Exhaustification, free-choice, and additivity

Evidence from Sakha *da(ɣanɨ)*

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01/10/21

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95th Annual Meeting of the Linguistics Society of America

- In Sakha/Yakut (Turkic, Siberian branch) the particle *dayanɨ* (often reduced to *da*) appears in three main environments:
  - Negative Polarity Items (NPIs) with WH-words, numeral *biir* 'one' (1):

    (1) [Kim da(ɣanɨ)] [biir da kinige-ni] aax-*(pa)-ta
    [who *da(ɣanɨ)*] [one *da* book-ACC] read-(NEG)-PST.3SG
    'Nobody read any book(s)', lit: 'Anybody didn't read any book(s)'

  - Full *da(ɣanɨ)* or reduced *da* both acceptable with WH-NPIs. The short form is preferred following quantificational adjectives like *biir* 'one'.
  - Scalar focus particle (2):

    (2) [Onnooɣor studjen da(ɣanɨ)] iti kinige-ni aax-(pa)-ta
    [even student *da(ɣanɨ)*] that book-ACC read-(NEG)-PST.3SG
    'Even the student (didn't) read that book'

  - *da(ɣanɨ)* outside of WH-words, *biir* is not as sensitive to polarity
  - (2) Expresses that it is unexpected that the student would (or would not) read the book.
  - Doubled in coordination constructions (3):

    (3) Djulus [kofje da(ɣanɨ] [čaj da(ɣanɨ)] is-(pe)-te
    Djulus [coffee *da(ɣanɨ)*] [tea *da(ɣanɨ)*] drink-(NEG)-PST.3SG
    a. Without NEG *-pe*: 'Djulus drank both coffee and tea'
    b. With NEG *-pe*: 'Djulus drank neither coffee nor tea'

- Quantifier particles are fertile grounds for cross-linguistic investigation (see Szabolcsi 2010, 2015, *et seq.*)
- NPIs built out of numeral 'one' and/or an existential quantifier like a WH-word (or 'some-') combined with an 'even'-like particle are well attested
  - *even-some* / *even-WH* / *even-one* NPIs (Chierchia 2013)
  - Lahiri (1998) on Hindi *bhii*, Szabolcsi (2015, 2017) on Hungarian *is/sem*, Japanese *-mo*, Serbo-Croatian *i/ni*, Haspelmath (1997) on many others
- NPIs are existentials which obligatorily scope below their licenser (e.g. negation) (Fauconnier 1975, Ladusaw 1979, Progovac 1993, Chierchia 2013, Crnič 2014)
  - Why does positive *da(ɣanɨ)...da(ɣanɨ)* resolve to a conjunction 'both...and' meaning?

- Questions quantifier particles raise for semantic compositionality (Szabolcsi 2015: 161):
  a. One single denotation? "Do the roles of each particle form a natural class with a stable semantics?"
     - **For Sakha *da(ɣanɨ)*, yes**
  b. Additional operators? "Are the particles aided by additional elements, overt or covert, in fulfilling their varied roles? If yes, what are those elements?"
     - **Semantic alternatives of a disjunction/existential, interpreted by a covert exhaustifier** (Sauerland 2004, Chierchia, Fox, Spector 2008, Crnič 2011, Szabolcsi 2017)
     - **Chierchia's Grammatical Theory of Polarity Sensitivity** (2004, 2013)
  c. Cross-linguistic comparison? "What do we make of the cross-linguistic similarities and differences in the distribution and interpretation of the particles?"

2. Distribution: Sakha *da(yanɨ)*, Hungarian *is/sem*, Japanese *-mo*

Role	Sakha *da(yanɨ)*	Hungarian *is/sem*	Japanese *-mo*	see slide
NPI, *anybody*	✓— *kim da(yanɨ)*	✓— *valaki is, akárki is, senki*	✓— *dare-mo*	(36)
even X	✓— *(onnooyor)* ... X *da(yanɨ)*	✓— *még* X *is*	✓— X-*mo*	(37)
both X *and* Y	✓—X *da(yanɨ)* ... Y *da(yanɨ)*	✓— X *is* Y *is*	✓— X-*mo* Y-*mo*	(38)
neither X *nor* Y	✓— X *da(yanɨ)* Y *da(yanɨ)*	✓— X *sem* Y *sem*, *sem* X *sem* Y	✓— X-*mo* Y-*mo*	(39)
X *too/either*	✗	✓— X *is*, X *sem*	✓— X-*mo*	
FCI, *anybody*	✗	✓— *akárki is, bárki is*	✓— *dare-de-mo*	
∀-GQ, *everyone*	✗	✗	✓— *daré-mo*	

- Main sources: Szabolcsi (2004, 2015, 2017, 2018), Shimoyama (2006, 2011)
- Hun. *sem*=negative concord variant of *is*. *-ki*='who'. *senki*=*sem*+*ki*. JPN *dare*='who'

