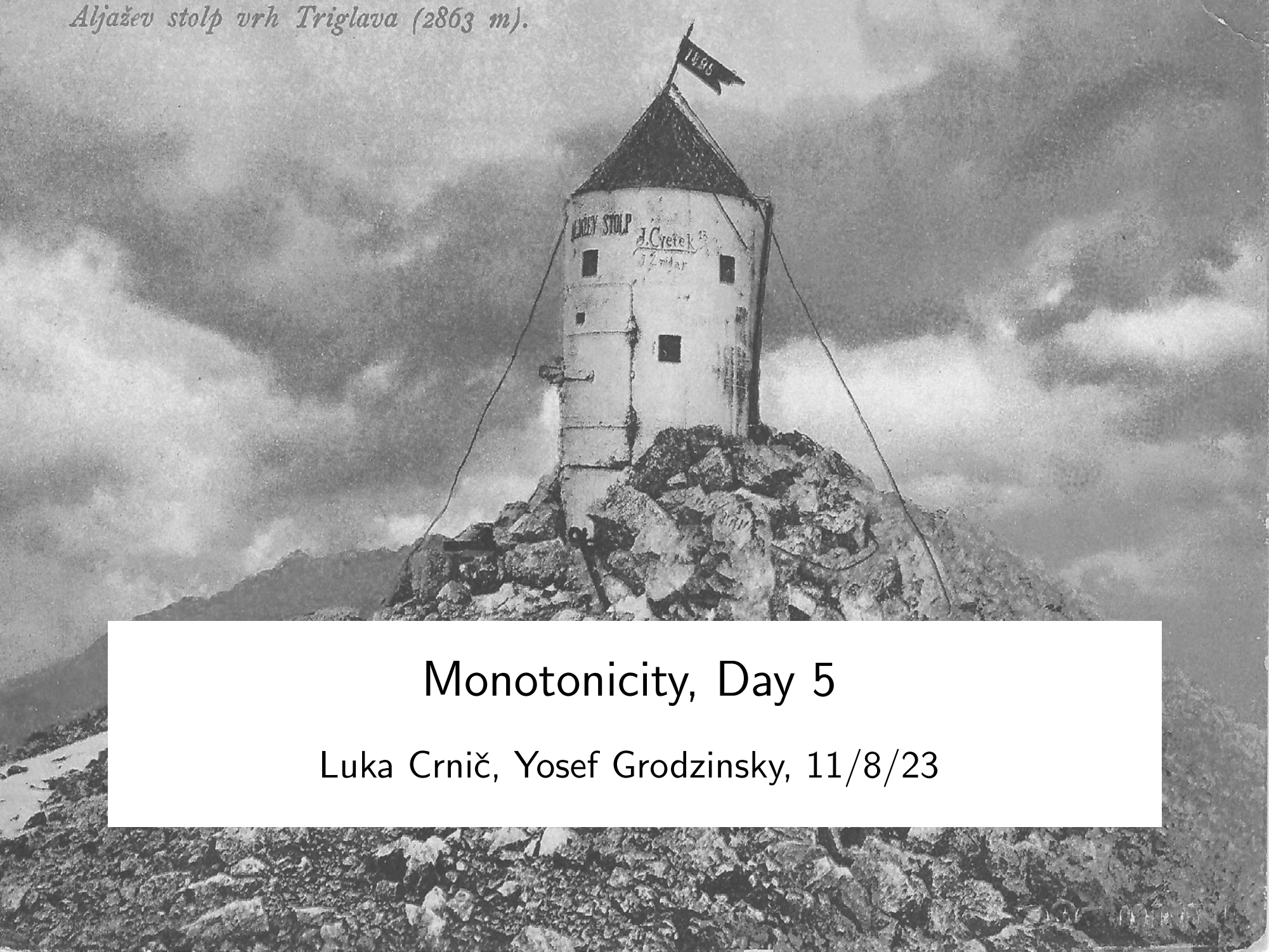


Monotonicity, Day 5

Luka Crnič, Yosef Grodzinsky, 11/8/23

