

# Cross-linguistic variation in ordinary vs interrogative disjunctions

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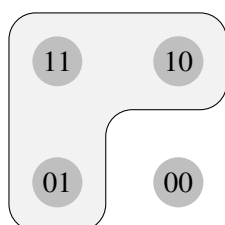
## Introduction

- Disjunction in natural language has broadly two related but distinct uses. Consider (1):

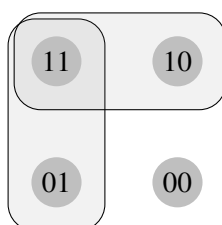
(1) The city says they have to cut down this tree.

- a. (Maybe) The tree is too tall **or** sick. declarative
- b. Is the tree [too tall]<sub>F</sub><sup>↑</sup> **or** [sick]<sub>F</sub><sup>↓</sup> ? alternative question (AltQ)
- c. Is the tree too tall **or** sick<sup>↑</sup> ? polar question (PolQ)

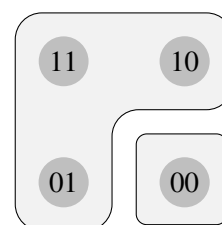
1. One use “flattens” these possibilities into a single disjunctive proposition, as in (1a). This can then feed polar question formation, as in (1c).
2. Another makes these possibilities salient in the discourse as a question as in (1b), keeping the individual possibilities distinct.



(1a) declarative



(1b) AltQ



(1c) PolQ

In languages like English, a single disjunctive (*or*) appears in all of these uses. Prosody distinguishes between (1b,c) in English; see e.g. Han and Romero 2004, Pruitt and Roelofsen 2013, Biezma and Rawlins 2015, Meertens 2019.

- Some languages lexically distinguish these uses of disjunction. Following Haspelmath (2007), I call these forms “**ordinary disjunction**” (**ODISJ**) vs “**interrogative disjunction**” (**IDISJ**).

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(2) ‘They<sub>sg</sub> drink coffee or tea’, three ways in

Finnish:

a. Declarative:

Hän juo kahvia **tai**/\***vai** teetä.

3sg drinks coffee ODISJ/\*IDISJ tea

b. AltQ:

Juo-ko hän kahvia **vai** teetä?

drinks-Q 3sg coffee IDISJ tea

c. PolQ:

Juo-ko hän kahvia **tai** teetä?

drinks-Q 3sg coffee ODISJ tea

**Today:** I investigate the ranges of use of ODISJ vs IDISJ in languages that exhibit this distinction, concentrating on **Finnish, Mandarin, Vietnamese, and Tiwa** (Tibeto-Burman; northeast India).

► Languages differ in the distinction that is lexicalized by ODISJ vs IDISJ. In particular:

- In Mandarin and Vietnamese, there are certain contexts where the contrast between ODISJ and IDISJ are neutralized. But not in Finnish or Tiwa.
- I propose that the conventional link between IDISJ and alternative question formation is *syntactic* in Finnish and Tiwa but only *semantic* in Mandarin and Vietnamese.
- I discuss a (work in progress) approach to these facts.

## 1 The basic paradigm

We first confirm the signature of ordinary versus interrogative disjunction, introduced above, in our four languages of focus:

|            | ODISJ                       | IDISJ         |  |
|------------|-----------------------------|---------------|--|
| Finnish    | <i>tai</i>                  | <i>vai</i>    | Vainikka 1987; Kaiser 2003                       |
| Mandarin   | <i>huò(zhe)</i>             | <i>háishì</i> | Lin 2008; Huang 2010; Erlewine 2014; Ito 2014... |
| Vietnamese | <i>hoặ<sup>2</sup></i>      | <i>hay</i>    |  |
| Tiwa       | <i>ba / khí<sup>3</sup></i> | <i>na</i>     | Dawson 2020                                      |

<sup>2</sup> *Hoặ* is Sino-Vietnamese and a cognate of Mandarin *huò*. Alves (2009) hypothesizes that *hoặ* came to replace the native disjunctive *âu là* between the 17th and 20th century. (Phan (2013: 343–352) however suggests that such Sino-Vietnamese replacements most likely do not reflect entirely new borrowings from the 17th century onwards, but that such Sino-Vietnamese forms were likely already in use.) I do not know of the range of use of *âu là*.

<sup>3</sup> Tiwa also has another ordinary disjunction, *khí*, which necessarily takes wide scope, even above illocutionary force operators; see Dawson 2020: 161.

(3) **Disjunctive proposition declarative:**

‘L. will come tomorrow or the day after.’

