A fugue on disjunction and indefinites

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Exceptional scope indefinites and disjunction lack structurally parallel universal and conjuctive counterparts (e.g., Fodor and Sag 1982, Rooth and Partee 1982). On the extant approaches to alternatives and strengthening, this fact has significant repercussions for what inferences indefinites and disjunction are predicted to be able to give rise to. Crnič (2023) explores some of these predictions in the domain of donkey anaphora. This talk re-diagnoses some other puzzling patterns involving indefinites and disjunction as consequences of their ability to take exceptional scope and of such construals admitting conjunctive and universal strengthening.

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1 Two ingredients

This talk is about two independent facts and their interaction. The first fact pertains to the exceptional scope-taking abilities of indefinites and disjunction; the second fact pertains to the ability of indefinites and disjunction to give rise to, respectively, universal and conjunctive meanings in certain configurations. The remainder of the paper discusses instances of their interaction. (See Charlow 2019 for a related discussion, though one based on different assumptions, and with conclusions that are independent of our issues, but also derivable on our assumptions.)

1.1 Exceptional scope and alternatives

Disjunction and indefinites. These expressions have the ability to take scope out of islands (e.g., Fodor and Sag 1982, Rooth and Partee 1982). This is illustrated with adjunct islands in the following:

(1) If Gali or Tali gets up late, Donald is hungry.

Can convey: (G gets up late $\rightarrow$ D is hungry) $\vee$ (T gets up late $\rightarrow$ D is hungry)

(2) If a farmer gets up late, Donald is hungry.

Can convey: $\exists$x: farmer x $\wedge$ (farmer x gets up late $\rightarrow$ D is hungry)

Conjunction and universal quantifiers. These expressions are better behaved than disjunction and indefinites: they do no exhibit exceptional scope behavior (e.g., May 1977, 1985).

(3) If Gali and Tali get up late, donkeys will be hungry.

Cannot convey: (G gets up late $\rightarrow$ D is hungry) $\wedge$ (T gets up late $\rightarrow$ D is hungry)

(4) If every farmer gets up late, donkeys will be hungry.

Cannot convey: $\forall$x: farmer x $\rightarrow$ (farmer x gets up late $\rightarrow$ D is hungry)

Choice functions. Some other approaches to (exceptional) indefs/disj may suffice for resolving the puzzles discussed below as well. Some other approaches do not (e.g., Schwarzschild 2002).

(5) Let E be a non-empty set of individuals. A function f: $\mathscr{P}$(E) $\rightarrow$ E is a (simple) *choice function* iff for every A $\subseteq$ E: if A is not empty then f(A) $\in$ A.

(6) A choice function variable introduced by an indefinite or a disjunction must/can be existentially closed; *existential closure* is free and may have a contextually restricted domain.

LFs of above sentences and the described meanings derived:

(7) a. If Gali or Tali gets up late, Donald is hungry.
b. [$\exists_D$f [if [f Gali or Tali] gets up late, Donald is hungry]]
c. $\exists$f$\in$D: (f({G,T}) gets up late $\rightarrow$ D is hungry)
$\Leftrightarrow$ (G gets up late $\rightarrow$ D is hungry) $\vee$ (T gets up late $\rightarrow$ D is hungry)

(8) a. If a farmer gets up late, Donald is hungry.

b. [$\exists_D$f [if [f a farmer] gets up late, Donald is hungry]]

c. $\exists$f$\in$D: (f(farmer) gets up late $\rightarrow$ Donald is hungry)

$\Leftrightarrow$ $\exists$x: farmer x $\wedge$ (farmer x gets up late $\rightarrow$ D is hungry)

Missing alternatives. There is no universal closure over choice functions (*pace* Charlow 2019).

(MA) Existential closure over choice functions only induces domain alternatives.

