Session IV: Universal Quantifiers

- Central Observations and Claims :
- i. The syntax of universal quantification is not uniform across languages.
- ii. Many natural languages have two adnominal expressions with seemingly universal force. One of these may in fact be a Q-Mod.
- 1. Variation in the Domain of Genuine Adnominal Quantification: D+NP vs. D+QP Lillooet Salish (St'át'imcets) vs. English (Matthewson 2001)
- Standard GQ-analysis of adnominal quantifiers (repeated) :
- (1)



• The Problem:

In Lillooet Salish (aka St'át'imcets) constructions as in (1) are systematically ungrammatical:

Adnominal quantifiers do not combine with NPs, but with DPs, cf. (2) !

(2) a. **tákem** [i smelhmúlhats-a] all DET.PL woman(PL)-DET 'all the women'



Q: How to interpret the structure in (2b)?

1.1 Some basic facts about DPs in St'át'imcets (Matthewson 2001)

- i. All arguments require the presence of an overt determiner:
- (3) a. q'wez-ílc [**ti** smúlhats-**a**] b. * q'wez-ílc [smúlhats] dance-INTR DET woman-DET dance-INTR woman 'The/a woman danced.'
- ii. Determiners are disallowed on all main predicates, including nominal predicates:

| (4) | a. | kúkwpi7 | [kw-s | Rose] | b. * | [ti kúkwpi7 -a][kw-s | Rose] |
|-----|----|--------------|---------|-------|------|--------------------------------------|-------|
| | | chief | DET-NOM | Rose | | DET chief-DET DET-NOM | Rose |
| | | 'Rose is a o | chief.' | | | 'Rose is a / the chief.' | |

- iii. Quantifiers inside arguments always co-occur with determiners:
- (5) a. léxlex [tákem i smelhmúlhats-a] intelligent all DET.PL woman(PL)-DET 'All (of) the women are intelligent.'
 - b.*léxlex [tákem smelhmúlhats] intelligent all woman(PL) 'All women are intelligent.'
- (6) a. úm'-en-lkhan [**zí7zeg' i** sk'wemk'úk'wm'it-a] [ku kándi] give-TR-1sg.subj each DET.PL child(PL)-DET DET candy 'I gave each of the children candy.'
 - b.*úm'-en-lkhan [**zí7zeg'** sk'úk'wm'it/ sk'wemk'úk'wm'it] [ku kándi] give-TR-1sg.subj each child / child (PL) DET candy 'I gave each child / each (of the) children candy.'
- Structure for quantified arguments in St'át'imcets (see also Demirdache et al. 1994, Matthewson & Davis 1995, Matthewson 1998):



1.2 Semantic analysis

- Interpreting (7):
- i. NPs in St'át'imcets denote (one-place) predicates, cf. (4a).
- ii. The entire QP in St'át'imcets denotes a generalized quantifier (Matthewson 1998)



- **Q:** What are the semantic types and denotations of the functional heads in D and Q?
- iii. As DPs never function as predicates in St'át'imcets (cf.4b), quantifiers in St'át'imcets combine with sisters of argumental type: **type(DP) = <e>**.
- iv. D-heads in St'àt'imcets denote variables over CHOICE FUNCTIONS, cf. (9), which apply to the NP-set and choose one (singular or plural) individual from the set denoted by the NP predicate: **type(D) = <et,e>**, cf. (10):
- (9) [[CF]] = $\lambda f \in D_{\langle e,t \rangle}$. x, such that f(x)=1



- v. St'àt'imcets adnominal quantifiers take an individual and a predicate as semantic arguments, and quantify over the atomic subparts of that individual:
- (11) Distributive universal quantifier:
 - a. [[zí7zeg']] = $\lambda x_{\langle e \rangle}$. $\lambda Q_{\langle e t \rangle}$. $\forall y \leq x$ [atom(y) $\rightarrow Q(y)$]

zi7zeg' takes an individual and a predicate and specifies that every atomic subpart of that plural individual satisfies the predicate.