- a. Liisa tulee [huomenta **tai**/\***vai** ylihuomenta]. Finnish  
Liisa comes tomorrow ODISJ/\*IDISJ day.after
- b. Lǐsì [míngtiān **huòzhe**/\***háishì** hòutiān] huì lái. Mandarin  
Lǐsì tomorrow ODISJ/\*IDISJ day.after will come
- c. Lan sẽ đến vào [ngày mai **hoặc**/\***hay** ngày kia]. Vietnamese  
Lan will arrive in tomorrow ODISJ/\*IDISJ day.after
- d. Lastoi [khónana **ba**/\***na** sónena] phiw. Tiwa  
Lastoi tomorrow ODISJ/\*IDISJ day.after come (Dawson, 2020: 87, p.c.)

(4) **Alternative question:**

‘Will L. come tomorrow or the day after?’ (AltQ)

- a. Tulee-ko Liisa [huomenta \***tai/vai** ylihuomenta]? Finnish  
comes-Q Liisa tomorrow \*ODISJ/IDISJ day.after
- b. Lǐsì [míngtiān \***huòzhe/háishì** hòutiān] huì lái? Mandarin  
Lǐsì tomorrow \*ODISJ/IDISJ day.after will come
- c. Lan sẽ đến vào [ngày mai \***hoặc/hay** ngày kia]? Vietnamese  
Lan will arrive in tomorrow \*ODISJ/IDISJ day.after
- d. Lastoi [khónana \***ba/na** sónena] phiw? Tiwa  
Lastoi tomorrow \*ODISJ/IDISJ day.after come (Dawson, 2020: 87, p.c.)

(5) **Polar question:**

‘Will L. come tomorrow or the day after?’ (PolQ)

- a. Tulee-ko Liisa [huomenta **tai**/\***vai** ylihuomenta]? Finnish  
comes-Q Liisa tomorrow ODISJ/\*IDISJ day.after
- b. Lǐsì [míngtiān **huòzhe**<sup>/c</sup>/**háishì** hòutiān] huì lái **ma**? Mandarin  
Lǐsì tomorrow ODISJ<sup>/c</sup>/IDISJ day.after will come PolQ
- c. Lan sẽ đến vào [ngày mai **hoặc**<sup>/c</sup>/**hay** ngày kia] **à**? Vietnamese  
Lan will arrive in tomorrow ODISJ<sup>/c</sup>/IDISJ day.after PolQ
- d. Lastoi [khónana **ba**/\***na** sónena] phiw **ná**? Tiwa  
Lastoi tomorrow ODISJ/\*IDISJ day.after come PolQ (cf Dawson, 2020: 79, 87, p.c.)

Distinct ordinary and interrogative disjunctions are also attested in Albanian, Amharic, Egyptian and Syrian Arabic, Basque, Belarusian, Buriat, Georgian, Gothic, Kannada, Latin, Lezgian, Lithuanian, Malagasy, Marathi, Polish, Sinhala, Somali, Ukrainian, and Yoruba. See Moravcsik 1971; Haspelmath 2007; Mauri 2008a,b; Mauri and van der Auwera 2012 and references therein.<sup>4</sup>

## 2 Neutralization

- Certain environments “neutralize” the difference between ordinary and interrogative disjunction in Mandarin (Lin, 2008; Huang, 2010; Erlewine, 2014; Ito, 2014) and Vietnamese.

- Where “neutralization” occurs, the result is an ordinary disjunction interpretation. The interrogative disjunction loses its special AltQ-raising ability.

### (6) Neutralization in conditionals, in Mandarin and Vietnamese:

- a. [Yàoshì Akiu [cízhi **huòzhe/háishi** tuìxiū] dehuà] qǐng gàosù wǒ. Mandarin  
 if Akiu resign ODISJ/IDISJ retire COND please tell 1sg  
 ‘If Akiu resigns or retires, please tell me.’ (Huang, 2010: 128)
- b. [Nếu [Minh **hoặc/hay** Kim] gọi đến] thì bảo là tôi đang họp. Vietnamese  
 if Minh ODISJ/IDISJ Kim call come then say that 1sg PROG meeting  
 ‘If Minh or Kim calls, say that I’m in a meeting.’

### (7) Neutralization with acceptability predicate, in Mandarin and Vietnamese:

- a. [Júzi **huòzhe/háishi** píngguǒ] dōu kěyǐ. Mandarin  
 orange ODISJ/IDISJ apple all ok  
 ‘An orange and/or an apple are both ok.’ (Lin, 2008: 4)
- b. [Minh **hoặc/hay** Kim] cũng/đều ok. Vietnamese  
 Minh ODISJ/IDISJ Kim also/all ok  
 ‘Minh and/or Kim are both ok.’

