties of the proposition, it is interpreted either as a question or an assertion. In this section, I will introduce the terminology used in IQS and show how the treatment of disjunction in IQS models the different disjunctive questions discussed in 2.2.

**Terminology** *Information states* (or simply *states*) are sets of possible worlds. We say a state  $\sigma$  *supports* an atomic formula  $p$  if  $p$  is true in all worlds in  $\sigma$ . A state  $\sigma$  supports the negation of a formula  $\varphi$  if  $\varphi$  is false in all worlds in  $\sigma$ . A full definition of support (including non-atomic formulas) can be found in Appendix B. The simplified definitions below are sufficient for the current purposes.

(41) DEFINITION OF SUPPORT

- a.  $\sigma \models p$  iff  $\forall w \in \sigma : w(p)=1$
- b.  $\sigma \models \neg\varphi$  iff  $\forall \tau : \tau \neq \emptyset \subseteq \sigma : \tau \not\models \varphi$

Adapted from Groenendijk and Roelofsen (2009)

While states can be any collection of worlds, IQS gives special status to those states which are the maximal set of worlds that support a formula. The maximal state supporting a formula  $\varphi$  is the *possibility* for  $\varphi$ ; that is, the state that supports  $\varphi$  and is not properly contained in any other state that supports  $\varphi$ . The collection of all the possibilities for  $\varphi$  is the *proposition* expressed by  $\varphi$ . The proposition expressed by (39) has one possibility—the state that contains all worlds where Angela has a dog. The proposition expressed by (40) has two possibilities—one state with all the

worlds where Angela has a dog and one with all the worlds where Angela doesn't have a dog.

(42) **Possibility:** A *possibility* for  $\varphi$  is a maximal state supporting  $\varphi$ , that is, a state that supports  $\varphi$  and is not properly included in any other state supporting  $\varphi$ .

(43) **Proposition:** The proposition expressed by  $\varphi$  is the set of possibilities for  $\varphi$

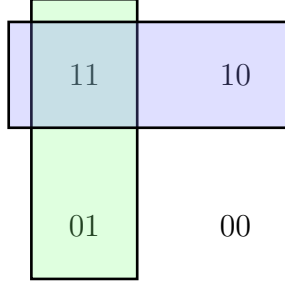
Adapted from Ciardelli and Roelofsen (2011)

A proposition that contains a single possibility is an assertion. Whereas, a proposition that contains more than one possibility is a question. These terms can be defined using a notion of inquisitiveness. A proposition is *inquisitive* if it contains more than one possibility<sup>6</sup>.

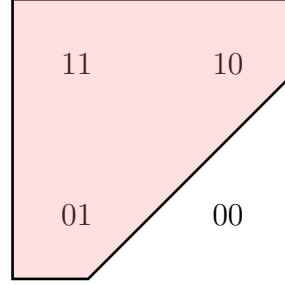
**Disjunction** IQS models the basic notion of disjunction as inquisitive (that is it proposes more than one possibility into the common ground), as in the picture on the left. In this view, the basic function of disjunction is to introduce alternatives (or possibilities). In the following figures, 1 and 0 represent the truth values true and false (respectively) and each quadrant of the square represents a possible world (i.e. the top left quadrant represents the world where both propositions are true, whereas the bottom right they are both false). This view can be compared with the traditional theories that consider disjunction to be a union of the set of worlds where at least one of the propositions is true, as depicted on the right.

---

<sup>6</sup>A typology of sentence types can be constructed based on whether it is informative or inquisitive (see Groenendijk and Roelofsen (2009)) for a complete description.



IS basic notion of  $(p \vee q)$



Traditional notion of  $(p \vee q)$

This difference is achieved in part by the distinction between possibilities and propositions. One difference between IQS and traditional theories is that propositions denote sets of sets of worlds (sets of possibilities), rather than just sets of worlds. Due to this change, the union of two propositions is a single proposition containing two possibilities. Below is the definition for disjunction in IQS. It is very similar to traditional theories in that it takes the union of two elements.

$$(44) \quad \text{For any type } \tau, \text{ if } \llbracket \alpha \rrbracket, \llbracket \beta \rrbracket \subseteq D_\tau, \text{ then } \llbracket \alpha \text{ or } \beta \rrbracket := \llbracket \alpha \rrbracket \cup \llbracket \beta \rrbracket$$

Roelofsen and van Gool (2010)

Below is a chart comparing traditional theories to IQS (the semantics for IQS is adapted from Roelofsen and van Gool (2010)). Following Roelofsen and van Gool (2010) all types denote sets.

	Traditional theories	IQS
1 place predicates	$\llbracket \text{run} \rrbracket = \lambda x. \lambda w. \text{run}_w(x)$	$\llbracket \text{run} \rrbracket = \{ \lambda x. \lambda w. \text{run}_w(x) \}$
2 place predicates	$\llbracket \text{love} \rrbracket = \lambda y \lambda x. \lambda w. \text{love}_w(x,y)$	$\llbracket \text{love} \rrbracket = \{ \lambda y \lambda x. \lambda w. \text{love}_w(x,y) \}$
Names	$\llbracket \text{Angela} \rrbracket = \text{Angela}$	$\llbracket \text{Angela} \rrbracket = \{ \text{Angela} \}$

The change from traditional theories to IQS allows for the distinction between propositions and possibilities. For example, (45)a. and b. denote a propositions, a set of sets. The union of two propositions, results in a proposition that contains two pos-

sibilities, as in (46).

- (45) a. *John runs*:  $\{\lambda w.run_w(john)\}$   
 b. *Angela runs*:  $\{\lambda w.run_w(angela)\}$

(46) 
$$\left\{ \begin{array}{l} \lambda w.run_w(john), \\ \lambda w.run_w(angela) \end{array} \right\}$$

If the propositions weren't sets of sets (as they are in traditional theories), then union could only result in (47); a proposition containing a single possibility.