(9) a. A farmer got up late.

b. [$\exists_D$f [[f a farmer] got up late]]

(10) ALT([$\exists_D$f [[f a farmer] got up late]]) =

{ [$\exists_D$f [[f a farmer] got up late]], ~~[$\forall_D$f [[f a farmer] got up late]]~~,

[$\exists_{D'}$f [[f a farmer] got up late]], ... , [every farmer got up late] }

Note that this does not preclude drawing implicatures for sentences with exceptional scope elements:

(11) If a farmer got up late, Donald was hungry.

'Weaker' implicature parse:

(12) a. [exh [$\exists_D$f [if [f a farmer] got up late, D was hungry]]] *(exh associates with f a frmr)*

b. $\Rightarrow$ it is not the case that if any farmer got up late, Donald was hungry

'Stronger' implicature parse:

(13) a. [$\exists_D$f [exh [if [f a farmer] got up late, D was hungry]]] *(exh associates with f)*

b. $\Rightarrow$ there is exactly one farmer such that if they got up late, Donald was hungry

1.2 Universal and conjunctive strengthening

Conjunctive and universal inferences. Disjunction and indefinites exhibit peculiar behavior:

(14) Gali is allowed to read book A or book B.

Can convey: $\Diamond$(Gali read book A) $\wedge$ $\Diamond$(Gali read book B)

(15) Gali is allowed to read a(ny) book.

Can convey: $\forall$x: book x $\rightarrow$ $\Diamond$(Gali read book x)

Conjunctive and universal inferences are not always available:

(16) Gali is required to read book A or book B.

Cannot convey: $\Box$(Gali read book A) $\wedge$ $\Box$(Gali read book B)

(17) Gali read book A or book B.

Cannot convey: Gali read book A $\wedge$ Gali read book B

Exhaustification and its limits. (e.g., Fox 2007, Katzir 2014)

(18) a. $[\![\text{exh}_C\ S]\!] = [\![S]\!] \wedge \forall S' \in \text{Excl}(S) \cap C: \neg[\![S']\!]$

b. $\text{Excl}(S) = \bigcap\{M \mid M \text{ is a maximal subset of ALT}(S)$ such that $\{\neg p \mid p \in M\} \cup \{[\![S]\!]\}$ is consistent$\}$

(19) a. [exh exh [allowed [Gali read book A or book B]]]

b. $\Diamond(A \vee B) \wedge \Diamond A \wedge \Diamond B \wedge \neg\Diamond(A \wedge B)$

(US) A sentence S that dominates an occurrence of disjunction or an existential quantifier may be strengthened to a conjunctive or a universal meaning by means of recursive exhaustification only if the universal or conjunctive meaning does not entail an element of Excl(S).

(e.g., Bar-Lev and Margulis 2014, Bowler 2014, Meyer 2015, Singh et al. 2016)

(20) a. $\Diamond$(G read book A) $\wedge$ $\Diamond$(G read book B) $\not\Leftrightarrow$ $\Diamond$(G read book A $\wedge$ G read book B)

b. $\Box$(G read book A) $\wedge$ $\Box$(G read book B) $\Leftrightarrow$ $\Box$(G read book A $\wedge$ G read book B)

1.3 Combination: Exceptional scope and strengthening

(MA) affects the pool of alternatives to a sentence with an exceptional disjunction or indefinite, which may allow the sentence to satisfy (US). In other words, due to a missing universal closure alternative, exceptionally-construed disjunction and indefinites may conspire with strengthening to give rise to conjunctive and universal meanings more readily.

Alternatives. Closure at different levels, substitution with quantifiers, etc.

(21) a. If Gali or Tali gets up late, Donald is hungry

b. [$\exists_{\text{D}}$f [if [f Gali or Tali] gets up late, Donald is hungry]]

(22) ALT([$\exists_{\text{D}}$f [if [f Gali or Tali] gets up late, Donald is hungry]]) =

{ [$\exists_{\text{D}}$f [if [f Gali or Tali] gets up late, Donald is hungry]],
[$\exists_{\text{D}'}$f [if [f Gali or Tali] gets up late, Donald is hungry]]
[if $\exists_{\text{D}}$f [f Gali or Tali] gets up late, Donald is hungry]]
[if Gali and Tali get up late, Donald is hungry], ... }

But is any of this effectful?