### (8) Variable neutralization in polar questions, in Mandarin and Vietnamese:

- a. <sup>%</sup>A xǐhuān [B **háishi** C] ma? Mandarin  
 A like B IDISJ C POLQ  
 ‘Does A like B or C?’ (PolQ) (\* in Dong 2009: 74, ok in Huang 2010: 130)

<sup>4</sup> I am primarily interested in cases where ODISJ and IDISJ appear to be syntactically equivalent in the size of disjuncts that they take. Therefore I do not discuss cases like Japanese, where alternative questions necessarily involve disjuncts of clausal size, unlike ordinary disjunction; see Uegaki 2018.

- b. %Minh có uống [trà nhài **hay** trà sen] không? Vietnamese  
 Minh ASR drink tea jasmine IDISJ tea lotus PoLQ  
 ‘Does Minh drink jasmine tea or lotus tea?’ (PoLQ) (as per Anne Nguyen, p.c.)

► But there is no comparable neutralization in Finnish or Tiwa!

(9) **Non-neutralization in Tiwa conditionals:**

- [Mukton **na** Saldi phi-gai-do], Tonbor khâduw?  
 Mukton IDISJ Saldi come-COND-TOP Tonbor happy  
 ‘Will Tonbor be happy if Mukton comes or if Saldi comes?’ (AltQ)  
 \* ‘Tonbor will be happy if Mukton or Saldi comes.’ (declarative) (Dawson 2020: 79, p.c.)

(10) **Non-neutralization in Finnish conditionals:**

- a. Olen onnellinen, [jos [Pekka **tai/\*vai** Liina] tulee].  
 be.1sg happy if Pekka ODISJ/\*IDISJ Liina comes  
 ‘I will be happy if Pekka or Liina comes.’
- b. Olisit-ko onnellise-mpi, [jos [Pekka **tai/vai** Liina] tulee]?  
 be.COND.2sg-Q happy-COMP if Pekka ODISJ/IDISJ Liina comes  
*tai*: ‘Would you be happier if one of Pekka or Liisa comes?’ (PoLQ / \*AltQ)  
*vai*: ‘Would you be happier if Pekka comes or if Liisa comes?’ (AltQ / \*PoLQ)

► Neutralizing environments are (roughly) those where *wh*-words have non-interrogative uses.

(11) **Simple clauses with *wh*-words become *wh*-questions:**

- |  |   |
|--|---|
| <p>a. Wǒ xǐhuān <i>shenme</i> Mandarin<br/>         1sg like what<br/>         i. * ‘I like something.’ (declarative)<br/>         ii. ✓ ‘What do I like?’ (<i>Wh</i>Q)<br/>         (Li, 1992: 125)</p> | <p>b. Tân mới gặp <i>ai</i> Vietnamese<br/>         Tân just meet who<br/>         i. * ‘Tân just met someone.’ (decl.)<br/>         ii. ✓ ‘Who did Tân just meet?’ (<i>Wh</i>Q)<br/>         (Tran, 2009: 1)</p> |
|--|---|

(12) ***Wh*-indefinites in conditionals:** (cf 6)

- a. Yàoshi/rúguǒ tā xǐhuān *shénme*... Mandarin  
 if 3sg like what  
 ‘If they<sub>sg</sub> like anything...’ (Li, 1992: 128)

- b. [Nếu *ai* đến] thì Anh Thơ sẽ rất vui. Vietnamese  
 if who arrive then Anh Thơ FUT very happy  
 ‘If anyone arrives, Anh Thơ will be happy.’ (Tran, 2009: 140)

(13) **Wh-indefinites in polar questions:** (cf 8)

- a. Qiáo Fēng mǎi-le *shénme* ma? Mandarin  
 Qiáo Fēng buy-ASP what POLQ  
 ‘Did Qiáo Fēng buy anything?’ (Cheng, 1991: 114)
- b. Cô ấy có gặp *ai* không? Vietnamese  
 she ASR meet who POLQ  
 ‘Did/Does she meet anyone?’ (Tran, 2009: 140)

Summary of non-interrogative *wh* and non-interrogative IDISJ (neutralization) environments:

|                       | Mandarin  |        |        | Vietnamese |        |
|-----------------------|-----------|--------|--------|------------|--------|
|                       | <i>wh</i> | IDISJ  | IDISJ’ | <i>wh</i>  | IDISJ  |
| conditionals          | ✓ (12a)   | ✓ (6a) | *      | ✓ (12b)    | ✓ (6b) |
| unconditionals        | ✓         | ✓      | ✓      | ✓          | ✓      |
| ‘all’ + acceptability | ✓         | ✓ (7a) |        | ✓          | ✓ (7b) |
| ‘all’ + episodic      | ✓         | ✓      | ✓      | ✓          | *      |
| PolQ                  | ✓ (13a)   | ‰ (8a) |        | ✓ (13b)    | ‰ (8b) |
| existential verb      | *         | *      |        | ✓          | *      |
| negation (high)       | ✓         | ✓      | *      |            |        |
| negation (low)        | *         | *      |        | ✓          | *      |
| epistemic modals      | ✓         | ✓      | *      | ✓          | *      |
| ‘seems like’          | ✓         | ✓      | ✓      | ✓          | ✓      |

(Mandarin IDISJ’ reflects a subset of speakers.)