(47)  $\lambda w.run_w(john)$  or  $run_w(angela)$

Since all types denote sets, disjunction can apply to all types. For example, it can disjoin proper names to get a set of objects of type  $\langle s,e \rangle$ , as in (49).

(48) a.  $\llbracket lindsay \rrbracket = \{lindsay\}$   
 b.  $\llbracket angela \rrbracket = \{angela\}$

(49)  $\left\{ \begin{array}{l} lindsay, \\ angela \end{array} \right\}$

These complex sets can combine with other sets by *Pointwise Function Application*, defined below. This allows for elements of a set to act as arguments for elements in another set. If  $\alpha$  and  $\beta$  are sisters and  $\alpha$  contains an element (a) of type  $\langle \sigma, \tau \rangle$  (where  $\sigma$  and  $\tau$  are any types) and  $\beta$  contains an element (b) type  $\langle \sigma \rangle$ , then a can apply to b.

(50) Roelofsen & van Gool *Pointwise Function Application*

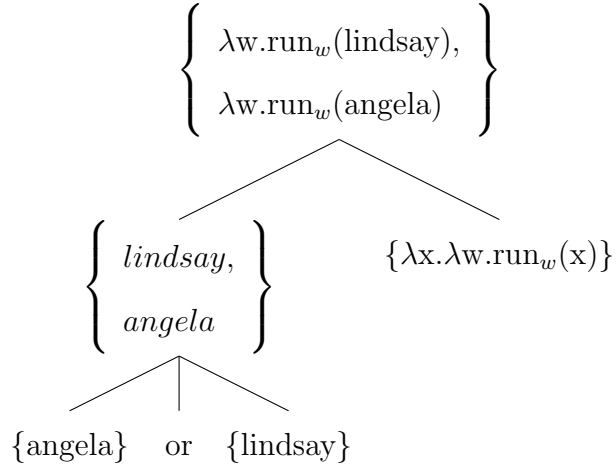
If  $\llbracket \alpha \rrbracket \in D_{\langle \sigma, \tau \rangle}$ ,  $\llbracket \beta \rrbracket \in D_{\sigma}$ , then

$$\llbracket \alpha\beta \rrbracket := \llbracket \beta\alpha \rrbracket := \{d \in D_{\tau} \mid \exists a \in \llbracket \alpha \rrbracket, \exists b \in \llbracket \beta \rrbracket, d = a(b)\}$$

In (50), the result of the disjunction is a set that contains two objects. In this case, the elements in this set can act as arguments for the predicate (which is itself in a



set) by the definition above.



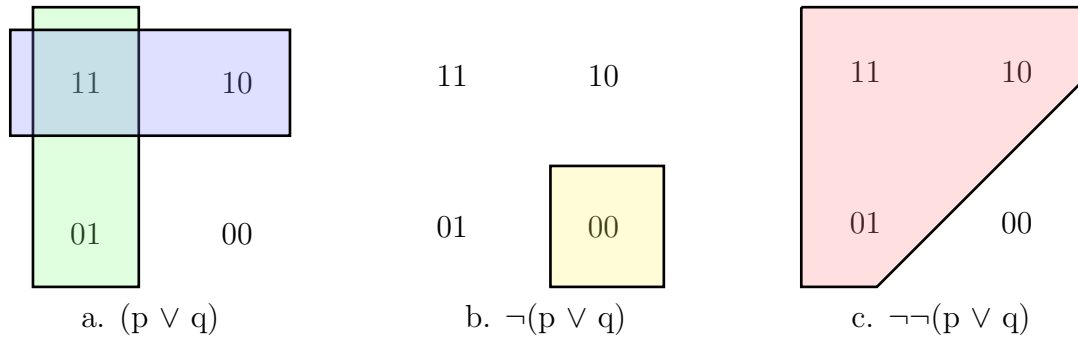
(50) expresses a proposition that contains two possibilities. Note that the source of inquisitiveness is the disjunction *Angela or Lindsay*. While the disjunction does not denote two possibilities, I will say that the disjunction *projects* two possibilities.

**Operators** Inquisitive Semantics defines two non-basic propositional operators using basic operations. These operators modify the structure of the possibilities of a proposition. The first of these operators is *non-inquisitive closure* (denoted as  $!\varphi$ ). This operation takes the union of all the possibilities in a proposition. If the proposition has multiple possibilities, it will return a single set. An assertion of  $\varphi$  is expressed in IQS as  $!\varphi$ , the union of all possibilities in  $\varphi$ .

$$(51) \quad !\varphi = \neg\neg\varphi = \cup\varphi$$

Since negation is defined as complementation in IQS,  $\varphi$  and  $!\varphi$  always have the same informational content. They can have different inquisitive content (in (52) a. has two possibilities, while c. only has one).  $\varphi$  may contain more than one possibility while  $!\varphi$  can only contain one. In (52), we see that negation is not structure preserving.

(52)



The second non-basic operation is *non-informative closure*. This operation exhausts the possibilities of the common ground. A proposition is non-informative if it does not eliminate any possibilities from the common ground. The non-informative operator ‘?’ applies to a proposition  $\varphi$  and returns  $(\varphi \vee \neg\varphi)$ . This makes a proposition inquisitive.

(53)  $?\varphi = \varphi \vee \neg\varphi$

**Disjunctive Questions** In section 2.2, it was shown that in English *or* in a question can result in many distinct interpretations depending on prosody and syntax. Egyptian Arabic shows a similar range of questions depending on whether *wallaa* or *aw* is used. In this paper, I have considered the response patterns of a question to reflect its effects of discourse. To capture this, a notion of compliance is needed. Following the intuitions in Groenendijk and Roelofsen (2009), I provide a simplified definition of compliance<sup>7</sup>. The basic idea is that for propositions that contain multiple possibilities and a compliant response is one that is a subset of one of the possibilities.

