Session VI – The interpretation of complex wh-DISJ expressions

1. The phenomenon

- In many languages, complex quantifying expressions can be formed by combining wh-elements and conjunctive ('and') or disjunctive ('or') elements:

- In Hausa, *wh*-expressions combine with the prefix *koo* 'or' in order to form a complex quantifying expression *koo+wh* (e.g. Newman 2000). Q-formation applies to D-quantifiers (1a-c) and A-quantifiers alike (1d-f).

(1)

a.	*koo-waa*	=	koo + who	'everyone'
b.	*koo-mee*	=	koo + what	'everything'
c.	*koo-wànè*	=	koo + which	'every',
d.	*koo-'ìnaa*	=	koo + where	'everywhere'
e.	*koo-yàushee*	=	koo + when	'always'
f.	*koo(ta)yàayàa*	=	koo + yàayàa	'in every way'

- *Koo* is the disjunction marker (cf. 2), and doubles as an (optional) Y/N-question marker (3) (see also Jayaseelan 2001 on such doubling in other languages).

(2)

zâ-i	daawoo	nân	dà awàa biyu	**koo**	zâi	bugàa	manà	wayàa.
FUT-3sg	return	here	in hour two	DISJ	FUT-3sg	hit	us	wire

'He will return within two hours or he will call us.' (Newman 2000:132)

(3)

koo	kaa	sàami	gyàd'aa	mài yawàa?	(Cowan & Schuh 1976:216)
DISJ/Q	2sg.m.PERF	get	peanut	many	

'Did you get a lot of peanuts?'

- Wh-DISJ-quantifier formation is attested in many other languages, both typologically related and unrelated: *other Chadic languages* (Margi (Hoffmann 1963), Mupun (Frajzyngier 1993), Hdi (Frajzyngier 2002), Gùrùntùm (Haruna 2003)), *Japanese* (Nishigauchi 1986, 1990), *Malayalam* (Jayaseelan 2001), *Kannada* (Amritavalli 2003), *Korean* (Haspelmath 1997, Gill 2004).

- Japanese, Malayalam, and Korean also allow for the formation of wh-CONJ-quantifiers.

2. Variation in the interpretation of wh-DISJ quantifiers

- *The problem:*
  The interpretation of wh-DISJ quantifiers is subject to cross-linguistic variation (Nishigauchi 1986, Jayaseelan 2001, Amritavalli 2003, Gill et al. 2004):

i. Hausa, Korean: **wh+DISJ = ∀** , cf. (1), (4)

(4)

Nwukwu-na	kimchi-lul	cohahan-ta	
who-DISJ	kimchi-acc	like-DECL	

'*Everyone/Anyone* likes kimchi.'

Korean: *wh+DISJ = ∀*

ii. Japanese, Malayalam, Kannada: **wh+DISJ = ∃** , cf. (5ab)

(5) a. **dono** gakusei **-** ***ka***- ga rakudai-si-ta *Japanese: wh+DISJ = ∃*
which student - DISJ- NOM flunk-PAST
'*Some* student flunked.'

b. n®aan= **aar**- e- **(y)oo** kaNDu *Malayalam: wh+DISJ = ∃*
I who- ACC- DISJ saw
'I saw *some*body.'

Q: ***How to account for the observed variation in interpretation?***
- different interpretive mechanisms?
- OR the same mechanism, but different syntactic structure?

3. Japanese: Indeterminate Pronouns + Propositional Quantifiers

Kuroda (1965), Shimoyama (2001), Kratzer & Shimoyama (2002) Kratzer (2003, 2004)

- *Assumptions*

i. *wh*-expressions are indeterminate pronouns and possess no quantificational force

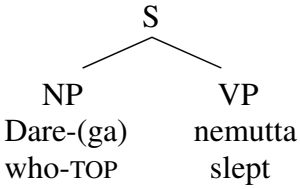
ii. As indeterminate pronouns, wh-expressions only introduce individual alternatives that can expand in a Hamblin semantics of expanding alternatives until they meet an operator that selects them. Alternatives can expand to the propositional level.

iii. The alternatives are quantified over by the *closest* c-commanding quantifier

iv. Quantifiers are *propositional quantifiers* at the sentence level.