(4) [Donó hito-mo] hashitta
[which person-*mo*] run.PST
'Everybody ran' (Japanese, Kobuchi-Philip 2009: 172)

(5) Sakha

a. [Tugu da(ɣanɨ)] aax-*(pa)-t-ɨm
[what.ACC *da(ɣanɨ)*] read-(NEG)-PST-1SG
'I didn't read anything'

b. [Xas biirdii kinige-ni] aax-t-ɨm
[how.much each book-ACC] read-PST-1SG
'I read every single book'

c. [Tuox baar kinige-ni barɨ-tɨn] aax-t-ɨm
[what exist book-ACC every-ABL] read-PST-1SG
'I read all the books'

- (5-a)'s positive variant ungrammatical. Does NOT mean 'I read everything'
- Shimoyama (2011)— Japanese *-mo* quantifier particle forms universals
  - so-called NPI WH-*mo* actually PPI (i.e. $[\forall < \neg]$ rather than $[\neg < \exists]$)

2. Distribution

Da(ɣanɨ) lacks a basic additive reading (I)

- X *also*, X *too*/*either*—**additivity**. Presupposition that, in addition to the ordinary value of a proposition, ≥ 1 additional alternative is (also) true

(6) a. DJULUS drank coffee, too/also.
Additive presupp. = Somebody other than D. drank coffee.
b. DJULUS didn't drink coffee, either
Additive presupp. = Somebody other than D. didn't drink coffee.

- Basic additive use possible for Hungarian *is*/*sem* (7)

(7) Bill {is / sem} ásított
Bill {*is* / *sem*} yawned
a. (Positive, *is*): 'BILL yawned, too'
[Presupposition= Somebody other than Bill yawned]
b. (Negative, *sem*): 'BILL didn't yawn, either'
[Presupposition= Somebody other than Bill didn't yawn]
(Hungarian, Szabolcsi 2017: 461)

2. Distribution

Da(ɣanɨ) lacks a basic additive re 'ading (II)

- Sakha *da(ɣanɨ)* is infelicitous for such a reading:[1]

(8) Djulus {#da(ɣanɨ) / emie} kofje is-(pe)-te
Djulus { *da(ɣanɨ)* / *also*} coffee drink-(NEG)-PST.3SG
(Positive, *emie*): 'DJULUS drank coffee, too'
(Negative, *emie*): 'DJULUS didn't drink coffee, either'

- With *da(ɣanɨ)* (8) can only mean 'Even DJULUS (didn't) drink coffee' (i.e. the scalar focus reading)
  - Part of the meaning is an additive presupposition: somebody other than Djulus (did drink/didn't drink) coffee (in addition to scalar presupposition)
  - Basic additive present in *da(ɣanɨ)*'s cognates in many other Turkic languages, e.g. Turkish *dA* (Kornfilt 1997: 109–14, Kamali and Karvovskaya 2013, Szabolcsi 2018). No NPI uses in Turkish (i.e. not a quantifier particle)
- Lacking a basic additive use makes *da(ɣanɨ)* a unique quantifier particle

[1] With *emie* (8) can also mean 'Djulus (didn't) yawn again'

(9) [Kim {*da(ɣanɨ) / baɣarar}] alaadjɨ sie-n söp buoluo
[who { *da(ɣanɨ)* / PTCL}] pancake eat-CVB can maybe
(With *baɣarar*): 'Anyone can eat pancakes' (Sakha)

(10) [Bárki (is)] jön meg, engedd be
[anyone *is*] come.3SG VRB.MODIFIER let.2SG.IMP VRB.MODIFIER
'Whoever arrives, let him in' / 'Let anybody who arrives in'
(Hungarian, Halm 2016: 130)

2. Distribution

Da(ɣanɨ)'s scalar focus reading is compatible with free-choice implicature

(11) Sakha

a. Iti kinige-ni [ehe-em da(ɣanɨ)] aaɣ-ɨan söp
that book-ACC [grandfather-1SG *da(ɣanɨ)*] read-FUT can
(i) 'Even MY GRANDFATHER can read that book'
(ii) 'Anyone can read that book, even MY GRANDFATHER'

b. Iti kinige-ni [ehe-em da(ɣanɨ)] aax-ta
that book-ACC [grandfather-1SG *da(ɣanɨ)*] read-PST.3SG
'Even MY GRANDFATHER read that book'

(12) Hungarian (Szabolcsi 2017: 460)

a. [Akár Mari is] nyerhet
[*akár* Mari *is*] can.win
'Anyone can win; to pick an arbitrary example, Mari'

b. *[Akár Mari is] nyer
[*akar* Mari *is*] win.PRES
'*Anyone is winning'

- *da(ɣanɨ)* does not form FCIs, unlike Hungarian *is* in (12-a). (11-a) is a free-choice implicature over the *even*-use