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<sup>7</sup>For a more detailed account of compliance see Groenendijk and Roelofsen (2009). The definition provided above has been simplified quite a bit to serve the current purposes.

(54) A response  $\varphi$  is **compliant** with  $\psi$  iff  $\varphi \subseteq$  of the possibilities in  $\psi$ .

A compliant response must pick a possibility or a substate of a possibility of the proposition denoted by the question. For example, (55) is an alternative question that expresses a proposition with two possibilities:  $\lambda w.\text{have}_w(\text{Lindsay}, \text{dog})$  and  $\lambda w.\text{have}_w(\text{Lindsay}, \text{cat})$ . The affirmative (a) response is ungrammatical because it does not denote either possibility (or a subset of them). However, (b) is a compliant response because it does denote one of the possibilities.

(55) Does Lindsay have a dog $\uparrow$  or a cat $\downarrow$ ?

a. #Yes.

b. A dog.

The question types (discussed in 2.2) varies in the structure of its possibilities and therefore in its response patterns. These differences are depicted in (56).

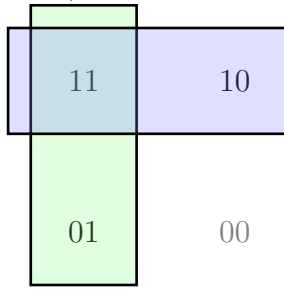
(56)a. depicts the proposition expressed by an alternative question. The two possibilities correspond to the two disjuncts:  $\phi$  and  $\psi$ . A compliant answer to an alternative question denotes a subset of one of the possibilities<sup>8</sup>. The two possibilities of the proposition are projected from the disjunction.

In contrast to alternative questions, polar questions (as in c.) are propositions that contain two possibilities, but those possibilities are not projected from the disjunction. For example, in *Does Lindsay have a dog-or-a-cat?*, the proposition has undergone non-inquisitive closure yielding one possibility—*Lindsay has a dog or a cat* and the other possibility is contributed by non-informative closure—*Lindsay doesn't have a*

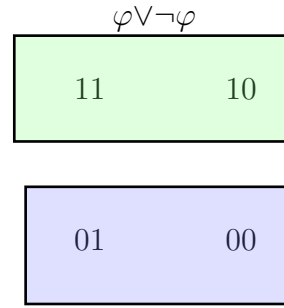
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<sup>8</sup>Notice that the *no* answer is not a possibility. In fact, *no* has been grayed out to denote that, rather than proposing to remove it from the common ground, it is a not-at-issue update.

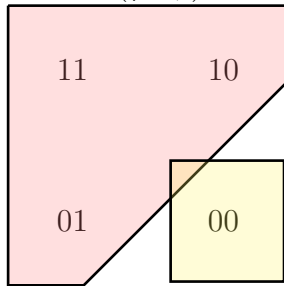
(56) **a. Alternative Question:**  
 $(\varphi \vee \psi)$



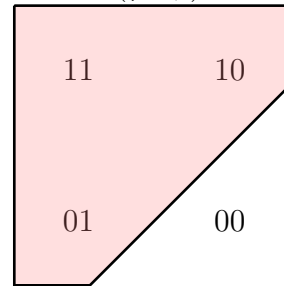
**b. Polar-Alternative question:**



**c. Polar question:**  
 $?!(\varphi \vee \psi)$



**d. Assertion:**  
 $!(\varphi \vee \psi)$



*dog or a cat.* This property of polar questions shows similarities with an assertion containing disjunction (d.). In both (c. and d.) the possibilities of the disjunction are considered one possibility in the proposition.

A polar-alternative question (*Do you have a car or not?*), is shown in (b). Like a polar question, it can be responded with both *yes* and *no*. Although it is similar to a polar question in its response pattern, it differs in a crucial way. Like alternative questions (and unlike polar questions containing disjunction), the two possibilities are projected from the disjunction.

The two question types (a and b), can be distinguished from (c and d) in that the possibilities that the disjunction projects are two possibilities in the proposition. However, in (c and d), a polar question and an assertion, the possibilities of the disjunction are considered one possibility in the proposition. This is modeled in IQS

as non-inquisitive closure.

## 4.2 Inquisitive Presuppositions

Haspelmath (2007) has described interrogative disjunctions as having two properties. First, as their name suggests, interrogative disjunctions are taken to have a distribution limited to interrogative clauses. Second, an interrogative clause containing an interrogative disjunction is interpreted as an alternative question, rather than a polar question. Haspelmath (2007) also states that languages with interrogative disjunctions also have standard disjunctions which occur in both interrogative and declarative environments. Interrogatives with standard disjunctions are interpreted as polar questions, rather than alternative ones. I have shown that for Egyptian Arabic *wallaa* and *aw* this description is not complete. While *wallaa* does generally occur in interrogatives, it only occurs in a subset of question types; it occurs in closed alternative (15) and polar-alternative questions ??, but not polar or wh-questions (21). Additionally, *wallaa* can occur in a very select range of declarative clauses ((34) and (37)). The standard disjunction *aw* occurs not only in polar questions and declaratives, but also in wh-questions. Moreover, *aw* cannot occur in the question types that *wallaa* occurs in.

Stating the distribution of *wallaa*—or any other interrogative disjunction—as a list of restrictions and allowances in clause types is not explanatory. Using Inquisitive Semantics, these environments can be grouped by their source of inquisitiveness. In IQS, a proposition is inquisitive if it contains more than one possibility. I use the term *source of inquisitiveness* to refer to anything that enters more than one possibility into the common ground. I claim that the differences between *wallaa* and *aw* can be captured as a difference in inquisitiveness. While *wallaa* is always a source of

inquisitiveness, *aw* never is.