### 3 Towards a proposal

Here I present the directions of my analysis, only sketching technical details. See Appendix for details.

- I adopt an approach to Hamblinian question semantics within *Alternative Semantics* (Rooth, 1985).  
 (See also Beck 2006; Beck and Kim 2006; Kotek 2019, a.o.)

- *Wh*-phrases introduce a *set of alternatives* as their *alternative set*, but no defined ordinary value (Ramchand, 1997; Beck, 2006).

- (14) a.  $\llbracket who \rrbracket^0$  is undefined  
 b.  $\llbracket who \rrbracket^{alt} = \text{e.g. } \{\text{Alex, Bobby, Chris}\}$

- A clause containing (14) does not result in a normally interpretable meaning. An operator like ALTSHIFT (Kotek 2016, 2019) can apply, turning a *wh*-containing clause meaning into a question.

► I propose that **ODISJ** and **IDISJ** produce (the same) *wh*-phrase-like meanings.

- (15) a.  $\llbracket \text{Bobby ODISJ/IDISJ Chris} \rrbracket^0$  undefined  
 b.  $\llbracket \text{Bobby ODISJ/IDISJ Chris} \rrbracket^{alt} = \{\text{Bobby, Chris}\}$

- Like *wh*-containing structures, ODISJ/IDISJ-containing structures are not directly interpretable.
  - ALTSHIFT can apply, producing an alternative question meaning.
  - I also propose **existential closure operators**  $\exists$  (specifically, two variants) that can apply, resulting in a kind of indefinite meaning.

► Mandarin-type neutralization can be (mostly) explained by the semantics of these environments:

- *Wh*-words have non-interrogative uses in **free choice / negative polarity licensing environments** in Mandarin (see e.g. Li, 1992; Lin, 1998; Cheng and Giannakidou, 2013) and Vietnamese (Tran and Bruening, 2013).
- These are environments that quantify over individual disjuncts (see e.g. Aloni 2007; Simons 2005 on modals, Alonso-Ovalle 2006 on conditionals), thereby interpreting the result of ODISJ and IDISJ (and *wh*) equivalently.

(The facts for non-interrogative uses under negation are a bit more complicated.)

► On top of this semantic foundation, I propose that there is a role **lexicalized morphosyntactic differences** as well. Expressions that introduce alternatives (*wh*, disjunctions) may also establish syntactic dependencies with their interpreting operators, via Agree.

- **ODISJ** bears a **[u $\exists$ ] feature**, an  $\exists$  operator and blocking application of ALTSHIFT.

IDISJ lacks this feature, allowing its alternatives to form a question, just like *wh*-phrases do.

Without further differences, the semantics predicts neutralization in certain environments.

- **IDISJ has a [uALTSHIFT] feature in Finnish-type languages but not in the Mandarin-type.**

Note that Finnish *does* have certain environments where *wh*-words have non-interrogative uses, but *vai* is still not neutralized there. Embedded *vai* is possible for an embedded AltQ.

(16) **Non-interrogative *wh* in unconditional, but no neutralization:**

- [Vaikka *kuka* tulee], avaisin oven.  
even.though who come open.COND.1sg door  
'No matter who comes, I would open the door.'
- [Vaikka [Pekka **tai**/\***vai** Liina] tulee], avaisin oven.  
even.though Pekka oDISJ/\*IDISJ Liina come open.COND.1sg door  
'No matter whether Pekka or Liina comes, I would open the door.'

## 4 Conclusion

A number of languages of the world lexically distinguish the disjunctive in alternative questions (“interrogative disjunction”) vs ordinary disjunction.

- In some languages (Mandarin and Vietnamese), IDISJ behaves like oDISJ in certain environments.
  - Neutralization *tends* to occur in environments where *wh*-words have non-interrogative uses.
  - These are *roughly* free choice / negative polarity licensing environments.
- In contrast, some other languages (Finnish and Tiwa) appear to never allow such neutralization. IDISJ is *syntactically* specified to lead to AltQ interpretation.

Q: How does oDISJ vs IDISJ behave in your language?

Q: What cues lead learners to converge on the correct type of distinction?