- There is a common reason that *da(ɣanɨ)* does not appear in FCIs or basic additive uses
- *da(ɣanɨ)* marks alternatives of its host obligatorily active (Chierchia 2013)
  - In most cases, *da(ɣanɨ)* is interpreted by simple (non-recursive) exhaustification
  - Szabolcsi (2017)— additive *too* quantifier particles cause recursive exhaustification of a subset of the alternatives
    - *Da(ɣanɨ)* does not do so
  - Recursive exhaustification IS responsible for the 'both...and' reading of *da(ɣanɨ)...da(ɣanɨ)*, thought it is caused by each instances of the particle activating the alternatives of its host disjunct

- Chierchia (2004, 2013)—
  - Polarity items (PIs) are existentials/disjunctions
  - PIs have semantic alternatives (ALTs). Licensing is the grammaticalization of a scalar implicature involving these alternatives
  - Unlike ordinary scalar implicatures (e.g. *I drank coffee or tea*, scalar implicatures=*I didn't drink BOTH*), the ALTs of PIs are not subject to Gricean Relevance. Cannot be ignored. i.e. ALTs of PIs are **obligatorily active**
  - Non-entailed alternatives must be exhaustified—non-entailed alternatives must be eliminated (negated) or else appropriately ranked
- Main exhaustifiers— covert *only* O (13), covert *even* E (defined on slide (16))

(13) $\mathsf{O}_{\mathsf{ALT}}(\phi) = \phi \wedge \forall \psi \in \mathsf{ALT}[\psi \rightarrow \phi \subseteq \psi]$,
where '$\subseteq$' means 'entails' (Chierchia 2013: 31)

  - O(nly) (13) asserts proposition with alternatives ϕ ("prejacent") and negates all alternatives of ϕ which ϕ does not entail. $\phi = \mathsf{T}$, non-entailed $\mathsf{ALT}(\phi) = \mathsf{F}$
  - If negation of $\mathsf{ALT}(\phi)$ contradicts ϕ: ordinary scalars prune contradiction (Relevance); PIs become uninterpretable (ALTs not subject to Relevance)

- First, take a positive example

(14) *Djulus [tugu da(ɣanɨ)] aax-ta
Djulus [what.ACC *da(ɣanɨ)*] read-PST.3SG
'*Djulus read anything'

(15) a. $[\![\text{tugu da(ɣanɨ)}]\!] = [\![\text{anything}_{\text{NPI}}]\!] = \lambda P_{\langle et,t\rangle}.\ \exists x\ [\text{THING}(x) \wedge P(x)]$

b. $[\![(14)]\!] = \exists x[\text{THING}(x) \wedge \text{READ}(\text{djulus}, x)]$

- Assume domain contains two things: *Syntactic Structures* and *Aspects*. (15-b) is equivalent to a disjunction ($p \vee q$) where $[\![p]\!]$ ='Djulus read *Syntactic Structures*' and $[\![q]\!]$ ='Djulus read *Aspects*'

- Like *anything*, *tugu da(ɣanɨ)* has obligatorily active alternatives (ALT)
  - In set-notation: $\text{ALT}(p \vee q) = \{p \vee q, p, q, p \wedge q\}$
    - Equivalent to $\text{ALT}(p \vee q) = (p \vee q) \wedge p \wedge q \wedge (p \wedge q)$
  - As a semi-lattice:

$(p \vee q)$	Prejacent
$p \qquad q$	Subdomain ALTs
$(p \wedge q)$	Scalar ALT

- Because $(p \vee q)$ has active ALTs, we exhaustify with respect to them. Members of ALT that are not entailed by prejacent $(p \vee q)$ eliminated (i.e. negated)
  - Non-entailed alternatives $= \{p, q, p \wedge q\}$

(16) $$O_{ALT}(p \vee q) = \underbrace{(p \vee q) \wedge \underbrace{\neg p \wedge \neg q}_{\neg(p \vee q)}}_{(p \vee q) \wedge \neg(p \vee q),\ \text{contradiction}} \wedge \neg(p \wedge q)$$

- Under negation . . .

(17) a. Djulus [tugu da(ɣanɨ)] aax-pa-ta
Djulus [what.ACC *da(ɣanɨ)*] read-NEG-PST.3SG
'Djulus didn't read anything'

b. $[\![(17\text{-a})]\!] = \neg\exists x[\text{THING}(x) \wedge \text{READ}(\text{djulus}, x)] = \neg(p \vee q)$

- $\text{ALT}(\neg(p \vee q)) = \{\neg(p \vee q), \neg p, \neg q, \neg(p \wedge q)\}$
  - All of these alternatives are entailed by the prejacent $\neg(p \vee q)$. None can be eliminated by exhaustification. No contradiction

(18) $O_{\text{ALT}}(\neg(p \vee q)) = \neg(p \vee q) \wedge \neg p \wedge \neg q \wedge \neg(p \wedge q)$