The two disjuncts of *wallaa* must correspond to two possibilities. For example, the alternative question, *Do you want coffee<sup>↑</sup> or tea<sup>↓</sup>?* denotes a proposition containing two possibilities: (i) the addressee wants coffee and (ii) the addressee wants tea. Each possibility corresponds to one of the disjuncts of *wallaa*—*coffee* and *tea*. This can be contrasted with the disjuncts of *aw* which only project one possibility in the common ground. This can be seen in polar questions, such as *Do you want coffee-or-tea?*. In this question, the disjuncts correspond to only one possibility (i) addressee wants coffee or tea, while a higher operator (non-informative closure) contributes the other possibility, the (ii) neither case.

In IQS, disjunction is a natural source for inquisitiveness; the semantics of disjunction always denote a plurality of possibilities. However, disjunctions do not always propose multiple possibilities into the common ground. The possibilities of a disjunction can become non-inquisitive by operators such as non-inquisitive closure and negation which alter the structure of the possibilities. In this section, I claim Egyptian Arabic is a language that has both an inquisitive disjunction *wallaa* and a non-inquisitive one *aw*. This can be contrasted with English, where the single disjunction *or* can be both inquisitive and non-inquisitive. That is, the disjuncts of *or* can project a single or multiple possibilities depending on what construction they occur in.

In formulating these restrictions it is important to recognize that it applies to possibilities which are not necessarily the most local constituent of the disjunction. For example, in *Lindsay has a dog or a cat* the disjunction joins two noun phrases. The restriction, however, must apply to not just *a dog or a cat*, but rather to *Lindsay has a dog* and *Lindsay has a cat*. For this reason, the restrictions of *wallaa* and *aw*

are formulated as to only apply to the possibilities that the disjuncts project. There are a few ways to make explicit the connection between the local constituent and the possibility it corresponds to. These options are discussed in Appendix B. For the current purposes, I will assume a direct connection between the local constituent and the possibility it corresponds to by assuming an elision based approach to the disjunction.<sup>9</sup>

Both *wallaa* and *aw* contribute the same at-issue content—the semantics of disjunction as stated in (44)—a union between the denotations of the two elements. They differ in requirements placed on the possibilities they contribute to the common ground. While *wallaa*-phrases must project sets that contain more than one possibility, *aw*-phrases project a singleton set of possibilities<sup>10</sup>. These requirements are formalized in (58) and (57) below. The requirements are listed before a dot to indicate that they are not-at-issue content. This will be discussed in more detail with regards to the Dependency Constraint.

The restriction in (57) insures that there is state that supports  $\alpha$  that is in a possibility  $P$  and that there is a state that supports  $\beta$  that is not in that possibility  $P$ , and vice versa. This requires that *wallaa* always be a source of inquisitiveness. In this definition, I have used  $P$  and  $P'$  to range over possibilities<sup>11</sup>.

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<sup>9</sup>I do not believe that these constructions involve ellipsis. This is simply being used to show an explicit connection between the constituents of the disjunction and the possibilities they correspond to.

<sup>10</sup>In addition, *wallaa* has a further requirement that *aw* does not, that one of its disjuncts holds.

<sup>11</sup>Since, possibilities are defined as maximal states supporting a proposition, these definitions could be defined without using a variable that ranges over possibilities, and instead just use states.

- (57) For any type  $\tau$ , for any  $[[\alpha]], [[\beta]] \subseteq D_\tau$ ,  $[[\alpha \text{ wallaa } \beta]] :=$   
 $\exists P [ \exists s [ s \models \alpha \ \& \ s \subseteq P ] \ \& \ \exists s' [ s' \models \beta \ \& \ s' \not\subseteq P ] ] \ \&$   
 $\exists P' [ \exists s [ s \models \alpha \ \& \ s \not\subseteq P' ] \ \& \ \exists s' [ s' \models \beta \ \& \ s' \subseteq P' ] ] \cdot [[\alpha]] \cup [[\beta]]$

*Aw* has a presupposition requiring the opposite: It cannot be the source of inquisitiveness. It states that there there must be a possibility that contains all the states that support  $\alpha$  and all the states that support  $\beta$ .

- (58) For any type  $\tau$ , for any  $[[\alpha]], [[\beta]] \subseteq D_\tau$ ,  $[[\alpha \text{ aw } \beta]] :=$   
 $\exists P [\forall s [ s \models \alpha \rightarrow s \subseteq P ] \ \& \ \forall s' [ s' \models \beta \rightarrow s' \subseteq P ] ] \cdot [[\alpha]] \cup [[\beta]]$

This restriction would prevent a set generated by *wallaa* from combining with non-inquisitive closure. This is because the function of non-inquisitive closure is to take the union of alternatives, yielding a single set. Conversely, a set generated by *aw* must be in the scope of non-inquisitive closure since the set it projects is required to be a singleton. In the following sections, I will show how this analysis can account for the data in section 3.

#### 4.2.1 Polar and Alternative Questions

In (59), the two possibilities of the disjunction *wallaa* correspond with two possibilities in the common ground.

- (59) Hoda eind-aha      ?ahwa wallaa shai?  
 Hoda have-3sg.fem coffee or tea  
*Does Hoda have coffee or tea?*