Limits. In many cases, (US) blocks strengthening:

(23) If Gali or Tali gets up late, Donald is hungry.

(24) $\forall$f$\in$D: (f({G, T}) gets up $\rightarrow$ D is hungry)

$\Rightarrow$ (($\exists$f$\in$D: f({G, T}) gets up) $\rightarrow$ D is hungry)

In many other cases, the strengthened reading can be derived without exceptional scope:

(25) a. Gali is allowed to read book A or book B

b. [exh exh [$\exists_{\text{D}} f$ [allowed [Gali read [f book A or book B]]]]]

c. [exh exh [allowed [Gali read book A or book B]]]

(26) $\forall$f$\in$D: $\Diamond$(Gali read f({book A, book B}))

$\Leftrightarrow$ $\Diamond$(Gali read book A) $\wedge$ $\Diamond$(Gali read book B)

Illustration. Crnič 2023 argues that this interaction of exceptional scope and strengthening underpins donkey sentences (in some instances of donkey sentences, strengthening is unnecessary).

Assumptions:

(27) a. Indefinites are analyzed via choice functions (or perhaps even simple movement).

b. Definites/pronouns are analyzed via choice functions (E-type! e.g., Chierchia 2005).

LF and missing alternatives, again:

(28) a. If a farmer$_i$ owns a donkey$_j$, they$_i$ feed it$_j$.

b. [exh exh [$\exists_D$f [if f a farmer owns f a donkey, f farmer feeds f donkey]]]

(29) Some innocuous or non-existent alternatives:

a. [if [$\exists_D$f [f a farmer] owns [f a donkey]], [f farmer] feeds [f donkey]]]

b. ~~[$\forall_D$f [if f a farmer owns f a donkey, f farmer feeds f donkey]]~~

Output of strengthening: strong readings of donkey anaphora.

(30) $[\![(28b)]\!] = \forall f \in D: \big(f(\text{farmer}) \text{ owns } f(\text{donkey}) \rightarrow f(\text{farmer}) \text{ feeds } f(\text{donkey})\big)$

$\Leftrightarrow \forall x,y: \text{donkey } x \wedge \text{farmer } y \rightarrow \big(\text{farmer } y \text{ owns donkey } x \rightarrow \text{farmer } y \text{ feeds donkey } x\big)$

Limits: alternatives inhibit strengthening in many cases, thankfully.

(31) a. Gali read a book. It was nice.

b. [exh exh [$\exists_D$f [Gali read f a book Conj f book was nice]]]

(32) a. $= \exists f \in D$: Gali read f(book) $\wedge$ f(book) was nice

b. $\neq \forall f \in D$: Gali read f(book) $\wedge$ f(book) was nice

(33) $\forall f \in D$: Gali read f(book) $\wedge$ f(book) was nice

$\Leftrightarrow$ $[\![$[every book$_x$ Gali read x] [Conj [every book was nice]]$]\!]$

The stage is set ...

The goal of today's talk is not to argue for this analysis of donkey sentences, but rather to study the application of the machinery – the interaction of exceptional scope and strengthening – elsewhere:

- *Probably* conditionals and proportional quantifers (Santorio 2018, Bar-Lev and Fox 2020)
- Disjunction + certain nested quantifiers (Nouwen 2018, Alxatib 2023)
- Some 'exceptional' cases of NPI licensing

2 Proportions

2.1 Conditionals

Warm-up: Simplification of Disjunctive Antecedents. (esp., Bar-Lev and Fox 2020)

(34) If the winning ticket is 70, Sarah won.

To get the proposal off the ground, a non-monotonic semantics of conditionals is needed:

(35) $[\![\text{if the winning ticket is 70, Sarah won}]\!]^{\preceq,w} =$

$$\max_{\preceq,w}(\lambda w.[\![\text{the winning ticket is 70}]\!]^{\preceq,w}) \subseteq \lambda w.[\![\text{Sarah won}]\!]^{\preceq,w}$$

If we take a conditional with a disjunctive antecedent, which gives rise to simplification inferences,

(36) If the winning ticket is 70 or it is raining, Sarah won.

a. $\Rightarrow$ If the winning ticket is 70, Sarah won

b. $\Rightarrow$ If it is raining, Sarah won

the conjunction of its disjunct alternatives will not entail the conjunctive alternative. And, as admitted by (US), recursive exhaustification yields the simplification entailment.