3.1 Hamblin Semantics: Sample Derivation (see Kratzer & Shimoyama 2002)

(6)



(7) a. $[[dare]]^{w,g}$ = { x: human(x)(w) }
= {Shin, Akemi, Franku, Akira, Leana, …}
⇒ the set of all humans in w

b. $[[nemutta]]^{w,g}$ = { λxλw'. slept(x)(w') }
⇒ the singleton set introducing just one alternative, the property of sleeping.

c. $[[dare\ nemutta]]^{w,g}$ = { p: ∃x [human(x)(w) & p = λw'. slept(x)(w')] }
= {Shin slept, Akemi slept, Franku slept, …}
⇒ the set of alternative propositions of the form *a, b, c slept*

To compute the set of alternative propositions, one functionally applies the VP-denotation to the denotation of the indeterminate pronoun in a 'pointwise' fashion:

(8) [[VP]] ([[dare]]) = [[VP]] ({a, b, c, d, …})= { [[VP]](a), [[VP]](b), [[VP]](c), …}

3.2 Introducing the quantificational force

- The alternatives can expand until they meet an operator that selects them: Operators can be traditional *generalized quantifiers* (applying at the DP-level and ranging over alternative individuals) or propositional quantifiers (applying at the sentence level and ranging over alternative propositions):

(9) *Propositional quantifiers:*

Where A is a set of propositions, we have:

a. [∃](A) = {the proposition that is true in all worlds in which some proposition in A is true}

b. [∀](A) = {the proposition that is true in all worlds in which every proposition in A is true}

c. [Neg](A) = {the proposition that is true in all worlds in which no proposition in A is true}

d. [Q](A) = A

(10) ∃ ([[dare nemutta]]) = {the proposition that is true in all worlds in which some proposition in A = {Shin slept, Akemi slept, Franku slept, …} is true}

⇔ {the proposition that is true in all worlds in which some individual slept}

- Japanese: indeterminate pronoun *dare* 'human' + propositional quantifier:

(11) a. Q … […dare…] → *who*
b. Neg … […dare…] → *nobody*
c. ∀ … […dare…] → *everybody*
d. ∃ … […dare…] → *somebody*

- In Japanese, some of the quantifying elements occur both at the propositional level (*ka* = Q) and the DP-level (*ka* 'or' = ∃), (*mo* 'and' = ∀).

(12) a. [[**Dono** **hon**-o yonda] kodomo]-**mo** yoku nemutta.
which book-ACC read child -MO well slept
'For every book x, the child who read x slept well.'

b. [[12a]] = 1 iff all members of A = {the child who read book a, the child who read book b, the child who read book c, …} slept well.

- *Extension:*
On a more radical, but universal analysis (Kratzer 2004), all indeterminate pronouns are bound by (covert) propositional quantifiers. Elements such as *ka* 'or' and *mo* 'and' on the indeterminate pronoun merely function as semantic agreement markers indicating that the indeterminate pronoun must be bound by a covert propositional quantifier, namely '∃' or '∀' respectively.

⇒ see Kratzer (2004) and Butler (2004) for a universal extension of the indeterminate analysis to English

Q: ***Can we extend this indeterminate account to Hausa?***

4. Why the indeterminate account fails for Hausa

- *Initially plausible assumption:*

  The disjunction-marker *koo* in Hausa only indicates the existence of an indeterminate pronoun introducing Hamblin alternatives. This is in line with much current research on *or*, see. e.g. T.E. Zimmermann 2000, Geurts 2003, Simons 2005.

(13) [[koo + waa]] = { x: human(x)(w) } = the set of all humans in w
DISJ who

- *Arguments against*

i. Why would the default reading in sentences without overt quantifiers (i.e. in affirmative episodic sentences) *distributive universal*, and not *existential*, as in Japanese, cf. (14)?
→ selectional restriction must be stipulated !

(14) **koo-waa** yaa ci jarràbâwaa (Newman 2000:623)
DISJ-who 3sg.m.PERF eat exam
'*Everyone* passed the exam.'

ii. Systematic gaps: no *wh*-DISJ-expressions in *wh*-questions

(15) Waa ya ci jarràbâwaa?
who 3sg.m.rel.PERF eat exam
'Who passed the exam?'

Q: Why would wh-questions in Hausa not make use of indeterminate pronouns?

iii. The behaviour of wh-DISJ-expressions under negation

⇒ *Prediction:* As indeterminate pronouns, wh-DISJ-expressions should always be interpreted as negative existential quantifiers (*nobody, nothing*) when embedded under a negative operator

⇒ *Recall the key assumption of the indeterminate account:* Alternatives introduced by indeterminate pronouns are quantified over by the *closest* c-commanding quantifier

- *Observation:*

  Wh-DISJ-expressions in Hausa receive different interpretations under VP-negation and under CP-negation (with fronted focus constituent), despite the fact that the negation operator is the closest c-commanding operator in both cases.