- b. [[zí7zeg' i smelhmúlhats-a qwatsáts]] each DET women(PL)-DET leave 'Each woman left.'
- = 1 iff for all y which are atomic parts of the plural individual of all contextually relevant women that is chosen by the choice function g(k), y left.
- Conclusions:
- i. Adnominal quantifiers in St'àt'imcets do not denote relations between two sets (<et,<et,t>>), as would be expected on the standard GQ-analysis. Rather, their first argument is of type <e>.
- ii. The creation of a generalized quantifier proceeds in two steps: (i.) identification of an individual (DP-denotation), *which depends on the context*; (ii.) quantification over the subparts of this plural individual
- \rightarrow the two-step procedure is reminiscent of the two interpretive steps (domain restriction, and GQ-formation), which appear to take place simultaneously in English

1.3 How to account for this instance of cross-linguistic variation?

- *Two options:*
- i. In line with the *Transparent Mapping Hypothesis*, adnominal quantifiers in St'àt'imcets and English exhibit macro-variation in that quantifiers denote semantic objects of different types. The semantic difference is reflected by differences in the surface syntax of quantified expressions in the two languages.
- ii. In line with the *Universal Hypothesis*, the systems of adnominal quantification in the two languages do not differ. As the standard GQ-analysis for English does not extend to St'àt'imcets (complement DPs in St'àt'imcets can never be interpreted as predicates!), perhaps one can re-analyse English quantification in the light of the St'àt'imcets facts?
- \Rightarrow option (ii.) is stronger and may give rise to new and unexpected insights into the quantificational system of English.
- \Rightarrow There is one quantificational construction in English, which seems to correspond to (10)

- (12) a. All the linguists that were at the party last night had a lot of fun.
 - b. *All linguists that were at the party last night had a lot of fun.
 - c. All linguists are smart. \Rightarrow KIND-READING only



- Same in French *toutes les*-constructions :
- (14) Toutes *(les) étudiants en linguistique ont eu beaucoup de plaisir.
- BUT : This structure is only attested with *all*-DPs, not with every- and *each*-DPs, nor with *chaque*-NPs in French!
- (15) a. *Each the linguist had a lot of fun.b. *Every the linguist had a lot of fun.c. *Chaque le linguiste a eu beaucoup de plaisir.
- \Rightarrow It seems as if constructions with *all* and *tout* were the odd ones out.
- 2. Differences between all and each/every (Vendler 1992, Stowell & Beghelli 1995)

2.1 Syntactic/Selection differences:

- i. *all* co-occurs with the definite article, *each/every* does not (see above)
- ii. *all* must combine with *plural* count NPs or mass NPs, but not with singular count NPs, cf. (16a-c).

each/every must combine with singular count NPs, but not with plural count Nps and mass NPs, cf. (17a-c).

- (16) a. all the students_{count.PL}
 - b. all the water_{mass.SG}
 - c. [#]all the student_{count.SG} (only mass reading)
- (17) a. *each/every students
 - b. each/every water (only count reading)
 - c. each/every student

2.2 Semantic Differences

- i. Collective and distributive interpretations:
- *all*+DPs can combine with collective predicates, while *each/every*-NPs cannot (18a-c)

- (18) a. All the students / *each student / *every student surrounded the city.
 - b. All the students/ *each student / *every student gathered outside the building.c. All the students/ *each student/ *every student solved the exercise together.
- *all*+DPs with not inherently collective predicates are ambiguous between a collective and a distributive construal (19ab); *each/every*-NPs must be interpreted distributively (20ab).
- (19) a. All the students solved an exercise. (together or individually)
 b. All the students ate a pizza. (together or individually)
 (20) a. Each/every student solved an exercise. (only individually)
 b. Each/every student ate a pizza. (only individually)
- Both kinds of expressions freely combine with inherently distributive predicates:
- (21) All the students/ each student / every student fell asleep.
- *Conclusion* (Gil 1995):

each/every-NPs are lexically specified as [+distributive], while *all*-DPs are unspecified in this respect: [+/- DIST]

- ii. *Discourse anaphora*:
- *All*-DPs can function as discourse antecedents for plural pronouns across sentential boundaries.
- (22) All the students₁ entered the classroom. They₁ were in good spirits.
- *each/every*-NPs do not function as discourse antecedents across sentential boundaries; see also last session.
- (23) Each/Every student₁ entered the classroom. #He₁ was in good spirits.
- Conclusions:
- i. *all*-DPs introduce plural discourse referents that can be referred to in subsequent discourse.
- \Rightarrow all-DPs are referring expressions (due to the presence of the definite article)
- \Rightarrow all-DPs do NOT denote generalized quantifiers !
- ii. *each/every*-NPs do not introduce discourse referents as they are not referring expressions
- \Rightarrow *each/every*-NPs DO denote generalized quantifiers !
- Q: If *all* is not a quantifying determiner, what is it then?