(37) a. If the winning ticket is 70 or it is raining, Sarah won.

b. [exh exh [if the winning ticket is 70 or it is raining, Sarah won]]

c. $\max_{\preceq,w}(\lambda w.[\![\text{the winning ticket is 70 or it is raining}]\!]^{\preceq,w}) \subseteq \lambda w.[\![\text{Sarah won}]\!]^{\preceq,w} \wedge$
$\max_{\preceq,w}(\lambda w.[\![\text{the winning ticket is 70}]\!]^{\preceq,w}) \subseteq \lambda w.[\![\text{Sarah won}]\!]^{\preceq,w} \wedge$
$\max_{\preceq,w}(\lambda w.[\![\text{it is raining}]\!]^{\preceq,w}) \subseteq \lambda w.[\![\text{Sarah won}]\!]^{\preceq,w} \wedge$
$\max_{\preceq,w}(\lambda w.[\![\text{the winning ticket is 70 and it is raining}]\!]^{\preceq,w}) \nsubseteq \lambda w.[\![\text{Sarah won}]\!]^{\preceq,w}$

Santorio's puzzle. Consider the conditional sentence in (39) in light of the context described in (38). The sentence is judged as a correct description of the context. But the sentence in (40) is not!

(38) [Context: Raffle. Sarah bought 40 tickets in a 100-ticket raffle. The tickets she bought were numbered 31 to 70. The winning ticket was just picked. We're not told which ticket won, but we hear two rumors. On the first, the winning ticket is among tickets 1 to 70; on the second, it is among tickets 31 to 100.]

(39) If the winning ticket is between 1 and 70 or between 31 and 100, probably Sarah won.

a. $\rightsquigarrow$ If the winning ticket is between 1 and 70, probably Sarah won.

b. $\rightsquigarrow$ If the winning ticket is between 31 and 100, probably Sarah won.

(40) %If the winning ticket is between 1 and 100, probably Sarah won.

The parse provided in (41) yields an undesirable meaning:

(41) a. If the winning ticket is between 1 and 70 or between 31 and 100, probably Sarah won.

b. [exh exh [if W is between 1-70 or between 31-100, probably S won]]

c. $\mathrm{Pr}\big(\lambda \mathrm{w}.[\![\text{Sarah won}]\!]^{\preceq,w} \mid \lambda \mathrm{w}.[\![\text{W is between 1-70 or between 31-100}]\!]^{\preceq,w}\big) \geq 0.5 \wedge$
$\mathrm{Pr}\big(\lambda \mathrm{w}.[\![\text{Sarah won}]\!]^{\preceq,w} \mid \lambda \mathrm{w}.[\![\text{W is between 1-70}]\!]^{\preceq,w}\big) \geq 0.5 \wedge$
$\mathrm{Pr}\big(\lambda \mathrm{w}.[\![\text{Sarah won}]\!]^{\preceq,w} \mid \lambda \mathrm{w}.[\![\text{W is between 31-100}]\!]^{\preceq,w}\big) \geq 0.5$

Diagnosis, resolution. The puzzle follows from the exceptional scope construal of disjunction.