## References

- Aloni, Maria. 2007. Free choice, modals, and imperatives. *Natural Language Semantics* 15:65–94.
- Alonso-Ovalle, Luis. 2006. Disjunction in Alternative Semantics. Doctoral Dissertation, University of Massachusetts Amherst.
- Alves, Mark J. 2009. Sino-Vietnamese grammatical vocabulary and sociolinguistic conditions for borrowing. *Journal of the Southeast Asian Linguistics Society* 1:1–9.



- Beck, Sigrid. 2006. Intervention effects follow from focus interpretation. *Natural Language Semantics* 14:1–56.
- Beck, Sigrid, and Shin-Sook Kim. 2006. Intervention effects in alternative questions. *Journal of Comparative Germanic Linguistics* 9:165–208.
- Biezma, María, and Kyle Rawlins. 2015. Alternative questions. *Language and Linguistics Compass* 9:450–468.
- Cheng, Lisa Lai-Shen. 1991. On the typology of *wh*-questions. Doctoral Dissertation, Massachusetts Institute of Technology.
- Cheng, Lisa Lai-Shen, and Anastasia Giannakidou. 2013. The non-uniformity of *wh*-indeterminates with polarity and free choice in Chinese. In *Strategies of quantification*, ed. Kook-Hee Gil, Stephen Harlow, and George Tsoulas, 123–154. Oxford University Press.
- Dawson, Virginia. 2020. Existential quantification in Tiwa. Doctoral Dissertation, University of California Berkeley.
- Dong, Hongyuan. 2009. Issues in the semantics of Mandarin questions. Doctoral Dissertation, Cornell University.
- Erlewine, Michael Yoshitaka. 2014. Alternative questions through focus alternatives in Mandarin Chinese. In *Proceedings of the 48th Meeting of the Chicago Linguistic Society (CLS 48)*, ed. Andrea Beltrama, Tasos Chatzikonstantinou, Jackson L. Lee, Mike Pham, and Diane Rak, 221–234.
- Hamblin, Charles. 1973. Questions in Montague English. *Foundations of Language* 10:41–53.
- Han, Chung-hye, and Maribel Romero. 2004. Disjunction, focus, and scope. *Linguistic Inquiry* 35:179–217.
- Haspelmath, Martin. 2007. Coordination. In *Language typology and syntactic description*, ed. Timothy Shopen, volume 2, 1–51. Cambridge University Press, second edition.
- Howell, Anna, Vera Hohaus, Polina Berezovskaya, Konstantin Sachs, Julia Braun, Şehriban Durmaz, and Sigrid Beck. 2022. (No) variation in the grammar of alternatives. *Linguistic Variation* 22:1–77.
- Huang, Cheng-Teh James. 1991. Modularity and Chinese A-not-A questions. In *Interdisciplinary approaches to linguistics: Essays in honor of S.-Y. Kuroda*, ed. Carol Georgopoulos and Roberta Ishihara, 305–332. Springer.
- Huang, Cheng-Teh James, Yen-hui Audrey Li, and Yafei Li. 2009. *The syntax of Chinese*. Cambridge University Press.
- Huang, Rui-heng Ray. 2010. Disjunction, coordination, and question: a comparative study. Doctoral Dissertation, National Taiwan Normal University.
- Ito, Satomi. 2014. 現代中国語における ``还是"と ``或者"の交替現象 [The phenomenon of alternating

- háishi* and *hùozhe* in Modern Chinese]. お茶の水女子大学中国文学会報 [*Bulletin of the Ochanomizu University Sinological Society*] 118–136.
- Kaiser, Elsi. 2003. A question of case. In *Proceedings of the 19th Scandinavian Conference on Linguistics*, ed. Anne Dahl and Peter Svenonius, 694–707.
- Kotek, Hadas. 2016. On the semantics of *wh*-questions. In *Proceedings of Sinn und Bedeutung 20*, ed. Nadine Bade, Polina Berezovskaya, and Anthea Schöller, 424–447.
- Kotek, Hadas. 2019. *Composing questions*. MIT Press.
- Kratzer, Angelika. 1991. The representation of focus. In *Semantik: Ein internationales Handbuch der zeitgenössischen Forschung*, ed. Arnim von Stechow and Dieter Wunderlich, HSK, 825–834. Walter de Gruyter.
- Lahiri, Utpal. 1998. Focus and negative polarity in Hindi. *Natural Language Semantics* 6:57–123.
- Lee, Young-Suk, and Laurence Horn. 1995. *Any* as indefinite plus *even*. Manuscript, Yale University, May 1995.
- Li, Yen-hui Audrey. 1992. Indefinite *wh* in Mandarin Chinese. *Journal of East Asian Linguistics* 1:125–155.
- Lin, Hsin-yin. 2008. Disjunctions in Mandarin Chinese: A case study of *haishi* ‘or’. Master’s thesis, National Kaohsiung Normal University. URL <http://handle.ncl.edu.tw/11296/nd1td/59442072851903271049>.
- Lin, Jo-Wang. 1998. On existential polarity *wh*-phrases in Chinese. *Journal of East Asian Linguistics* 7:219–255.
- Mauri, Caterina. 2008a. *Coordination relations in the languages of Europe and beyond*. Mouton de Gruyter.
- Mauri, Caterina. 2008b. The irreality of alternatives: Towards a typology of disjunction. *Studies in Language* 32:28–55.
- Mauri, Caterina, and Johan van der Auwera. 2012. Connectives. In *Cambridge handbook of pragmatics*, ed. Keith Allan and Kasia M. Jaszczolt, chapter 19, 377–401. Cambridge University Press.
- Meertens, Erlinde. 2019. How prosody disambiguates between alternative and polar questions. In *Proceedings of the 22nd Amsterdam Colloquium*, 299–308.
- Moravcsik, Edith A. 1971. On disjunctive connectives. *Language Sciences* 15:27–34.
- Phan, John Duong. 2013. Lacquered words: The evolution of Vietnamese under Sinitic influences from the 1st century BCE through the 17th century CE. Doctoral Dissertation, Cornell University.
- Pruitt, Kathryn, and Floris Roelofsen. 2013. The interpretation of prosody in disjunctive questions. *Linguistic Inquiry* 44:632–650.