(16) a. VP-negation: negative existential reading

bà-n ga **koo-waa** **ba**. (Newman 2000:623)
NEG-1sg see DISJ-who NEG
'I didn't see *anyone*.' / 'I saw *no-one*.'
NOT: 'I did not see everybody.'

b. CP-negation: negative universal reading

bàa [**koo-waa**$_{FOC}$ [$_{VP}$ *kèe* sô-n wannàn jàr)iidàa]] **ba**. (Newman 2000)
NEG DISJ-who PROGrel like-of this newspaper NEG
'Not *everyone* likes this newspaper.'
NOT: 'Nobody likes this newspaper.'

Q: *What IS the source of the universal quantification in (16b)?*

5. An alternative account for Hausa: Set union triggered by *join*-operator

- Basic Assumptions:

i. wh-DISJ-expressions in Hausa denote genuine universal quantifiers.

ii. Their denotation can be locally composed from the meaning of its parts, given assumptions (17a-e) (see also Jayaseelan 2001):

(17) i. wh-expressions denote a set variable X, ranging over sets of individuals (Cooper 1983, Jacobson 1995, Sternefeld 2001), cf. (18a).

ii. *wh*-expressions in Hausa are inherently focused (Rooth 1985, Beck 2006).

iii. Their focus value is the range of possible alternative values for X, cf. (18b).

iv. DISJ-marker *koo* is focus-sensitive and denotes the Boolean operator *join*, cf. (18c).

v. Application of *join* at the level of sets results in *(big) set union* (Szabolcsi 1997)
→ Universal quantification over the domain of individuals, cf. (18d).

(18) a. $[[\text{waa}]]^0$ = X, with X = {x | x is human in w}
who

b. $[[\text{waa}]]^f$ = {{musa}, {musa, hawwa}, {audu, hawwa} …}

c. $[[\text{koo}]]^0$ = $\lambda X.\ \textit{join}[[X]]^f$

d. $[[\text{koo + waa }]]^0$ = $\cup[[\text{waa}]]^f = \{\{m\} \cup \{m, h\} \cup \{a, h\} \cup ...\} = \{\{m, h, a, \ldots\}\}$
= the unique set containing the set of all human beings in w

→ Strictly speaking, the expression in (18d) is the meaning of 'each and only each'

→ Lexicalization leads to re-interpretation with weaker truth-conditions (*each*, *every*)

Q: ***How to derive the negative existential reading under VP-negation in (16a)?***
A: ***Obligatory QR out of the VP, see Zimmermann (2008)***

6. Cross-linguistic variation

Given that the indeterminate account does not extend from Japanese to Hausa, there remain two options to account for the observed variation in semantic interpretation:

- *Option I: Microvariation* - One interpretive mechanism:

- Extend operator account from Hausa to Japanese

- Derive the differences in meaning from differences in syntactic structure

a. Hausa: local composition of DISJ+wh
→ application of join-operator at DP-level leads to set union and universal quantification, cf. (18a-d)

b. Japanese, Malayalam: DISJ and *wh* combine at a distance:
→ application of join-operator at propositional level leads to disjunction of propositions and thence to existential quantification (Krifka 2001, Jayaseelan 2001).

(19) a. $[[\text{dare-(ga) nemutta}]]^0$ = X slept
who slept

b. $[[\text{dare-(ga) nemutta}]]^f$ = {Shin slept, Akemi slept, Franku and Shin slept, …}

c. $[[\text{DISJ}]]^0$ = $\lambda X.\ \textit{join}[[X]]^f$ (= (18c))

d. $[[\text{DISJ dare-(ga) nemutta}]]^0$ = Shin slept $\vee$ Akemi slept $\vee$ Franku and Shin slept …
$\Leftrightarrow$ Somebody slept

- *Option II, Macrovariation:* Different interpretive mechanisms in different languages:
  a. Hausa: operator account
  b. Japanese: indeterminate account

→ If the indeterminate account is empirically superior for Japanese, the two languages interpret *wh*-DISJ-expressions in different ways, giving rise to different readings (Zimmermann 2005).

Q: Could the difference in choice of the interpretive mechanism follow from the different availability of propositional quantifiers across languages (Japanese: yes, Hausa, no)?

→ If so, the observed difference in interpretation would ultimately follow from a difference in the inventory of functional elements

7. Possible Topics for Class Papers

- Candidates for Indeterminate Pronouns in other languages (see Kratzer & Shimoyama 2002 on German *irgendein*, Haspelmath 1997)
- 'Quantificational' occurrences of 'and' and 'or' in other languages
- The interpretation of *wh*-elements in non-interrogative contexts
- Instances of 'or' indicating the existence of alternatives

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