(42) a. [exh exh [$\exists_D$f [if W is between 1-70 or between 31-100, probably S won]]]

b. $\mathrm{Pr}\big(\lambda \mathrm{w}.[\![\text{Sarah won}]\!]^{\preceq,w} \mid \lambda \mathrm{w}.[\![\text{W is between 1-70}]\!]^{\preceq,w}\big) \geq 0.5 \wedge$
$\mathrm{Pr}\big(\lambda \mathrm{w}.[\![\text{Sarah won}]\!]^{\preceq,w} \mid \lambda \mathrm{w}.[\![\text{W is between 31-100}]\!]^{\preceq,w}\big) \geq 0.5 \wedge$
$\mathrm{Pr}\big(\lambda \mathrm{w}.[\![\text{Sarah won}]\!]^{\preceq,w} \mid \lambda \mathrm{w}.[\![\text{W is between 1-70 or between 31-100}]\!]^{\preceq,w}\big) < 0.5$

$\Rightarrow$ If the winning ticket is between 1 and 70, probably Sarah won

$\Rightarrow$ If the winning ticket is between 31 and 100, probably Sarah won

$\not\Rightarrow$ If the winning ticket is between 1 and 100, probably Sarah won

2.2 Proportional quantifiers

Santorio's puzzle has been replicated in other environments (see Bar-Lev and Fox 2020, fn. 46). For example, the sentence in (44) is an acceptable description of the scenario in (43), but (45) is not.

(43) [Context: Teams A and B have 5 members each. 3 members are on both teams. The remaining 2 members per team (that is, 4 kids altogether) are on a single team.]

(44) Most kids on team A or team B are on both teams.

a. $\rightsquigarrow$ Most kids on team A are on both teams.

b. $\rightsquigarrow$ Most kids on team B are on both teams.

(45) %Most of the 7 kids are on both teams.

The resolution is the same as above: exceptional scope and strengthening.

(46) a. [exh exh [$\exists_D$f [most kids on [f team A or B] are on both teams]]]

b. $\big($$\forall$f$\in$D: card({x | kid x is on team A and team B}) / card({x | kid x is on f({team A, team B})}) $\geq$ 0.5$\big)$ $\wedge$ $\big($card({x | kid x is on team A and team B}) / card({x | kid x is on team A or team B}) $<$ 0.5$\big)$

$\Rightarrow$ Most kids on team A are on both teams

$\Rightarrow$ Most kids on team B are on both teams

$\not\Rightarrow$ Most of the 7 kids are on both teams

3 Nesting

3.1 Warm-up

Bar-Lev and Fox 2020 discuss the following type of example:

(47) Every girl is allowed to eat ice cream or cake on her birthday. Interestingly, no boy is $\triangle$.

a. $\Rightarrow$ $\forall$x: girl x $\rightarrow$ $\Diamond$(girl x eats IC)

b. $\Rightarrow$ $\forall$x: girl x $\rightarrow$ $\Diamond$(girl x eats C)

c. $\Rightarrow$ $\neg\exists$x: boy x $\wedge$ $\Diamond$(boy x eats IC $\vee$ boy x eats C)

Different parses yield the observed reading. One of them is provided in (48):

(48) a. Antecedent: [exh exh [every girl$_x$ [$\exists_D$f [x is allowed to eat [f ice cream or cake]]]]]

b. Ellipsis: [no boy$_{x,F}$ [$\exists_D$f [x is allowed to eat [f ice cream or cake]]]]

Antecedent meaning: a missing universal closure alternative affects strengthening.

(49) [every girl$_x$ [$\forall_D$f [x is allowed to eat [f ice cream or cake]]]]]

$\notin$ ALT([every girl$_x$ [$\exists_D$f [x is allowed to eat [f ice cream or cake]]]]])

(50) $[\![$(48a)$]\!]$ = $\forall$f$\in$D: every girl is allowed to eat f({ice cream, cake})

$\Leftrightarrow$ every girl is allowed to eat ice cream $\wedge$ every girl is allowed to eat cake

3.2 Universal over existential

Alxatib 2023 notes a similar pattern in other types of examples:

(51) Chris needs to allow Kim to eat salad or soup, but I don't $\triangle$.

a. $\Rightarrow$ Chris needs to allow Kim to eat salad

b. $\Rightarrow$ Chris needs to allow Kim to eat soup

c. $\Rightarrow \neg$(I need to allow Kim to eat salad or soup)

Alxatib shows that these data are problematic on the extant formulations of exhaustification (with low-scope disjunction): either you are forced to employ exh below the modal (= failure to derive the right ellipsis meaning) or you you employ exh above the modal (= failure to derive free choice).