- Ramchand, Gillian Catriona. 1997. Questions, polarity and alternative semantics. In *Proceedings of NELS 27*, 383–396. GLSA.
- Rooth, Mats. 1985. Association with focus. Doctoral Dissertation, University of Massachusetts, Amherst.
- Rooth, Mats. 1992. A theory of focus interpretation. *Natural Language Semantics* 1:75–116.
- Simons, Mandy. 2005. Dividing things up: The semantics of *or* and the modal/*or* interaction. *Natural Language Semantics* 13:271–316.
- Tran, Thuan. 2009. Wh-quantification in Vietnamese. Doctoral Dissertation, University of Delaware.
- Tran, Thuan, and Benjamin Bruening. 2013. Wh-phrases as indefinites: A Vietnamese perspective. In *Linguistics of Vietnamese: an international survey*, ed. Daniel Hole and Elisabeth Löbel, 217–241. de Gruyter.
- Tsai, Cheng-Yu Edwin. 2015. Toward a theory of Mandarin quantification. Doctoral Dissertation, Harvard.
- Uegaki, Wataru. 2018. A unified semantics for the Japanese Q-particle *ka* in indefinites, questions, and disjunctions. *Glossa* 3.
- Vainikka, Anne. 1987. Why can *or* mean *and* or *or*. In *University of massachusetts occasional papers in linguistics*, volume 13.

## Appendix: More detailed proposal

### Questions in Rooth-Hamblin semantics

I adopt an approach to Hamblinian question semantics within *Alternative Semantics* (Rooth, 1985). See also Beck 2006, Beck and Kim 2006, Kotek 2019, among others.

(17) **Alternative Semantics (Rooth, 1985, 1992):**

We keep track of *two dimensions* of meaning. For any syntactic object  $\alpha$ , we compute:

- a. the ordinary semantic value  $\llbracket \alpha \rrbracket^o$ ; and
- b. the alternative set (or focus semantic value)  $\llbracket \alpha \rrbracket^{\text{alt}}$ , the set of all ordinary semantic values obtained by substituting alternatives for any F-marked subparts of  $\alpha$ .

(18) **Interpretability:** (based on Rooth, 1992; Beck, 2006)

To interpret  $\alpha$ ,  $\llbracket \alpha \rrbracket^o$  must be defined and  $\in \llbracket \alpha \rrbracket^{\text{alt}}$ .

When using Alternative Semantics for focus, Interpretability is generally always ensured.

- A *wh*-phrase has a set of possible values ( $\approx$  short answers) as its alternative set (inspired by Hamblin 1973), with no defined ordinary semantic value (Ramchand, 1997; Beck, 2006):

(19)  $\llbracket who \rrbracket^o$  is undefined  
 $\llbracket who \rrbracket^{alt} = \{x_e : x \text{ is human}\}$

(20) a.  $\llbracket \text{Alex likes } who \rrbracket^o$  is undefined  
 b.  $\llbracket \text{Alex likes } who \rrbracket^{alt} = \left\{ \begin{array}{l} \wedge \text{Alex likes Bobby,} \\ \wedge \text{Alex likes Chris,} \\ \wedge \text{Alex likes Dana} \end{array} \right\}$

- But (20) has no ordinary semantic value and violates Interpretability (18)! We apply **ALTSHIFT** (Beck's  $C_{int}$ ) to result in an Interpretable question.