- Numerals like *biir* (as in *biir da N* NPIs)—rich scale of alternatives (totally ordered by entailment). Require a different exhaustifier E(ven)

(19) $\text{E}_{\text{ALT}}(\phi) = \phi \wedge \forall\psi \in \text{ALT}[\phi <_\mu \psi]$ (Chierchia 2013: 148)
where '$\phi <_\mu \psi$'=ϕ is less likely than ψ w.r.t. a probability metric μ

- E(ven)-EXH (19) interpretable only if prejacent ϕ least likely alternative

(20) *Djulus [biir da kinige-ni] aax-ta
Djulus [one *da* book-ACC] read-PST.3SG
'*Djulus read any book'

a. $[\![(20)]\!] = \exists x[\text{n}(x) \wedge \text{BOOK}(x) \wedge \text{READ}(\text{djulus}, \text{book}) : |\text{n}| = 1]$
b. ALT(20-a)={one book $\Leftarrow$ two books $\Leftarrow$ three books $\Leftarrow$ ...}

(21) E_{ALT}(20)= one book $\wedge \forall$p $\in$ ALT[one book $<_\mu$ p]

a. i.e. one book $<_\mu$ two books $<_\mu$ three books...
Unsatisfiable! *two* entails *one* (and so forth)

- Under negation, these entailments are reversed (22-b)

(22) Djulus [biir da kinige-ni] aax-pa-ta
Djulus [one *da* book-ACC] read-NEG-PST.3SG
'Djulus didn't read any book(s)'

a. $[\![(22)]\!] = \neg\exists x[n(x) \wedge BOOK(x) \wedge READ(djulus, x) : |n| = 1]$

b. ALT(22-a)=
{¬one book ⇒ ¬two books ⇒ ¬three books ⇒ ...}

(23) E_{ALT}(22-a)= ¬one book $\wedge \forall p \in ALT[\neg\text{one book} <_{\mu} p]$

- (23) is satisfiable. See Crnič (2011, 2014)

- In languages like Sakha, Hungarian, quantifier particles are crucial to resulting meaning.
- Sakha WH-words without *da(ɣanɨ)* are not NPIs (24-a). Likewise *biir* 'one' without *da* (24-b).

(24) a. (i) Min [tugu da(ɣanɨ)] aax-*(pa)-t-ɨm
I [what.ACC *da(ɣanɨ)*] read-(NEG)-PST-1SG
'I didn't read anything'

(ii) Min [tugu] aax-(pa)-t-ɨm?
'What did I (not) read?'

b. (i) Min [biir da kinige-ni] aax-*(pa)-t-ɨm
I [one *da* book-ACC] read-(NEG)-PST-1SG
'I didn't read anything'

(ii) Min [biir kinige-ni] aax-(pa)-t-ɨm
'I (didn't) read one book'

- Hungarian *vala*-WH only NPIs with *is/sem*. Positive polarity items (PPIs) without *is/sem* (25-b) (Tóth 1999, Szabolcsi 2015, 2017)

(25) a. *(Nem) hiszem, hogy [vala-ki is] el jön
(NEG) believe.1SG that [some-who *is*] PRT come.3SG
'I do not think that anyone will come'

b. (*Nem) hiszem, hogy [vala-ki] el jön
'I think that someone will come' (Halm 2016: 144)

- Where does the grammar encoded that alternatives of an element are obligatorily active?
  - Property of lexical items, more-or-less idiomatic (Chierchia 2013)
  - Individual morphemes can have the function of activating alternatives of their host (i.e. making them obligatorily) (Szabolcsi 2017: 460)
  - **Individual morphemes** can have the function of activating alternatives of their host (i.e. making them obligatorily) (Szabolcsi 2017: 460)

Quantifier particles activate alternatives

- The host independently has (non-obligatory) alternatives:
  - Existentials (e.g. *some*, WH-words) ALTs $= < \exists, \forall > = < \vee, \wedge >$
  - Numeral 'one' ALTs $= \{1, 2, 3, 4, \ldots, \}$
  - Focused element ALTs = disjunction of focus alternatives (Rooth 1992)
- Quantifier particles like *da(ɣanɨ), is/sem* activate these alternatives (i.e. make them obligatory)

- *even*-focus reading of *da(ɣanɨ)* a product of the particle activating the alternatives of an element under focus

(26) [(onnooɣor) Djulus da(ɣanɨ)] aax-(pa)-ta
[(even) Djulus *da(ɣanɨ)*] read-(NEG)-PST.3SG
'Even DJULUS (didn't) read'

- (26) felicitous only if Djulus is **contextually** considered to be less likely to have read (or not read, for negation) that alternatives

(27) a. Ordinary value of (26)= (¬)READ(djulus) (=prejacent)
b. (26)'s Focus-ALTS=
{(¬)READ(djulus), (¬)READ(erkin), (¬)READ(sardaana)}