Resolution. Exceptional scope and strengthening.

(52) a. Antecedent: [exh exh [$\exists_{\mathrm{D}} f$ [Chris needs to allow [Kim to eat [f salad or soup]]]]]

b. Ellipsis: [not$_F$ [$\exists_{\mathrm{D}} f$ [I$_F$ need to allow [Kim to eat [f salad or soup]]]]]

(53) a. [exh exh [$\exists_{\mathrm{D}} f$ [Chris needs to allow [Kim to eat [f salad or soup]]]]

b. $\forall$f$\in$D: $\Box\Diamond$(Kim eats f({salad, soup})) $\wedge$ $\neg\Box\Diamond$(Kim eats salad and soup))

3.3 Existential over universal

Ability modals. Nouwen 2018, Bar-Lev and Fox 2020 discuss free choice under ability modals:

(54) Betty can balance a fishing rod on her nose or on her chin. (Geurts 2011)

a. $\Rightarrow$ Betty can balance a fishing rod on her nose

b. $\Rightarrow$ Betty can balance a fishing rod on her chin

Nouwen / Geurts's universal analysis of ability:

(55) X can do A iff there is an action available to X that would reliably bring about A.

(56) There is a proposition p (characterizing an action by Betty) such that in all worlds where p is true, either Betty balances a fishing rod on her nose or on her chin: $\exists$p: $\forall$w$\in$p: (Pw$\vee$Qw)).

Derivation.

(57) a. [exh exh [$\exists_D f$ [able [Betty balances a fishing rod [f on her nose or her chin]]]]]

b. $\forall$f$\in$D: $\exists$p: $\forall$w$\in$p: Betty balances$_w$ fishing rod on f({B's chin, B's nose}

4 Exceptional NPI licensing

4.1 Exceptional scope NPIs

*Any NP*s have a famously restricted distribution. It can be captured well enough by (58):

(58) An occurrence of *any NP* is acceptable iff it is dominated by a constituent that is DE with respect to its domain. (cf. Kadmon and Landman 1993)

We put forward that (at least) *any NP*s also exhibit island-escaping behavior. This can be shown in two close-knit ways: (i) by showing that NPIs can give rise to readings that would require them taking exceptional scope, and (ii) by showing that NPIs can be 'rescued' from environments in which they would otherwise be unacceptable by taking exceptional scope. Both ways are discussed below.

Exceptional readings. Let us begin by looking at a variant of Kratzer (et al.) example:

(59) a. [Context: A math textbook contains 500 difficult problems. Every math grad students is required to pick a problem and study every analysis that solves it. Tali studied every analysis that solves the four-color theorem. Zali studied every analysis that solves the Poincaré conjecture. But, as always, Gali is an exception.]

b. Gali DIDN'T study every analysis that solves ANY problem mentioned in the book.

Derivation via (intermediate) exceptional scope:

(60) [neg [$\exists_D$f [[every analysis that solves [f any problem]]$_x$ Gali studied x]]]

Note that an exceptional widest scope reading would require strengthening in order to satsify the NPI licensing condition, but this is blocked due to the sentence having inhibitive alternatives:

(61) a. #[$\exists_D$f [neg [[every analysis that solves [f any problem]]$_x$ Gali studied x]]]

b. #[exh exh [$\exists_D$f [neg [[every analysis that solves [f any problem]]$_x$ Gali studied x]]]

Exceptional licensing (& readings): non-monotonicity. NPI is not licensed on the lowest scope.

(62) a. [Context: Every student had to study between 2 and 5 analyses that solve some problem mentioned in the textbook. Tali studied between 2 and 5 analyses that solve the four-color theorem. Zali studied between 2 and 5 analyses that solve the Poincaré conjecture. But, as always, Gali is an exception.]

b. Gali DIDN'T study between 2 and 5 analyses that solve ANY problem in the book.