(21) **ALTSHIFT (Kotek, 2016, 2019):**

a.  $\llbracket [\text{ALTSHIFT } \alpha] \rrbracket^o = \llbracket \alpha \rrbracket^{alt}$   
 b.  $\llbracket [\text{ALTSHIFT } \alpha] \rrbracket^{alt} = \left\{ \llbracket \alpha \rrbracket^{alt} \right\}$

- I propose that **ODISJ** and **IDISJ** produce (the same) *wh*-phrase-like meanings.

(22) **ODISJ/IDISJ with disjuncts  $x_1 \dots x_n$ :**

a.  $\llbracket \text{ODISJ/IDISJ } \{x_i\} \rrbracket^o$  undefined  
 b.  $\llbracket \text{ODISJ/IDISJ } \{x_i\} \rrbracket^{alt} = \bigcup \{ \llbracket x_i \rrbracket^o \}$

(23) a.  $\llbracket \text{Alex likes } [\text{Bobby ODISJ/IDISJ Chris}] \rrbracket^o$  undefined  
 b.  $\llbracket \text{Alex likes } [\text{Bobby ODISJ/IDISJ Chris}] \rrbracket^{alt} = \left\{ \begin{array}{l} \wedge \text{Alex likes Bobby,} \\ \wedge \text{Alex likes Chris} \end{array} \right\}$

If we then apply **ALTSHIFT**, we yield an alternative question:

(24) a.  $\llbracket [\text{ALTSHIFT } [\text{Alex likes } [\text{Bobby ODISJ/IDISJ Chris}]]] \rrbracket^o = \left\{ \begin{array}{l} \wedge \text{Alex likes Bobby,} \\ \wedge \text{Alex likes Chris} \end{array} \right\}$   
 b.  $\llbracket [\text{ALTSHIFT } [\text{Alex likes } [\text{Bobby ODISJ/IDISJ Chris}]]] \rrbracket^{alt} = \left\{ \left\{ \begin{array}{l} \wedge \text{Alex likes Bobby,} \\ \wedge \text{Alex likes Chris} \end{array} \right\} \right\}$

- Evidence for this approach comes from **island-insensitivity**.

- The compositional percolation of alternative sets is insensitive to syntactic islands, explaining focus association into islands (Rooth, 1985).

- We’ve already seen that alternative questions are not sensitive to adjunct islands (conditionals) in Tiwa (9) and Finnish (10). Alternative questions in Mandarin with *hái shì* are insensitive to islands (Huang, 1991: 313–314). Similarly for Vietnamese:

(25) Bạn mua quyển sách [RC mà [Minh **hay** Kim] viết]? Vietnamese  
 2sg buy CL book REL Minh IDISJ Kim write  
 ‘Did you buy the book that Minh wrote or that Kim wrote?’ (AltQ)

- These facts argue against approaches to alternative questions involving covert movement of IDISJP (for these languages).

### On ODISJ vs IDISJ

- Expressions that introduce alternatives (*wh*, disjunctions) may also establish syntactic dependencies with their interpreting operators, via Agree.<sup>5</sup>

► **ODISJ bears a [u $\exists$ ] feature**, requiring association with an  $\exists$  operator:

(26)  $\exists$  with argument  $\alpha$ :

- $\llbracket \exists \alpha \rrbracket^o = \vee \llbracket \alpha \rrbracket^{\text{alt}}$
- $\llbracket \exists \alpha \rrbracket^{\text{alt}} = \llbracket \alpha \rrbracket^{\text{alt}}$

(27)  $\exists_{\text{reset}}$  with argument  $\alpha$ :

- $\llbracket \exists_{\text{reset}} \alpha \rrbracket^o = \vee \llbracket \alpha \rrbracket^{\text{alt}}$
- $\llbracket \exists_{\text{reset}} \alpha \rrbracket^{\text{alt}} = \left\{ \vee \llbracket \alpha \rrbracket^{\text{alt}} \right\}$

(28) a.  $\llbracket \llbracket \exists_{\text{reset}} [\text{Alex likes } [\text{Bobby ODISJ Chris}]] \rrbracket \rrbracket^o = \wedge \text{A likes B} \vee \text{A likes C}$

b.  $\llbracket \llbracket \exists_{\text{reset}} [\text{Alex likes } [\text{Bobby ODISJ Chris}]] \rrbracket \rrbracket^{\text{alt}} = \{ \wedge \text{A likes B} \vee \text{A likes C} \}$

Using  $\exists_{\text{reset}}$  in (28) returns an Interpretable result, but using  $\exists$  would not...