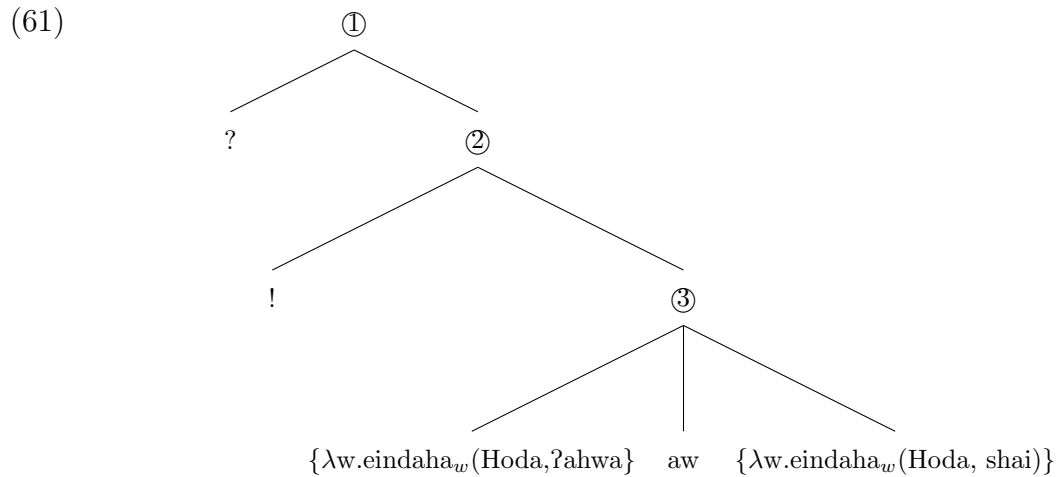
This can be compared with (61) in which the two possibilities of the *aw* disjunction correspond to one possibility in the common ground (that Hoda has coffee or tea),



while the second possibility is contributed by the non-informative closure ‘?’<sup>12</sup>

- (60) Hoda eind-aha      ?ahwa aw shai?  
 Hoda have-3sg.fem coffee or tea  
*Does Hoda have coffee or tea?*

In (61), we can see that *aw* takes the union of its two disjuncts and the result is in ①, a set containing two possibilities. Those possibilities then undergo non-inquisitive closure, which can be thought of as another union process. In ②, this process has applied and the two possibilities that *aw* created are not one possibility. Finally, the polar question intonation contributes the non-informative closure, which proposes a possibility that is the complement of the possibility in ②. Finally in ①, there are two possibilities: one contributed by both disjuncts of *aw* and one contributed by non-informative closure.




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<sup>12</sup>The non-informative closure operation can be thought of as the realization of polar question intonation. *Wallaa* does not occur with polar question intonation and therefore does not occur with the non-informative closure operator.

$$\textcircled{1} \left\{ \begin{array}{l} \lambda w. \text{have}_w(\text{Hoda}, ?\text{ahwa}) \text{ or } \text{have}_w(\text{Hoda}, \text{shai}), \\ \lambda w. \neg(\text{have}_w(\text{Hoda}, ?\text{ahwa}) \text{ or } \text{have}_w(\text{Hoda}, \text{shai})) \end{array} \right\}$$

$$\textcircled{2} \{ \lambda w. \text{have}_w(\text{Hoda}, ?\text{ahwa}) \text{ or } \text{have}_w(\text{Hoda}, \text{shai}) \}$$

$$\textcircled{3} \left\{ \begin{array}{l} \lambda w. \text{eindaha}_w(\text{Hoda}, ?\text{ahwa}), \\ \lambda w. \text{eindaha}_w(\text{Hoda}, \text{shai}) \end{array} \right\}$$

#### 4.2.2 Polar Alternative Questions

These presuppositions also explain why *wallaa* is grammatical in polar alternative questions and *aw* is not. Since *aw* always projects a single set of possibilities a disjunction of a possibility and the negation of that possibility exhausts the common ground. A declarative of this form, such as (62), is interpreted as a tautology and is judged as quite odd out of context.

- (62) Hoda min Amrika aw laa?  
 Hoda from America or not  
*Hoda from America (United States) or not.*

In an interrogative clause, such as (63), *aw* is ungrammatical because, as with the declarative, the disjunction exhausts the common ground denoting the possibility consisting of all states compatible with *Hoda is from America* and those compatible with *Hoda is not from America*. The non-informative closure associated with polar question intonation denotes the complement of the possibility denoted by the *aw* phrase. However, there is no complement of a possibility that already contains all possible states.

- (63) \*Hoda min Amrika aw laa?/eh?  
 Hoda from America or not  
*Is Hoda from America (United States) or not/what?*

*Wallaa* on the other hand is grammatical in polar alternative questions. While its presupposition allows overlap of the possibilities (as in alternative questions), it does not require it. This makes *wallaa* suitable for disjoining a proposition and its complement.

### 4.2.3 Wh-questions

In English, a disjunction that is in a wh-question is never a source for inquisitiveness. That is it never denotes multiple possibilities in the common ground. For example, in (64), this is seen in the response pattern.

- (64) Who has a dog or a cat?
- a. Sally → Sally has a dog or a cat.
  - b. #A cat.
  - c. #Sally, a cat
  - d. Sally, and she has a cat.

The addressee answers (64) with a value for the wh-element, such as *Bill* or *Sally* (as in (i)a.), rather than with confirming one of the disjuncts (as in b.). This means the possibilities differ in the value for the wh-element, not the different disjuncts. Answering (64) with a value for the wh-element, say *Sally*, is interpreted as stating that Sally has a cat or a dog, not choosing between the *cat* and *dog* disjuncts. Sentence (64) cannot have a reading equivalent to (65).

- (65) Who has a dog and who has a cat?

- a. #Sally
- b. Sally, a dog and John, a cat.

While (65) requires a response in which the addressee responds with both the value for the wh-element and which animal that person has. If the addressee wants to specify whether the value for the wh-element, say Sally, has a dog or a cat, s/he cannot simply list these answers as s/he can for (65). Rather, the addressee must make explicit that s/he is giving more or extra information, as in the contrast between c. and d. for (64).<sup>13</sup>

This shows that disjunctions in a wh-question undergo non-inquisitive closure. The inquisitiveness of a sentence like (64) is from the wh-element, not the disjunction. That is the possibilities vary based on the individuals in the domain rather than on the disjuncts. In inquisitive semantics this is modeled below, for a more complete description see Ciardelli et al. (2012).

$$(66) \quad ?\exists x !(p(x) \vee q(x))$$

This pattern is mirrored in the Egyptian Arabic data. *Aw*, the disjunction which cannot be a source for inquisitiveness can occur in wh-questions, whereas *wallaa*, which must be the source of inquisitiveness, cannot.