- Exhaustification with E(ven)— if the ALTs in (27-b) are probability ranked and Djulus is the least likely ALT, interpretable. Pragmatically ranked
- {(¬)READ(d) $<\mu$ (¬)READ(e), (¬)READ(d) $<_\mu$ READ(s)}
where X $<_\mu$ Y says 'X is pragmatically less likely than Y'

4. Free-choice and additivity

- Why does *da(ɣanɨ)* not appear in free-choice items?
  - Free-choice—recursive exhaustification
  - *da(ɣanɨ)...da(ɣanɨ)*'s 'both...and' reading is a free-choice-like effect
- Connection to additivity—Szabolcsi's (2017) bifurcation of focus alternatives

- The signature property of free-choice is a modal scoping over a disjunction of alternatives (28-a) becoming **enriched** to a conjunction (28-b), where each of the alternatives are acceptable (Chierchia 2013: 89)

(28) Djulus can drink coffee, tea, or water. $[\Diamond < \vee]$

a. $\Diamond(p \vee q \vee r)$
=D. can drink coffee, OR can drink tea, OR can drink water.

b. $\Diamond p \wedge \Diamond q \wedge \Diamond r$
=D. can drink coffee AND can drink tea AND can drink water

- enrichment of (28-a) to (28-b) a free-choice implicature involving *or*-disjunction.
- Chierchia (2013)— meaning of FCIs like English *any*, Italian *un N qualsiasi* 'any N whatsoever', German *irgend* 'some or other' similar reasoning

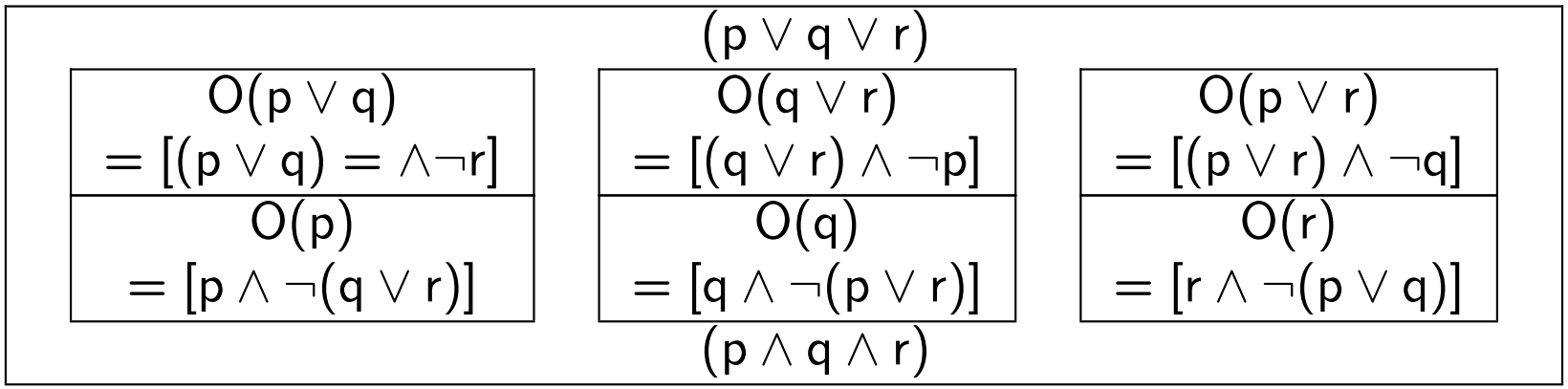
- Recursive exhaustification with O(nly) (Fox 2007, Fox and Katzir 2011, Chierchia, Fox and Spector 2008, Chierchia 2013)
  - Exhaustify not only the prejacent's alternatives, but also the alternatives of the subdomain alternatives. Will require a modal to be interpretable
- Consider a prejacent with three alternatives and no modal: $(p \vee q \vee r)$
- $ALT(p \vee q \vee r) =$

	$(p \vee q \vee r)$		(Prejacent)
$O(p \vee q)$	$O(q \vee r)$	$O(p \vee r)$	(Subdomain ALTs)
Op	Oq	Or	
	$(p \wedge q \wedge r)$		(Scalar ALT)

(29) a. $ALT(p \vee q) = \{(p \vee q), \underbrace{p, q}_{\text{entail } (p \vee q)}, r\}$

b. $O_{ALT}(p \vee q) = (p \vee q) \wedge \neg r$

- After exhaustifying the subdomain ALTs, exhaustify the prejacent $(p \vee q \vee r)$ with respect to these (pre-exhaustified) alternatives:



(30) $O_{Exh\text{–}ALT}(p \vee q \vee r) =$

$\underbrace{(p \vee q \vee r)}_{\text{Prejacent}} \wedge \underbrace{\underbrace{\neg O(p \vee q)}_{\neg((p \vee q) \wedge \neg r)_{(p \vee q) \to r}} \wedge \underbrace{\neg O(r)}_{\neg(r \wedge \neg(p \vee r))_{r \to (p \vee q)}}}_{(r(p \vee q))} \wedge \cdots \wedge \neg(p \wedge q \wedge r)$

a. $= (p \vee q) \wedge (p \leftrightarrow q \leftrightarrow r) \wedge \neg(p \wedge q \wedge r)$ (Contradiction!)