the classics

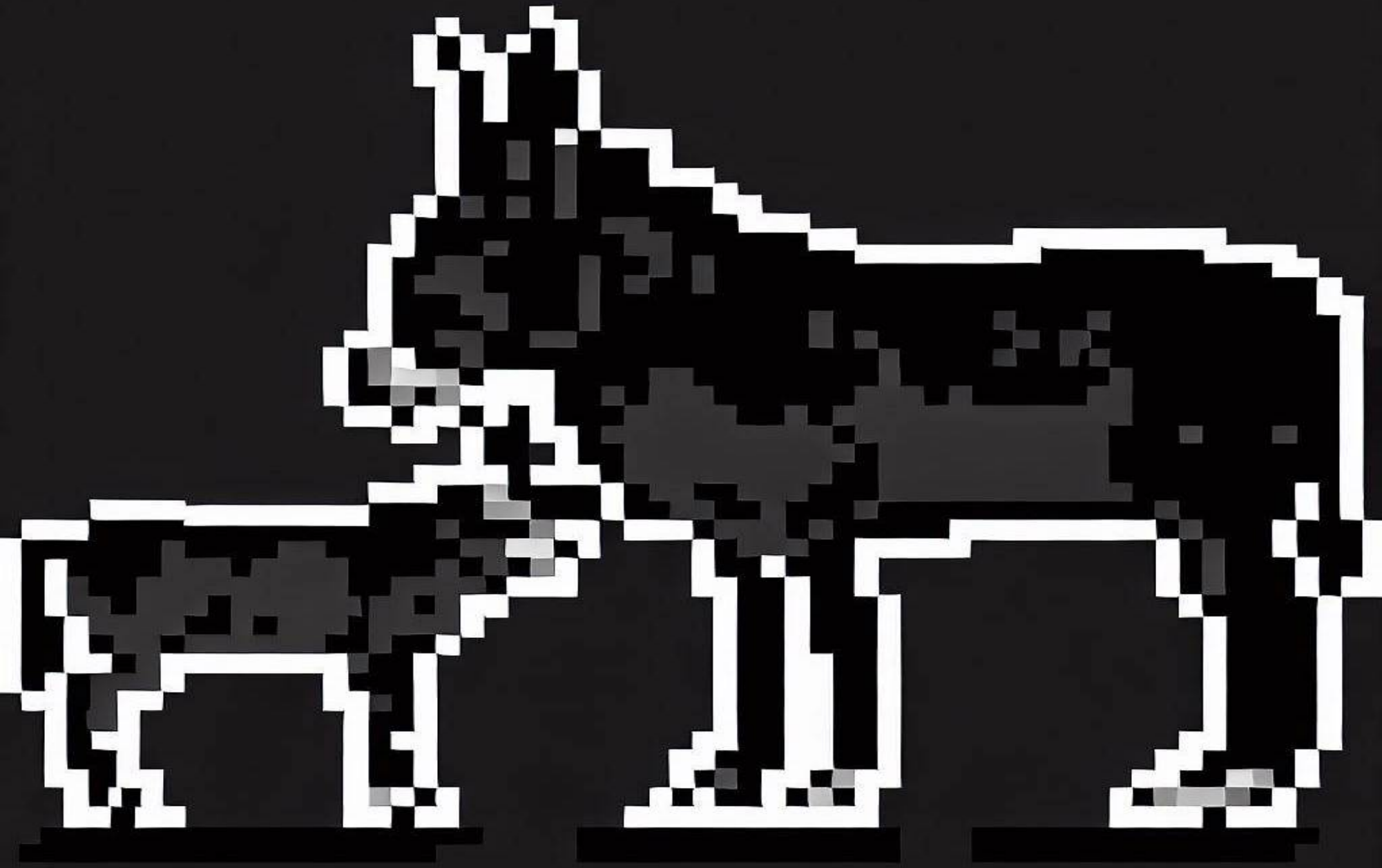
the traditional view (Seuren, Hoeksema, von Stechow, etc)