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<sup>13</sup>In general, questions seem to be able to request two answers at once. Sentence (i) requests a pairlist answer that addresses the values for both wh-elements. It is unclear to me why disjunction does not allow this as well.

- (i) Who has what?
  - a. #Sally
  - b. Sally, a cat.
  - c. John, a dog. Sally a cat. etc.

#### 4.2.4 Hurford's Constraint and the Dependency Constraint

The inquisitiveness restrictions on *wallaa* and *aw* are considered presuppositions in (57) and (58). One motivation for this is the difference between Hurford's constraint and the Dependency Constraint (as discussed in section 3.2.2). While both *aw* and *wallaa* (and possibly all disjunctions) are subject to Hurford's constraint, only *wallaa* is subject by the Dependency Constraint. The presuppositions for *aw* and *wallaa* account for this behavior.

Hurford's Constraint applies to disjuncts in which one logically entails another; when all possible worlds are considered, the worlds that make one disjunct true cannot be a subset of the worlds that make the other disjunct true. The dependency constraint is formulated similarly but only applies to the set of worlds under consideration in a particular context. For example, below *having a dog* will always be a subset of *having an animal* (in every context). However, *having children* and *having grandchildren* are only a subset relation in a context where everyone is alive. That is, someone can have grandchildren, but no children if their children are dead (Omar expressed that asking a question like *Do you have children wallaa grandchildren?* was rude because it somehow implied that your children were dead).

LOGICALLY INDISTINCT DISJUNCTS: logical subset/supersets

(i.e. having dogs and animals)

DISCOURSE INDISTINCT DISJUNCTS: contextual subset/superset

(i.e. having children or grandchildren)

*Wallaa*'s inquisitive presupposition applies to discourse possibilities requiring that the states that support each disjunct are not substates of the same possibility. If instead the restriction was formulated to require that the disjuncts only be logically distinct, then we would expect it to be grammatical for them to be considered one

possibility in the discourse after some type of closure process (as *aw* does). We really need a restriction that states that the disjuncts of *wallaa* must be distinct in the discourse, even once we have taken the contextual factors into consideration.

#### 4.2.5 Disjoining Interrogatives

It has been said that only *wallaa* can disjoin interrogatives while *aw* cannot (Abdel-Massih et al. (1981), as in (67)). Since EA does not syntactically mark clauses for type and *wallaa* has its own intonational requirements, it is hard to tell if this is an example of disjoined interrogatives or simply disjoined clauses. One argument for this being a disjunction of interrogatives is that *aw* can disjoin full clauses, however, it is always interpreted as an assertion and not a question. The second argument comes from the semantics.

- (67)    ʔayz takamil akl-ik                    wallaa/\*aw ʔaiz-nii  
           want finish    food-2sg.masc or                    want-masc-1sg.SUB  
           haddrab-ik?  
           hit-2sg.masc.OBJ  
           *Do you want to finish your food or do you want me to hit you?*

Roelofsen and van Gool (2010) states that in English a disjunction of interrogatives (or what they call wide-scope disjunction) always receives an alternative question interpretation. Moreover, Pruitt and Roelofsen (2011) states that all alternative questions may in fact be interrogative disjunctions (involving elision). A more detailed account of this construction, can be found in Pruitt and Roelofsen (2011). In EA, this construction type is often used as a threat, offering two opposing options (as in (67)). The non-inquisitive requirement of *aw* would not allow the disjuncts to denote the two opposing possibilities that this construction seems to require.

#### 4.2.6 Wallaa and aw together

Since both *wallaa* and *aw* can occur in the same sentence, such as (68). The gloss reflects the interpretation in that the *or* corresponding to *wallaa* is bolded and should be pronounced as stressed. (68) offers two possibilities in the common ground: (i) addressee wants beer or wine and (ii) addressee wants coffee or tea.

- (68) ʔayz-a        biira aw bibiit wallaa ʔahwa aw shai?  
want-fem.sg beer or wine or        coffee or tea  
*Do you want beer or wine **or** coffee or tea?*

This grouping of disjuncts is expected under the inquisitiveness account. The disjuncts of the *aw* disjunctions constitute one possibility in the common ground, while the disjuncts of *wallaa* comprise two possibilities.

#### 4.2.7 Declaratives

This analysis cannot straightforwardly account for the cases in which *wallaa* occurs in declarative clauses, since both cases involve a nonconventional use of negation. These cases are both cases where English uses stressed *or*. If the stress on *or* is denoting focus, then a clear parallel can be drawn between English and EA. *Wallaa* has a presupposition that it denotes multiple possibilities. The focus on *or* may be the same mechanism since focus has been claimed to be tied to alternatives Rooth (1992).

## 5 Conclusion

This paper provided a complete description of two disjunctive lexical items, *wallaa* and *aw* in Egyptian Arabic. These disjunctions behave closely to what has been called

interrogative and standard disjunctions by Haspelmath (2007). *Wallaa* is subject to a contextual version of Hurford’s constraint—what I call the Dependency Constraint. *Aw* is not subject to this constraint. The lexical items also differ in their distribution. *Wallaa* can occur in closed alternative questions, polar alternative questions, interrogative disjunctions, and in the scope of meta-linguistic negation. On the other hand *aw* can occur in polar questions, wh-questions, and declaratives. The proposed analysis claims that the difference between these two types of disjunction is the number of possibilities each contributes to the common ground, or their inquisitiveness. This accounts both for the difference in sensitivity to the Dependency constraint and the distribution of each lexical item.

While this analysis the observed pattern for Egyptian Arabic, it is unclear if all claimed cases of interrogative/standard disjunctions behave similarly. This paper provides tests that can be applied to other languages to determine if their disjunctions also differ in inquisitiveness.