- If we repeat the above steps with a possibility modal, exhaustification produces the free-choice reading.

(31) a. $O_{Exh-ALT}(\Diamond(p \vee q \vee r)) =$
$\Diamond(p \vee q \vee r) \wedge \neg O(\Diamond p \vee q) \wedge \cdots \wedge \neg\Diamond(p \wedge q \wedge r)$
b. $=\Diamond(p \vee q \vee r) \wedge (\Diamond p \leftrightarrow \Diamond q \leftrightarrow \Diamond r) \wedge \neg\Diamond(p \wedge q \wedge r)$

- Each alternative is acceptable in some world, so long as all alternatives are not true in any single world

Why does *da(yan+) not form FCIs?*

• It only activates the alternatives of the prejacent, NOT the alternatives of the subdomain alternatives. i.e. it only forces simple exhaustification

- Positive *da(ɣanɨ)...da(ɣanɨ)* coordination resembles the strengthening of a disjunction to a conjunction seen in free-choice

(32) a. Djulus [kofje da(ɣanɨ čaj da(ɣanɨ)] is-te
Djulus [coffee *da(ɣanɨ)* tea *da(ɣanɨ)*] drink-PST.3SG
'Djulus drank both coffee and tea'

b. Djulus [kofje da(ɣanɨ) čaj da(ɣanɨ)] is-pe-te
Djulus [coffee *da(ɣanɨ)* tea *da(ɣanɨ)*] drink-NEG-PST.3SG
(i) 'Djulus didn't drink coffee or tea' ✓[¬(p ∨ q)]
(ii) #'Djulus didn't drink both coffee and tea' #[¬(p ∧ q)]

- *da(ɣanɨ)...da(ɣanɨ)* cannot scope over negation (32-b-ii)
- No modal in required for *both...and* reading (32-a)

4. Free-choice and additivity:

Strengthening *or* to *and*

- If no stronger scalar alternative $(p \wedge q)$ is present, recursive exhaustification with O(nly) can strengthen *or* to *and*
  - Bowler (2014) on Warlpiri *manu* 'or/and', Bar-Lev and Margulis (2014) on Hebrew *kol* 'all/any', see Szabolcsi (2017: 461) for others

(33) a. $\text{ALT}(p \vee q) = \{(p \vee q), p, q\}$

b. $O_{\text{Exh-DA}(p \vee q)} = (p \vee q) \wedge \underbrace{\underbrace{\neg O(p)}_{\neg(p \wedge \neg q)_{p \to q}} \wedge \underbrace{\neg O(q)}_{\neg(q \wedge \neg p)_{q \to p}}}_{(p \leftrightarrow q)}$

Absence of stronger scalar alternative is key

- If the scalar alternative is included, we would reach a contradiction:
  - ▶ $= (p \vee q) \wedge (p \leftrightarrow q) \wedge \neg(p \wedge q) = \bot$
- **Sakha *da(ɣanɨ)*...*da(ɣanɨ)* underlyingly disjunction**. *Da(ɣanɨ)* activates each disjunct's ALTs, resulting in recurs EXH. Doubling a morphosyntactic reflex of recurs EXH

(34) [Bill is] ástított
[Bill *is*] yawn.PST.3SG
'BILL yawned, too' (Hungarian, Szabolcsi 2017: 462)
Bill yawned AND somebody other than Bill yawned

(35) a. Ordinary value of (34)= Y(bill) 'Bill yawned'
b. Focus-ALT(34)= {Y(bill), Y(mari), Y(katalin)}

- Szabolcsi (2017)—*is* bifurcates prejacent Y(bill) from other alternatives, producing BI-ALT (36-a). Recursively exhaustified without scalar (36-b)

(36) a. BI-ALT(34)= {{b}, {m ∨ k}} = [b ∨ (m ∨ k)]
b. $O_{Exh-BI-ALT}(b) = b \wedge \neg O(b) \wedge \neg O(m \vee k)$
$= b \wedge (b \leftrightarrow (m \vee k))$

- Result (36-b) **is** the additive presupposition: *Bill IS yawned*= T only if one of the ALTs *Mary yawned*, *Katalin yawned* is T.
- **Sakha *da(ɣanɨ)* lacks basic additive reading because it does not bifurcate its alternatives**