Derivation via (intermediate) exceptional scope:

(63) [neg [$\exists_{\mathrm{D}}$f [[between 2-5 analyses that solves f any problem]$_x$ Gali studied x]]]

Exceptional licensing: singular definites. Buccola and Crnič 2021 discuss the following:

(64) a. #Gali read the book that any French author wrote.

b. Gali didn't read the book that any French author wrote.

Observed meaning: the indefinite takes an intermediate scope.

(65) $\neg\exists$x(x is a French author $\wedge$ John read the book French author x wrote)

These facts can also be observed in cases in which an NPI occurs in the complement clause:

(66) a. #Gali heard the rumor that anyone likes her.

b. Gali didn't hear the rumor than anyone likes her.

Resolution. Buccola and Crnič 2021 employed and argued for exceptional movement re (64). But the data can be captured by recourse to choice functions as well. Choice function parses:

(67) a. [not [$\exists_{\mathrm{D}}$f [Gali read the book$_x$ that f any French author wrote x]]]

b. $\neg\exists$f$\in$D: Gali read ιx(book x $\wedge$ f(French author) read x)

(68) a. [not [$\exists_{\mathrm{D}}$f [Gali heard the rumor that f any person likes her]]]

b. $\neg\exists$f$\in$D: Gali hear ιp(rumor p $\wedge$ p $\subseteq$ f(person) likes Gali)

4.2 Conditionals

Non-monotonicity puzzle. NPIs are acceptable in conditionals. (e.g., von Fintel 1999, 2001)

(69) If any student gets an A, the test was easy.

This is unexpected given our above discussion and non-monotonic semantics for them:

(70) $[\![$if any student gets an A, the test was easy$]\!]^{\preceq,w}$ =

$\max_{\preceq,w}(\lambda$w.$[\![$any student gets an A$]\!]^{\preceq,w}) \subseteq \lambda$w.$[\![$the test was easy$]\!]^{\preceq,w}$

Resolution. Universal strengthening admits licensing (no matter the scope of closure).

(71) a. [exh exh [$\exists_D f$ [if f any student gets an A, the test was easy]]]

b. [exh exh [if $\exists_D f$ f any student gets an A, the test was easy]]

c. $\forall$f$\in$D: $\max_{\preceq,w}(\lambda$w. f(student) gets an A in w) $\subseteq \lambda$w.$[\![$the test was easy$]\!]^{\preceq,w}$

Embedding under DE operators.

(72) Few of my friends would have fun at the party if either of their parents attended.

(73) [few of my friends$_x$ [$\exists_D f$ [x would have fun at the party if [f either of x's parents] attended]

a. $\Rightarrow$ few of my friends would have fun at the party if their parent1 attended

b. $\Rightarrow$ few of my friends would have fun at the party if their parent2 attended

What about other NPIs such as *ever, lift a finger* in conditionals? (cf., e.g., Heim 1984, Crnič 2014)

4.3 Predictive expressions

Will* and *would (At least) *any NP*s may surface with predictive expressions. This is puzzling.

(74) a. To get into Harvard, Gali will read any book.

b. To satiate my hunger, I would eat anything.

(75) #To get into Harvard, Gali is required to read any book.

Predictive expressions as nested quantifiers (e.g., Copley 2002, Condoravdi 2003, Kaufmann 2005):

(76) $[\![\text{FUT}]\!]^{w,i} = \lambda$p. $\forall$v $\in$ M(w, i): $\exists$j > i: p(j)(v)

Resolution. Nested quantification admits strengthening. Universal strengthening admits licensing.

(77) a. [exh exh $\exists_D$f [FUT [Gali reads [f any book]]]]

b. $\forall f \in D$: $\forall v \in M(w, i)$: $\exists j > i$: Gali reads f(book) in v at j

Disjunction and limited free choice? Disjunction seems allergic to conjunctive strengthening.

(78) To get into Harvard, Gali will do all the extracurriculars or all the AP courses.

a. ?⇒ Gali will do all the extracurriculars

b. ?⇒ Gali will do all the AP courses

(79) To get into Harvard, Gali would do all the extracurriculars or all the AP courses.

a. ⇒ Gali would do all the extracurriculars

b. ⇒ Gali would do all the AP courses

to be continued, etc.