## 6 Appendix A: Polarity Sensitive Disjunctions

In this paper, I have discussed the EA disjunction *wallaa* and *aw*. The etymological source of *Wallaa* may have been from *wa* ‘and’ and *illa* ‘except, else’. It is important to distinguish this lexical item from *walaa* whose etymological source may be *wa* ‘and’ and *la* ‘not’ (shown below).



وَلَا (*walaa*): *wa* ‘and’ و + *la* ‘not’ لَا

وَلَّا (*wallaa*): *wa* ‘and’ و + *illaa* ‘except, else’ إِلَّا

While *walaa* can maintain its etymological meaning, negative conjunction, it has also been extended to other uses (Hoyt 2010). One such use is disjunction. In this section, I will discuss the behavior of *walaa* and previous work on its determiner use.

In his 2010 dissertation, Hoyt discusses the determiner *wala* in Levantine Arabic. He states that *wala* is polysemous between (at least) the following functions:

1. Negative Conjunction: “and not”: This is the etymological source, composed of *wa* “and” + *la* “not”, but it is still used productively;
2. Negative Disjunction or Additive Particle: “nor”: *la...wala* “neither...nor”
3. Disjunction: “or”, found mostly in urban registers;
4. Negative Scalar Focus Particles: “not even, not one”;
5. Denial *or*

(Hoyt 2010)

A distinguishing factor between the different uses of *walaa* is whether or not it expresses negation or simply enters into some type of relationship with another negative element. Section 6.0.9 will show that the disjunctive use of *walaa* in Egyptian

Arabic is a Negative Polarity Item. The uses of *walaa*, however, do not seem to be completely distinct. *Walaa* always shows interactions with alternatives.

### 6.0.8 Previous work on determiner use of *walaa*

Hoyt (2010) discusses what he calls *the negative scalar focus particle use* of *wala* in Levantine Arabic. In this case, *wala* associates with an expression that receives a scalar interpretation. That is, it compares a set of alternative propositions determined by the context. For example, in (69) below.

*Context: Fred is asking Qais for apples and Qais says that he doesn't have apples today. As Fred presses for just three or four apples, Qais responds with:*

- (69)    ma:fi    **wala**    **tuffæħ** lyo:m.  
          not.exist not.even apples the-day  
          “There isn’t even one apples today.” (Hoyt #)

In this case, *wala* associates with **tuffæħ** ‘apple’ and compares the amount of apples that Qais has with all other alternative cardinalities of apples. Hoyt states that *wala* associates with expressions that have alternatives that range over quantity scales (e.g. natural numbers), in this case of apples.

The distribution of the determiner *walaa* in Egyptian Arabic is discussed in Soltan (to appear). As in the Levantine dialect, the determiner *walaa* occurs with a singular indefinite noun, as shown below. But unlike the Levantine dialects, Soltan shows that determiner *walaa* has a much more limited distribution in EA. That is, it is only licensed in the scope of negation, in *without* clauses, and some *before* clauses.

- (70)    a.    *walaa waħid/walaa ħad* ‘no one’  
          b.    *walaa ħittah* ‘no place’  
          c.    *walaa kitaab* ‘no book’

- d. *walaa haagah* ‘nothing’
- e. *walaa raagil* ‘no man’ (Soltan (to appear) ex.4)

The negative conjunction use of *walaa* in Egyptian Arabic is discussed in Abdel-Massih et al. (1981). In this use, *wala* itself expressed both conjunction and negation. Abdel-Massih et al. (1981) states that *wala* is used when the negation *miš* immediately follows conjunction, as shown in (72) below.

(71) *wi miš* → *walaa*

(72) *Ilmoot wala ilʔubudiyya.*

*Death (is to be chosen) rather than slavery.*

Abdel-Massih et al. (1981) p. 62

When *walaa* is used as a negative conjunction—to replace conjunction and a negation that would otherwise circumfix to the following verb (ma- -š), the result is an emphatic negation reading. That is, while (73) and (74) are both grammatical, (74) conveys emphatic negation while (73) does not.

(73) *Rigiʔ wi ma-saʔal-š fnašifitna.*

*He returned, paying no attention to our advice.*

Abdel-Massih et al. (1981) p. 62

(74) *Rigiʔ wala saʔal fi našifitna.*

*He returned, paying no attention whatsoever to our advice.*

Abdel-Massih et al. (1981) p. 62

Although the lexical item varies in meaning and distribution in the its uses and in two dialects discussed, *walaa* displays interactions with polarity and alternative

structures in both.

### 6.0.9 Disjunction *walaa*

The disjunctive use of *walaa* does not express negation. Disjunctive *walaa* is ungrammatical in affirmative declarative sentences as in (75), but is grammatical in a declarative with clausemate negations (as in (76)).

(75) \*Hoda min Kanada *walaa* Amrika.  
Hoda from Canada nor America  
*Hoda is from America nor Canada.*

(76) \*Hoda miš min Kanada *walaa* Amrika.  
Hoda not from Canada nor America  
*Hoda isn't from America nor Canada.*

As discussed in section 2.2 for European languages, this is a contrastive negative coordinator. While both *walaa* and *aw* are both grammatical in negative declaratives, they vary in possible scope relative to negation. In (77) *aw* can scope below and above the negation.

(77) Hoda miš min Kanada *aw* Amrika.  
Hoda not from Canada or America  
*Hoda isn't from America or Canada.*

(i) ✓  $\vee > \neg$

(ii) ✓  $\neg > \vee$

In contrast, (78) can only have the interpretation where *walaa* is interpreted in the scope of negation.

(78) Hoda miš min Kanada walaa Amrika.  
 Hoda not from Canada or America  
*Hoda isn't from America or Canada.*

(i) \*  $\vee > \neg$

(ii)  $\checkmark \neg > \vee$

In clauses headed by *without*, *walaa* is also grammatical, as in (79).