2.3 All as a semantic modifier on DP-denotations (Brisson 1998, 2003)

• *Central Claim* (Brisson 2003):

While DPs without *all* allow for exceptions, the presence of *all* indicates that the DP-denotation is affected by the VP-predicate in its entirety.

(24) CONTEXT: There are 15 boys in summer camp. One day, all of them went for a swim in the lake, except for George, who was sick and stayed in the log cabin.

a. Today, the boys went for a swim.

- b. #Today, all the boys went for a swim.
- (25) CONTEXT: After heavy snowfalls, the entire state is covered in snow and the snowplough crews barely succeed in keeping the most important roads open for traffic. However, they do not get to the less important roads for lack of machinery.
 - a. The roads have been cleared off the snow.
 - b. #All the roads have been cleared off the snow.
- \Rightarrow all is a modifier in Spec,DP that ensures that the VP-predicate holds of each and every subpart of the DP-denotations without exception:
- (26) Revised analysis of all-DPs:



 \Rightarrow formal implementation proceeds in terms Schwarzschild's (1992, 1996) COVER MECHANISM

3. Evidence for the *all-every* distinction from Hausa (Zimmermann 2008)

- Central Observations:
- i. Hausa also has two adnominal expressions with universal force that differ along the same lines as *each/every* vs *all*
- ii. The Hausa counterpart of *all* shows even more modifier-like behaviour than *all*

3.1 Hausa: *duk(à)* vs. koo-wh expressions (Zimmermann 2008)

(27) distributive *koo-wh* expressions:

| 'each, every (m./f./pl.)' | | |
|---------------------------|--|--|
| 'every student' | | |
| 'every car' | | |
| 'all kinds of clothes' | | |
| | 'each, every (m./f./pl.)''every student''every car''all kinds of clothes' | |

| (28) | | DP |
|------|-----------|-------|
| | | |
| | D | NP |
| koc | wànè/wani | mùtûm |
| eve | ry / some | man |

- Morpho-syntactic differences between koo-wh (every/each) and duk (all)-expressions
- i. *koo*+wh must precede the NP, $duk(\dot{a})$ can occur before or after the head NP (29a-c).
- ii. unlike *koo*+wh expressions (27), $duk(\dot{a})$ shows no agreement with the head noun (29).

| (29) | a. duk faasinjoojî-n all passengers-DEF 'all the passengers' | vs. | faasinjoojî- <i>n dukà</i> [Newman 2000: 388] passengers-DEF all | | | |
|------|---|-----|---|--|--|--|
| | b. <i>duk(à)</i> Hàusàwaa all Hausa people 'all Hausa people' | vs. | Hàusàawaa <i>dukà</i> Hausa people all | | | |
| | c. <i>duk</i> àbinci all food 'all the food' | vs. | àbinci <i>dukà</i> food all | | | |

- \Rightarrow *duk*(*à*) is a modifying element, rather than a functional head in D.
- iii. unlike koo+wh, duk(a) cannot combine with singular NPs:

| (30)* naa | ga | duk | dàalìbii | (OK with daalibai 'students') |
|-----------|--------|--------|-------------|-------------------------------|
| 1sg.perf | see | all | student | |
| INTENDED: | 'I saw | all th | e students' | |

- iv. duk(a) occurs with definite expressions (3ab), *koo*+wh expressions only with indefinite NPs.
- \Rightarrow *duk(à)* is a modifying phrase (= English *all*, Brisson 1998, 2003) and typically operates on definite DPs.
- *duk(à) 'all' vs. koo+wh 'every, any': Semantic differences*
- i. *Collective vs. distributive readings*:
- *koo+wh* expressions do not allow for collective construals (Jaggar 2001):
- (31) a. **koo-wànè dàalìbii* yáa tàaru à gàba-n makarantaa. DISJ-which student 3sg.PERF gather at front-LINK school *'Each student gathered in front of the school.'
 - b. * *koo-wànè soojà* yáa keewàye gàrii. DISJ-which soldier 3sg.PERFsurround town *'Each soldier surrounded the city.'