References

Alxatib, S. (2023) Remarks on exhaustification and embedded free choice. *Natural Language Semantics*, 1–24.

Bar-Lev, M. and Margulis, D. (2014) Hebrew kol: a universal quantifier as an undercover existential. In *Proceedings of Sinn und Bedeutung*, vol. 18, 60–76.

Bar-Lev, M. E. and Fox, D. (2020) Free choice, simplification, and innocent inclusion. *Natural Language Semantics*, **28**, 175–223.

Bowler, M. (2014) Conjunction and disjunction in a language without 'and'. In *Semantics and Linguistic Theory, Volume 24*, 137–155.

Buccola, B. and Crnič, L. (2021) NPIs, intervention, and collectivity. *Semantics and Pragmatics*, **14**, 2–1.

Charlow, S. (2019) Scalar implicature and exceptional scope. URL: `https://ling.auf.net/lingbuzz/003181`. MS, Rutgers University.

Chierchia, G. (2005) Definites, locality, and intentional identity. In *Reference and Quantification: The Partee Effect* (eds. G. N. Carlson and F. J. Pelletier), 143–178. Stanford: CSLI.

Crnič, L. (2014) Against a dogma on NPI licensing. In *The Art and Craft of Semantics, Vol. 1* (eds. L. Crnič and U. Sauerland), 117–145. MIT Working Papers in Linguistics.

Crnič, L. (2023) Donkey anaphora through choice functions and strengthening. URL: `https://ling.auf.net/lingbuzz/007540`. MS, The Hebrew University of Jerusalem.

von Fintel, K. (1999) NPI licensing, Strawson entailment, and context dependency. *Journal of Semantics*, **16**, 97–148.

— (2001) Counterfactuals in a dynamic context. In *Ken Hale: a life in language* (ed. M. Kenstowicz), 123–152. MIT Press.

Fodor, J. D. and Sag, I. A. (1982) Referential and quantificational indefinites. *Linguistics and Philosophy*, **5**, 355–398.

Fox, D. (2007) Free choice and the theory of scalar implicatures. In *Presupposition and Implicature in Compositional Semantics* (eds. U. Sauerland and P. Stateva), 71–120. Palgrave Macmillan.

Geurts, B. (2011) *Quantity implicatures*. Cambridge University Press.

Heim, I. (1984) A note on negative polarity and downward entailingness. In *Proceedings of NELS*, vol. 14, 98–107.

Kadmon, N. and Landman, F. (1993) *Any*. *Linguistics and Philosophy*, **16**, 353–422.

Katzir, R. (2014) On the roles of markedness and contradiction in the use of alternatives. In *Pragmatics, semantics and the case of scalar implicatures* (ed. S. Pistoa-Reda), 40–71. Springer.

May, R. (1977) *The Grammar of Quantification*. Ph.D. thesis, MIT.

— (1985) *Logical Form: Its Structure and Derivation*. Cambridge, MA: MIT Press.

Meyer, M.-C. (2015) Generalized free choice and missing alternatives. *Journal of Semantics*, **33**, 703–754.

Nouwen, R. (2018) Free choice and distribution over disjunction: the case of free choice ability. *Semantics and Pragmatics*, **11**, 4–EA.

Rooth, M. and Partee, B. (1982) Conjunction, type ambiguity and wide scope 'or'. In *Proceedings of the First West Coast Conference on Formal Linguistics*. Dept. of Linguistics, Stanford University.

Santorio, P. (2018) Alternatives and truthmakers in conditional semantics. *The Journal of Philosophy*, **115**, 513–549.

Schwarzschild, R. (2002) Singleton indefinites. *Journal of Semantics*, **19**, 289–314.

Singh, R., Wexler, K., Astle-Rahim, A., Kamawar, D. and Fox, D. (2016) Children interpret disjunction as conjunction: Consequences for theories of implicature and child development. *Natural Language Semantics*, **24**, 305–352.