- monotonicity: DMness of (only) the *than*-clauses
- NPI licensing: NPIs are licensed (only) in the *than*-clause

(1) More people visited Spain [than ever visited England]

(2) *More people ever visited Spain [than visited England]

(but see Heim 2006, Zhang 2020, ia)



monotonicity in *than*-clauses, pt.1

quantifiers in than-clauses

(3) The dean assigned more students syntax [than a professor did]
$\not\Rightarrow / \not\Leftarrow$ The dean assigned more students syntax [than every professor did]

(4) The dean assigned more students syntax [than she did a math class]
$\Rightarrow / \not\Leftarrow$ The dean assigned more students syn [than she did every math class]

monotonicity in *than*-clauses, pt.1

conclusion - a composition puzzle

(5) The dean assigned more students syntax [than QP did]
is UM with respect to QP

(6) The dean assigned more students syntax [than he did QP]
is DM with respect to QP

an npi puzzle

(7) The admin assigned more students a class [than any professor did]

(8) The admin assigned more students syntax [than he did any other class]

disjunction in than-clauses

(9) The dean assigned more students syntax [than Adi or Gal did]
$\Rightarrow/_{\Leftarrow}$ The dean assigned more students a class [than Adi did]

(10) The dean assigned more students syntax [than he did phon or sem]
$\Rightarrow/_{\Leftarrow}$ The dean assigned more students syntax [than he did phonology]

conclusion - a variation puzzle

(11) The dean assigned more students syntax [than DisjP did]
is not UM with respect to DisjP

(12) The dean assigned more students syntax [than he did DisjP]
is DM with respect to DisjP

solving the composition puzzle

simple semantics of comparatives – inadequate meanings

(13) Gali is taller [than every girl is]

(14) $\#\{d \mid \text{every girl x: height}(x) \geq d\} \subseteq \{d \mid \text{height}(\text{Gali}) \geq d\}$
$\Leftrightarrow \#\max(\lambda d.\text{every girl x:height}(x) \geq d) < \max(\lambda d.\text{height}(\text{Gali}) \geq d)$

adequate meanings, puzzling syntax

(15) every girl x: $\{d \mid \text{height}(x) \geq d\} \subseteq \{d \mid \text{height}(\text{Gali}) \geq d\}$
$\Leftrightarrow$ every girl x: $\max(\lambda d.\text{height}(x) \geq d) < \max(\lambda d.\text{height}(\text{Gali}) \geq d)$

(cf Larson 1988, Schwarzschild & Wilkinson 2004, Heim 2006, ia)

solving the composition puzzle

decomposition of comparison in than-clauses (simplified)

(16) [than$_D$ [[max D]$_d$ Tali is ⟨d-tall]]⟩]]$_d$ (*than*-clause)

[er d]$_{d*}$ [Gali is d*-tall] (matrix clause)

(17) [λD. max$_d$(Tali is d-tall) $\in$ D] (*than*-clause)

(λd. max$_{d*}$(Gali is d*-tall)>d) = (matrix clause)

max$_d$(Gali is d-tall) $>$ max$_d$(Tali is d-tall)

note: neither [max D] nor [er ...] denote a DM function

(esp Heim 2006, etc; but see Gajewski 2009)

(18) The admin assigned more students syntax than she did QP

(19) [than$_D$ [[max D]$_d$ she assigned d-many students QP]]$_d$
[er d]$_{d*}$ [the admin assigned d*-many students syntax]

(20) [λD. max$_d$(the admin assigned d-many students QP)$\in$D)]
(λd′. max$_{d*}$(the admin assigned d*-many students syntax)$>$d') =
max$_d$(the admin assigned d-many students syntax)$>$
max$_d$(the admin assigned d-many students QP)

---

(21) [λX. max$_d$(the admin assigned d-many students syntax)$>$
max$_d$(the admin assigned d-many students QP)]
is a DM function.