- dukà-NPs freely occur with collective predicates:
- (32) a. *duk dàalìbâ-n* sun tàaru à gàba-n makar̃antaa all students-DEF 3pl.PERF gather at front-LINK school 'All the students gathered in front of the school.'
 - b. *duk soojoojî-n* sun keewàye gàrii all soldiers-DEF 3pl.PERF surround town 'All the soldiers surrounded the city.'
- \Rightarrow parallel to the distinction between distributive *each/every* and collective *all* in English (Vendler 1967, Gil 1995) and in Northern Sotho and Swahili (Zerbian & Krifka 2008).
- **BUT**: *koo+wh* expressions can serve as antecedents for collective reciprocal predicates !!!
- (33) *koowaa* NP_{\emptyset} yaa san juunaa nân. $\forall \qquad \emptyset \qquad 3$ SG.M know each.other here 'Everyone knows each other here.'
- ii. *Behaviour under negation* (Jaggar 2001:377)
- VP-NEG >> *koo*+*wh*: negative existential interpretation *no*, *no*-*one*, *nothing* ...
- (34) bà-n ga koo-waa ba
 NEG-1sg.SUBJ see DISJ-wh NEG
 'I didn't see anyone.' ⇔ 'I saw no-one' NOT: 'I did not see everyone.'
- VP-NEG >> $duk(\dot{a})$: negative universal interpretation *not all*.
- (35) a. bà-n karàntà duk lìttàttàafâ-n ba [Jaggar 2001: 377] NEG-1sg read all books-DEF NEG 'I didn't read all the books.'
 - b. bàa duk bàaƙii su-kà zoo ba NEG all guests 3pl-PERF.REL come NEG 'Not all the guests have come.'
- \Rightarrow see Stowell & Beghelli (1997) for a discussion of the scopal relations between *all/each/every* and negation in English
- iii. Differences in dynamic binding across sentential boundaries
- Grammatically singular distributive *koo*+wh expressions can only bind singular pronouns, cf. (36a),
- plural *duka*-DPs must be anaphorically picked up by plural pronouns, cf. (36b):

| (36) | a. <i>ko</i> | o-wànè _i | mùtûm | yaa | sayar dà | gida-n-sà _i | / | * gida-n-sù _i |
|------|--------------|----------------------|--------------------|------------------------|----------|------------------------|-------|--------------------------|
| | DIS | J-which | man | 3sg.per | Fsell | house-LINK | -3sg | house-LINK-3pl |
| | Έ | very _i ma | n sold hi | s _i house.' | | | | |
| | b. <i>du</i> | k mutà | anê-n _i | sun | sayar dà | * gida-n- sa_i | / | gida-n-sù _i |
| | all | men- | -DEF | 3DL PERI | Esell | house-LINK | - 380 | house-LINK-3pl |

all men-DEF 3pl.PERF sell house-LINK-3sg house-LINK-3pl'All the men_i sold their_i houses.' • Conclusion:

Same as many other languages (including English and German), Hausa has two adnominal expressions with universal quantifying force, namely koo+wh ('every') expressions and duka ('all')-expressions, which differ in syntactic distribution and semantic interpretation:

koo-wh: Q-Det $duk(\dot{a})$: Q-Mod

3.2 Additional Evidence

The distinction in [sg] distributive universal Q-Dets and [pl/mass] [+/- dist] universal Q-Mods is quite robust cross-linguistically:

- Cuzco Quechua (Faller & Hastings 2008)
- all universal quantifiers except *sapanka* can receive a collective interpretation:
- (37) a. **llapan/tukuy/lliw** runa hu~nu-na-ku-rqa-nku. every/all person meet-pa-refl-pst-3ku 'All people gathered.'
 - b. **Sapanka** runa hu⁻nu-na-ku-rqa-nku each person meet-pa-refl-pst-3pl (i) # 'Every person gathered.'
 - (ii) 'All families gathered (that is, each family had their own gathering).'
- only *llapa, tukuy* and *lliw* but not *sapanka* can convey the meaning that a single object is affected in its totality (= *all* vs. *each*)

| (38) | a. | llapan/lliw/tukuy | sunqu-y-wan | b. #sapanka | sunquy-wan | |
|------|---------------------|-------------------|-------------|--------------------------|-------------|--|
| | | every/all | heart-1-com | each | heart-1-com | |
| | 'with all my heart' | | | 'with each of my hearts' | | |

- only *llapa, tukuy* and *lliw* can combine with mass nouns and then specify the totality of the quantity (= *all, duk(à)*); when *sapanka* modifies a mass noun, it necessarily quantifies over units or kinds (= *each, koo+wh*)

| (39) | a. | llapan/tukuy/lliw | unu | b. sapanka | unu |
|-------------------|----|-------------------|----------|----------------------|-------|
| | | every/all | water | each | water |
| 'all (the) water' | | | 'each bo | ottle/kind of water' | |

• Bantu (Northern Sotho, Swahili; Zerbian & Krifka 2008)

The Swahili quantifiers *kila* and *-ote* differ in terms of inherent distributivity (apart form other syntactic and morpho-syntactic differences):

- (40) a. wa-toto **w-ote** wa-na-cheza pamoja (= *all*) cl2-child PPX2-all sc2-pres-play together 'All children are playing together.'
 - b. *Kila m-toto a-na-cheza pamoja (= every/ each)
 each cl1-child sc1-pres-play together
 * 'Every child is playing together.'

2.3 Basque (Etxebarria 2008)

Basque has three expressions translated as *all* (*guzti, den, oro*), and one translated as *each* (*bakoitz*)

- Similarities:
- universal expressions (except for *oro*) require the presence of a definite determiner on Q (not on the nominal complement, cf. Matthewson 2001): domain restriction on Q
- unlike weak modifying quantifiers, universally quantifying expressions must occur in postnominal position, same as determiners: [[NP] Q]
- *Differences*:
- *bakoitz* 'each' cannot occur with plural determiners
- (41) a. *Ikasle bakoitz-**ek** goxoki bat jan zuten. student each-D.pl.erg candy one-abs eat aux.pl
 - b. Ume guzti-**ak** goiz iritisi ziren child all-D.pl.abs early arrive aux.pl
- *bakoitz* 'each' must get a distributive interpretation
- (42) a. ikasle guzti-ek/ den-ek abestibat abestu zuten (= *all*) student all-D.**pl.**erg/all-D.**pl**.erg song one-abs sing aux.pl 'All/ all of the students sang a song (together).'
 - \rightarrow distributive: OK, collective: OK
 - b. ikasle bakoitz-ak abestibat abestu zuten (= *each/every*) student each-D.**sg**-erg song one-abs sing aux.pl 'Each student sang a song (*together).'
 - \rightarrow distributive: OK, *collective

3.3 Hebrew: Another Pattern

In Hebrew, the semantic distinction between *each/every* [+dist] and *all* [+/-dist] is not lexicalised in form of different functional elements, but indicated grammatically in form of number and definiteness marking [sg] vs. [pl] on the DP/NP-complement (Gil 1995):

- (43) a. *kol iš* saħav šaloš mizvadot / *hit?asef $\mbox{Sim šaħar kol+NP}_{SG}$ \forall man:SG carry-PST three suitcase-PL REFL-gather-PST with dawn 'Each man carried three suitcases / *gathered at dawn.'
 - b. *kol ha-?anašim* saħvu šaloš mizvadot / hit?asfu fim šaħar *kol*+DP_{PL} \forall **DEF**-man:**PL** carry-PST three suitcase-PL REFL-gather-PST with dawn 'All the men carried three suitcases (each/ together) / gathered at dawn.'

Q: How does number and definiteness marking determine the semantic properties of the Hebrew DP as a whole?

4. Research Assignment

- i. Determine the inventory of adnominal quantifying expressions with universal force in your language.
- ii. In case there is more than one expression, investigate to what extent the different expressions behave on a par with English *all* and English *each/every*, respectively.