5. Conclusion

- Sakha *da(ɣanɨ)* is a particle which activates alternatives of a host disjunction
- When the host is a low-point of scale existential like a WH-word or *biir* 'one', activation of alternatives forms NPI
- When the host is a focused element, the elements are not inherently ordered, rather only being ordered by pragmatic context
- When it marks each disjunct in a disjunction phrase, *da(ɣanɨ)* results in a 'both...and' reading in positive sentences, but an 'or' reading scoping under negation. The positive reading is a result of each alternative (disjunct) being marked as having obligatorily active alternatives, resulting in recursive exhaustification, strengthening the disjunction to a conjunction
- By itself, *da(ɣanɨ)* does not encode that alternatives need be recursively exhaustified (i.e. it does not pre-exhaustify, nor does it bifurcate alternatives), explaining its lack of FCI, basic additive uses

Acknowledgments

I am deeply grateful to Daria Boltokova for serving as my Sakha consultant. I would also like to thank Jonathan Bobaljik, Uli Sauerland, and Dora Mihoc for their guidance on this project. Others I would like to thank (in alphabetical order) are Lucas Champollion, Gennaro Chierchia, Christos Christopolous, Kate Davidson, Aurore Gonzalez, Vera Gribanova, Tamás Halm, Martin Haspelmath, Jim Huang, Niels T. Kühlert, Gunnar Lund, Andreea Nicolae, Ankana Saha, Deniz Satik, Hande Sevgi, Tamisa L. Tan, Satoshi Tomioka, Jonathan North Washington, and Chantale Yunt.

Additional notes and data

Transcription

- Native Cyrillic for the particle is <даҕаны>. Other romanizations include:
  - *daɣanı* (Krueger 1962: 115)
  - *daɣanï* (Stachowski and Menz 1998: 423)
  - *daqany* (Vinokurova 2005; Baker and Vinokurova 2010)

Additional notes and data

Licensing of *da(ɣanɨ)* (I)

- *Da(ɣanɨ)* NPIs are licensed by many negative morphemes, such as verbal negation with *-BA* (see (1)), negative copulas *suox* (37-a) and *ilik* (37-b), negative converb *-BAkkA* (37-c), and the prohibitive *-ImA* (37-d)

(37)

a. [Tuox da(ɣanɨ) sɨala] {suox / *baar} suruj-but-um
[what *da(ɣanɨ)* purpose] {NEG.COP / COP} write-PST-1SG
'I wrote for no reason'

b. [Kim da(ɣanɨ)] [biir da kinige] aax-a ilik
[who *da(ɣanɨ)*] [one *da* book] read-CVB COP.not_yet
'Nobody has read any book(s) yet' (Lit. 'Anybody has not read any book yet'

c. [Tugu da(ɣanɨ)] aax-pakka ereeri üören-n-im
[what.ACC *da(ɣanɨ)*] read-NEG.CVB though study-PST-1SG
'I studied without reading anything'

d. [Tugu da(ɣanɨ)] {aaɣ-ɨma / *aax}
[what.ACC *da(ɣanɨ)*] {read-NEG.IMP / read.IMP}
'Don't read anything!'

Additional notes and data

Licensing of *da(ɣanɨ)* (II)

- *Da(ɣanɨ)* NPIs also licensed by the comparative case morpheme *-TĀɣar* (38)

(38) Tujara [kim-neeɣer da(ɣanɨ)] uhun
Tujara [who-CMPR *da(ɣanɨ)*] tall
'Tujara is taller than anyone'

- Not licensed in antecedent of conditionals (39-a) or polar questions (39-b)

(39) a. *[Tujara [tugu da(ɣanɨ)] onŋor-doɣuna] Djulus čaj
[Tujara [what.ACC *da(ɣanɨ)*] repair-COND.3SG] Djulus tea
kut-an bier-iexteex
pour-CVB give-FUT.3SG
Intended: 'If Tujara repairs anything, Djulus will serve tea'

b. *[Kim da(ɣanɨ)] kofje ih-er=ɨj?
[who *da(ɣanɨ)*] coffee drink-PRES.3SG=Q
Intended: 'Does anyone drink coffee?'

- These NPIs thus strict (or "strong") NPIs, requiring Anti-Additive licensers rather just simply Downward Entailing (Zwarts 1998, Gajewski 2011)

Additional notes and data

Licensing of *da(ɣanɨ)* (III)

- *Da(ɣanɨ)* NPIs are not negative-concord items. Fail main diagnostic—ability to serve as a negative fragment answer to a non-negative question (Zanuttini and Portner 2003, Chierchia 2013: 238)

(40) Question: Tugu beɣehee aax-pɨk-kɨn=ɨj?
what.ACC yesterday read-PST-2SG=Q
'What did you read yesterday?'

a. Negative answers:

(i) #Tugu da(ɣanɨ)
what.ACC *da(ɣanɨ)*
intended: 'nothing'