(22) The admin assigned more students syntax [than he did any other class]

a resolution – composition puzzle

(23) The admin assigned more students syntax than QP did

(24) [than$_D$ [QP$_z$ [max D]$_d$ z assigned d-many students syntax]]$_d$
[er d]$_{d*}$ [the admin assigned d*-many students syntax]

(25) [λD. $[\![\text{QP}]\!]_z$(max$_d$(z assigned d-many students syntax)$\in$D)]
(λd. max$_{d*}$(the admin assigned d*-many students syntax)$>$d)

(26) $[\![\text{QP}]\!]_z\Big(\text{max}_d(\text{the admin assigned d-many students syntax})> \text{max}_d(\text{z assigned d-many students syntax})\Big)$

---

(27) [λX. X$_z\Big(\text{max}_d(\text{the admin assigned d-many students syntax})> \text{max}_d(\text{z assigned d-many students syntax})$]
is a UM function.

resolution – an npi puzzle

(28) The admin assigned more students a class [than any professor did]

an even greater challenge than free choice in modal sentences

(29) Gali is taller than any professor is.
$\Leftrightarrow$ Gali is taller than every professor is.

(30) Gali is taller than Tali or Zali is.
$\Leftrightarrow$ Gali is taller than Tali is $\wedge$ Gali is taller than Zali is.

the apparent equivalence with universal/conj alternatives should block free choice.
hence, there must be a parse on which these alternatives are not equivalent

resolution – an npi puzzle

strengthened meaning of degree predication

(31) [than$_D$ [any prof [exh [max D]$_d$ x assigned d-many students syntax]]]$_d$
[er d]$_{d*}$ [the admin assigned d*-many students syntax]

(32) $\exists$x: prof x $\wedge$ max$_d$(x assigned d-many students syntax) $>$
max$_d$(the admin assigned d-many students syntax)

universal quantifier alternative $\neq$ free choice strengthening

(33) $\forall$x: prof x $\rightarrow$ max$_d$(x assigned d-many students syntax) $>$
max$_d$(the admin assigned d-many students syntax) $\wedge$
$\forall$x,y: prof x $\wedge$ prof y $\rightarrow$ max$_d$(x assigned d-many students syntax) $=$
max$_d$(y assigned d-many students syntax)

$\rightsquigarrow$ exhaustification and the free choice inferences are possible (derivable as above)

expectation

(34) a. Gali is taller than any other girl is

b. $< >$Gali is taller than any other girls are

(35) a. Gold is worth more than anything else is

b. $< >$Gold is worth more than any blood is

there's also expectations about *any*-DPs in matrix clauses of comparatives ...

negative antonyms and npis

(36) More people visited Spain [than ever visited England]

(37) *More people ever visited Spain [than visited England]

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(38) Fewer people visited Spain [than have ever visited England]

(39) Fewer people ever visited Spain [than visited England]

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(40) Fewer people visited Spain [than visited an Asian country]
$\not\Rightarrow$ / $\not\Leftarrow$ Fewer people visited Spain [than visited every Asian country]

(41) Fewer people visited an Asian country [than visited Spain]
$\Rightarrow$ / $\not\Leftarrow$ Fewer people visited every Asian country [than visited Spain]

negative antonyms and npis

in all the *fewer* examples, a DM function c-commands npis

(42) [than$_D$ [[max D]$_d$ d-few people ever visited England]]$_d$
[er d]$_{d*}$ [d*-few people visited Spain]

is DM wrt *ever*.

(43) [than$_D$ [[max D]$_d$ d-few people visited England]]$_d$
[er d]$_{d*}$ [d*-few people ever visited Spain]

is DM wrt *ever*.

and the entailment patterns follow from our assumption about er, max, though care is needed with negative antonyms (max $\rightsquigarrow$ max-inf).

more comparatives

- the sentence is DM wrt the scope of max
- npis are acceptable in the scope of max
- other npis are acceptable due to exh (cf "free choice any")

fewer comparatives

- the matrix clause is DM wrt the scope of *few NP*
- the *than* clause is DM wrt the scope of *few NP*
- npis are licensed in the matrix and *than* clauses
- other npis are acceptable due to exh (cf "free choice any")