### Mandarin-type neutralization

- *Wh*-words have non-interrogative uses in **free choice / negative polarity licensing environments** in Mandarin (see e.g. Li, 1992; Lin, 1998; Cheng and Giannakidou, 2013) and Vietnamese (Tran and Bruening, 2013).

► Prior work has argued that the **individual disjuncts must be accessible for quantification in certain modal environments** (Aloni, 2007; Simons, 2005) **and conditionals** (Alonso-Ovalle, 2006).

<sup>5</sup> Agree might result in the transfer of a “focus index,” used for the interpretation of the operator. See for example Kratzer 1991 and Howell et al. 2022 on focus indices.

- The output of ODISJ/IDISJ (22–23) provides these disjuncts in the alternative set denotation.
- ODISJ has  $[u\exists]$ , which can be satisfied by  $\exists$ , not just by  $\exists_{\text{reset}}$ .  $\exists$  then simply passes up the alternative set denotation for its sister.
- ▶ We predict ODISJ/IDISJ neutralization, as well as non-interrogative *wh*, in these environments.
  - And similarly with ‘all’ quantification, following e.g. Tsai 2015.
- Negation also licenses non-interrogative *wh*-words and IDISJ neutralization, but these facts are a bit more complex:
  - In Vietnamese, negation licenses non-interrogative *wh* but does not neutralize IDISJ.
  - In Mandarin, high negation (*búshì*, *méiyǒu*) licenses non-interrogative *wh* and IDISJ neutralization, but low negation (*bù*) has neither effect. (At least they line up!)
- ▶ **Suppose  $\exists$  (non-resetting) and covert EVEN can be inserted freely.**
  - Structures of the form  $[\exists \dots wh/ODISJ/IDISJ]$  violates Interpretability.
  - Focus particles like EVEN “reset” the alternative set, resolving the Interpretability problem.
  - Adding EVEN derives NPI distribution (à la Lee and Horn, 1995; Lahiri, 1998):
 

|               |  |        |
|---------------|--|--------|
| · [EVEN ...   | $[\exists \dots wh/ODISJ/IDISJ]$           | × EVEN |
| · [EVEN ... [ | NEG ... $[\exists \dots wh/ODISJ/IDISJ]$ ] | ✓ EVEN |
- Supposing furthermore that there is a “floor” to the position of  $\exists$  insertion in Mandarin — not below low negation — we can explain the licensing by high negation but not by low negation.
- (But the mismatch between non-interrogative *wh* and IDISJ neutralization remains a puzzle.)

Summary of non-interrogative *wh* and non-interrogative IDISJ (neutralization) environments:

|                       | Mandarin  |       |        | Vietnamese |       | Proposal |
|-----------------------|-----------|-------|--------|------------|-------|----------|
|                       | <i>wh</i> | IDISJ | IDISJ' | <i>wh</i>  | IDISJ |          |
| conditionals          | ✓         | ✓     | *      | ✓          | ✓     | ✓        |
| unconditionals        | ✓         | ✓     | ✓      | ✓          | ✓     | ✓        |
| 'all' + acceptability | ✓         | ✓     |        | ✓          | ✓     | ✓        |
| 'all' + episodic      | ✓         | ✓     | ✓      | ✓          | *     | ✓        |
| PolQ                  | ✓         | %     |        | ✓          | %     |          |
| existential verb      | *         | *     |        | ✓          | *     |          |
| negation (high)       | ✓         | ✓     | *      |            |       | ✓        |
| negation (low)        | *         | *     |        | ✓          | *     | ✓        |
| epistemic modals      | ✓         | ✓     | *      | ✓          | *     | ✓        |
| 'seems like'          | ✓         | ✓     | ✓      | ✓          | ✓     |          |

**On Finnish-type languages**

- IDISJ has a [uALTSHIFT] feature in Finnish-type languages but not in the Mandarin-type.<sup>6</sup>

Note that Finnish *does* have certain environments where *wh*-words have non-interrogative uses, but *vai* is still not neutralized there. Embedded *vai* is possible for an embedded AltQ.

(29) **Non-interrogative *wh* in unconditional, but no neutralization:**

- a. [Vaikka *kuka* tulee], avaisin oven.  
 even.though who come open.COND.1sg door  
 'No matter who comes, I would open the door.'
- b. [Vaikka [Pekka **tai/\*vai** Liina] tulee], avaisin oven.  
 even.though Pekka oDISJ/\*IDISJ Liina come open.COND.1sg door  
 'No matter whether Pekka or Liina comes, I would open the door.'

<sup>6</sup> Huang, Li, and Li (2009: 242 note 5) briefly suggest such a syntactic account for Mandarin, which I argue is incorrect for Mandarin. Meertens (2019) briefly suggests such an approach for Finnish and Basque.