(ii) Tugu da(ɣanɨ) aax-pa-taɣ-ɨm
what.ACC *da(ɣanɨ)* read-NEG-PST-1SG
'I didn't read anything'

(41) a. Sakha *da(ɣanɨ)*

(i) Min [**kimi da(ɣanɨ)**] kör-*(bö)-t-üm
I [who.ACC *da(ɣanɨ)*] see-(NEG)-PST-1SG
'I didn't see anyone'

b. Hungarian is/sem

(i) Pál *(nem) látott [**sen-ki-t**]
Paul (NEG) saw *sem*-who-ACC
'Paul did not see anybody' (Tóth 1999: 125)

(ii) Pál *(nem) mondta, hogy Mária [**vala-ki-t is**] látott
Paul (NEG) said that Mary [*vala*-who *is*] saw
'Paul did not say that Mary saw anybody' (Tóth 1999: 126)

c. Japanese *-mo*

(i) Yoko-ga [gakusei-o **dare-mo**] syootaisi-*(nakat)-ta
Yoko-NOM [student-ACC who-*mo*] invite-(NEG)-PST
'Yoko didn't invite any student' (Shimoyama 2011: 417)

(42) a. Sakha *da(ɣanɨ)*

(i) [?(Onnooɣor) studjen da(ɣanɨ)] iti kinige-ni aax-ta
[(even) student *da(ɣanɨ)*] that book-ACC read-PST.3SG
'Even THE STUDENT read that book'

(ii) [(Onnooɣor) studjen da(ɣanɨ)] iti kinige-ni aax-pa-ta
[(even) student *da(ɣanɨ)*] that book-ACC read-NEG-PST.3SG
'Even THE STUDENT didn't read that book'

b. Hungarian *is/sem*

(i) Éva szerenscére [még János-t is] meg hívta
Eve luckily [even John-ACC *is*] VRB.MODIFIER invite.PST
'Eve luckily invited even John' (Kiss 2004: 108)

(ii) Nem jött el [egy diák sem]
NEG come.PST VRB.MODIFIER [one student *sem*]
'No student came' / 'Not even one student came' (Kiss 2004: 140)

c. Japanese *-mo*

(i) [Sono syoonin-mo] damatteita
[that witness-*mo*] was.silent
'Even that witness was silent / That witness was also silent'
(Shimoyama 2006: 145)

(ii) John-wa [hon A -mo] yom-ana-katta
John-TOP [book A -*mo*] read-NEG-PST
'John didn't even read book A' (Nakanishi 2006: 142)

Additional notes and data: Doubled in 'both...and' coordination

(43) a. Sakha *da(ɣanɨ)*

(i) [Djulus da(ɣanɨ) Tujara da(ɣanɨ)] kofje is-pit-ter
[Djulus *da(ɣanɨ)* Tujara *da(ɣanɨ)*] coffee drink-PST-3PL
'Both D. and T. drank coffee'

(ii) Min [kinige da(ɣanɨ) aax-t-ɨm] suruk da(ɣanɨ) suruj-d-um]
I [book *da(ɣanɨ)* read-PST-1SG letter *da(ɣanɨ)* write-PST-1SG]
'I both read a book and wrote a letter' / 'In addition to reading a book, I even wrote a letter'

b. Hungarian *is/sem*

(i) [Kati is Mari is] alud-t
[Kati *is* Mari *is*] sleep-PST.3SG
'Both K. and M. slept' / 'K. as well as M. slept' (Szabolcsi 2018: 5)

c. Japanese *-mo*

(i) Takashi-wa [tyuukan-siken-ni-mo kimatu-siken-ni-mo] ukat-ta
Takashi-TOP [midterm-exam-DAT-*mo* term.end-exam-DAT-*mo*] pass-PST
'T. passed both the midterm and the final' (Shimoyama 2011: 439)

(44) a. Sakha

(i) [Djulus da(ɣanɨ) Tujara da(ɣanɨ) kofje is-pe-tex-ter
[Djulus *da(ɣanɨ)* Tujara *da(ɣanɨ)*] coffee drink-NEG-PST-3PL
'Neither D. nor T. drank coffee'

b. Hungarian

(i) [Kati sem (és) Mari sem] alud-t
[Kati *sem* (and) Mari *sem*] sleep-PST.3SG

(ii) [Sem Kati sem Mari] nem alud-t
[*sem* Kati *sem* Mari] NEG sleep-PST.3SG
'Neither K. nor M. slept' (Szabolcsi 2018: 20)

c. Japanese

(i) Takashi-wa [tyuukan-siken-ni-mo kimatu-siken-ni-mo]
Takashi-TOP [midterm-exam-DAT-*mo* term.end-exam-DAT-*mo*]
ukara-nakat-ta
pass-NEG-PST
'T. didn't pass the midterm or the final' / 'For both the midterm and the final, T. didn't pass them' (Shimoyama 2011: 439)

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