(79) Fiona mišyi.t minyeir caka walaa baskoot.  
 Fiona left.PAST without cake nor cookies  
*Fiona left without cake nor cookies.=neither*

While *without* does license *walaa* this does not extend to other downward entailing operators. Disjunctive lexical items in other languages show the exact opposite behavior, that is they obligatorily scope outside of negation. Szabolcsi (2002) claims that the Hungarian disjunction *vagy* ‘or’ is a Positive Polarity Item. (80) can only have the interpretation in which the disjunction scopes outside of negation.

(80) **Nem** csukt-uk be az ajtó-t **vagy** az ablak-ot.  
**not** closed-1pl in the door-ACC **or** the window-ACC  
*Lit: We didn't close the door or the window.*

(i)  $\checkmark$  I don't know which

(ii) \*neither (Szabolcsi (2002) #4)

(81) János **nem** hívta fel Kati-t **vagy** Mari-t.  
 John **not** called-3sg up Kati-ACC **or** Mari-ACC  
*Lit. John didn't call Kati or Mari.*

(i)  $\checkmark$  or  $>$ not

(ii) \* not  $>$  or (Szabolcsi (2002) #39)

*Vagy* can occur under negation when it is in a higher clause, as in ???. It can also occur in the scope of downward entailing operators. This shows that *vagy* is sensitive

to negation itself.

- (82) **Nem** hisz-em, hogy becsukt-uk volna az ajtó-t **vagy** az  
**not** think-1sg that in-closed-1pl AUX the door-ACC **or** the  
ablak-ot.  
window-ACC  
*I don't think we closed the door or the window.* (Szabolcsi (2002) #5)

- (83) **Kevés fiú** hívta fel Kati-t **vagy** Mari-t.  
**few boy** called up Kati-ACC **or** Mari-ACC  
*Few boys called Kati or Mari.*

(i) ✓ or > few boys

(ii) ✓ few boys > or (Szabolcsi (2002) #41)

Both Hungarian and Egyptian Arabic have disjunctive lexical items that are polar sensitive. These languages are not alone in this attribute. Even languages that do not have PI disjunctions, still show an interaction between polarity and disjunction. That is, they all obey De Morgan's Law and the disjunction is interpreted with a conjunctive force under the scope of negation. This observation may be linked to the main point in this paper, that disjunctions come in inquisitive and non-inquisitive pairs. This is clear in a framework such as Inquisitive Semantics that makes explicit that alternatives are not projected under negation.

## 7 Appendix B: Formalism

### 7.1 Definition for Support

1.  $\sigma \models p$  iff  $\forall v \in \sigma : v(p)=1$
2.  $\sigma \models \neg\varphi$  iff  $\forall \tau \subseteq \sigma : \tau \not\models \varphi$

3.  $\sigma \models \varphi \vee \psi$  iff  $\sigma \models \varphi$  or  $\sigma \models \psi$
4.  $\sigma \models \varphi \vee \psi$  iff  $\sigma \models \varphi$  and  $\sigma \models \psi$
5.  $\sigma \models \varphi \rightarrow \psi$  iff  $\forall \tau \subseteq \sigma$ : if  $\tau \models \varphi$  then  $\tau \models \psi$

1. A state  $\sigma$  supports an atomic sentence  $p$  iff every index in  $\sigma$  makes  $p$  true;
2. A state  $\sigma$  supports a negation  $\neg\varphi$  iff no substate of  $\sigma$  supports  $\varphi$ ;
3. A state  $\sigma$  supports a disjunction iff it supports at least one of the disjuncts;
4. A state  $\sigma$  supports a conjunction iff it supports both conjuncts;
5. A state  $\sigma$  supports an implication  $\varphi \rightarrow \psi$  iff every substate of that supports  $\varphi$  also supports  $\psi$ .

Groenendijk and Roelofsen (2009)

## 7.2 Disjoining phrases

In section 4.2, I have formulated the inquisitive presuppositions of *wallaa* and *aw* only for cases in which they disjoin propositions. Ultimately, I would want an analysis similar to the one found in section 4.2, but allows *wallaa* and *aw* to disjoin phrases below the propositional level. It was formulated as such to make explicit the connection between a disjunction and the possibility it denotes. For example, in (84), the disjuncts need to have the associations in (a) and (b).

- (84) Lindsay drinks beer or wine.
- a. wine  $\approx \{\lambda w.\text{drink}_w(\text{Lindsay}, \text{wine})\}$
  - b. beer  $\approx \{\lambda w.\text{drink}_w(\text{Lindsay}, \text{beer})\}$

There are two possibilities. One is to state that the presupposition only applies to the most local constituents (*beer* and *wine* in (84)), but that these possibilities are

contextually restricted by the rest of the sentence. The presupposition applies to *beer* and *wine*, but only in the context of what Lindsay might be drinking.

The second possibility is to explicitly relate the noun phrase to the possibility in the presupposition. One way to do this is to use a notion of generalized entailment, defined below.

$$(85) \quad \text{GENERALIZED ENTAILMENT: } \forall f, g \in D_{\langle \sigma, \tau \rangle}: f \Rightarrow g \text{ iff } \forall x \in D_\sigma f(x) \rightarrow g(x)$$

The presupposition can reference the full proposition via the most local constituent of the disjunction. For example in (86), the functions denoted by the noun phrases of the disjunction in (84) are linked to the proposition by the definition of generalized entailment above.

- (86) a.  $\lambda x. \text{ Lindsay drinks } x \ \& \ x \text{ is beer} \Rightarrow \lambda x. x \text{ is beer}$   
 b.  $\lambda x. \text{ Lindsay drinks } x \ \& \ x \text{ is wine} \Rightarrow \lambda x. x \text{ is wine}$

Both of these solutions are trying to establish a connection between the local disjuncts of *aw* and *wallaa* to the possibilities that they correspond to in the common ground. This is not an issue that is unique to Egyptian Arabic or the data presented in this paper.

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