Wide Scope Indefinites

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PLIN0056 Semantic Research Seminar 2022: Week 1

Tentative Plan

Week 1 7 October (today): Referential indefinites and wide scope

- Reading: Schwarzschild 2002
- Optional reading: Fodor & Sag 1982, Abusch 1993
- Week 2 14 October: Choice functions
 - Reading: Schwarz 2011
 - Optional reading: Reinhart 1997, Winter 1997, Kratzer 1998, Matthewson 1998, Geurts 2000, Chierchia 2001, Schwarz 2001, Schlenker 2006
- Week 3 21 October: Pied-piping and scope
 - Reading: Charlow 2020
 - Optional reading: Demirok 2019: Ch. 4
- Week 4 28 October: Indefinites and presuppositions
 - Reading: Geurts 2010
 - Optional reading: Van Geenhoven 1998, Onea 2015
- Week 5 4 November: A neo-Heimian theory of indefinites with exceptional scope
 - Reading: von Fintel 1998, Heim 2011
 - Optional reading: Heim 1982

Other readings

- Historical account: Ruys 2001
- Detailed overview articles: Ruys & Spector 2017, Ebert 2021

1 Restrictions on quantifier scope

Classical scope ambiguity:

- (1) Every boy watched a French film.
 - a. For every boy *x*, there is a French film that *x* watched. $\forall x[B(x) \rightarrow \exists y[F(y) \land W(x, y)]]$ (Surface scope; every > a)
 - b. There is a French film y and every boy watched y. $\exists y [F(y) \land \forall x [B(x) \to W(x, y)]]$ (Inverse scope; a > every)
- (2) Some man is standing in front of every building.
 - a. There is some man x and x is standing in front of every building. $\exists x[M(x) \land \forall y[B(y) \rightarrow S(x, y)]]$ (Surface scope, some > every)
 - b. For every building y, there is some man standing in front of y. $\forall y[B(y) \rightarrow \exists x[M(x) \land S(x, y)]]$ (Inverse scope; every > some)

Quantifier scope in natural language is constrained.

1.1 Scope islands

Generally, finite clauses and coordinate structures are *scope islands*. E.g., the following sentences don't have inverse scope readings.

(3)	a.	Somebody met a man who has watched every French film.		
		(*every > some		
	b.	Somebody read every novel and watched TV before going to bed.		
		(*every > some		
	c.	The professor hopes that no student will pass. $(*no > hope$		
	d.	If no student succeeds, I will be particularly happy. $(*no > if$		
Note ings.	that	there are some exceptions: the following seem to have inverse scope read		
(4)	a.	I demanded that you read not a single book. (Fox 2003: p. 85		
	b.	Determine whether each number in the list is even or odd.		
		(Szabolcsi 2010: p. 107		
	c.	Someone is always willing to believe that every politician is corrupt.		
		(Reinhart 1997 : p. 349		
	d.	Every child who was born to every famous woman became famous too.		
		(Winter 1997: p. 417		
	e.	A delegate who was elected from each district was disqualified.		
		(Winter 1997: p. 417		

f. Somebody said that he could jump over every frog that Jessie did. (Syrett 2015: p. 585)

Paraphrases:

- (5) a. No book is such that I demanded that you read it.
 - b. For each number *x* in the list, determine whether *x* is even or odd.
 - c. For every politician x, someone is always willing to believe that x is corrupt.

- d. Every famous woman x is such that every child who was born to x became famous.
- e. For each district *x*, a delegate who was elected from *x* was disqualified.
- f. For every fog *x* that Jessie jumped over, someone said that he could jump over *x*.

Another scope island involves 'inverse linking', which is only possible with certain prepositions: (6a) has a someone > every reading, but not (5b) (May & Bale 2006).

- (6) a. Someone from every city despises it. (May 1977: p. 149)
 - b. Someone with every known skeleton key opened this door.

(May & Bale 2006: p. 643)

(*every > a)

Exercise: Which prepositions allow inverse scope??

1.2 Scope freezing

'Scope freeing effects' in double object constructions in English (Larson 1990: p. 603f):

(7) You showed a child every picture.

Compare:

(8) a. You showed a picture to every child.b. You showed every picture to a child.

1.3 Semantic constraints

Inverse scope readings are harder with downward entailing quantifiers (cf. Mayr & Spector 2012).

(9) A PhD student presented every paper.

(10)	a.	No PhD student presented every paper.	(*every > no)
	b.	A PhD student presented no paper.	(*no > a)

2 Indefinites with exceptional scope

The classical analysis of indefinites as existential quantifiers (Russell 1905; see Heim 2011 for an overview).

- (11) a. [A cat entered] = 1 iff there is a cat that entered.
 - b. \llbracket **Some dogs barked** $\rrbracket = 1$ iff there are some dogs that barked.

We'll come back to the question of what counts as an indefinite.

Fodor & Sag 1982 point out that indefinite noun phrases show peculiar scope properties: their quantificational scope is not restricted, unlike other quantificational expressions like universal quantifiers and *no NP*.

2.1 Scope islands

- (12) If-clause
 - a. If every relative of mine dies, I will inherit a house. (*every > if)
 - b. If some relative of mine dies, I will inherit a house. (Reinhart 1997: p. 342)

(13) *Coordinate structure*

a. Somebody read every novel and watched TV before going to bed.

(*every > some)

- b. Everybody read some novel and watched TV before going to bed.
- (14) *Inverse linking*
 - a. A show with every young performer that I like was criticised.

(*every > a)

b. Every show with a young performer that I like was criticised.

More examples from the literature:

- (15) a. John overheard the rumor that a student of mine had been called before the dean.
 - b. John overheard the rumor that each of my students had been called before the dean. (Fodor & Sag 1982: p. 369)
- (16) a. If a friend of mine from Texas had died in the fire, I would have inherited a fortune.
 - b. If each friend of mine from Texas had died in the fire, I would have inherited a fortune.
 - c. If no friend of mine from Texas had died in the fire, I would have inherited a fortune. (Fodor & Sag 1982: 369f)
- (17) a. Each teacher overheard the rumor that a student of mine had been called before the dean.
 - b. Each teacher thinks that for a student I know to be called before the dean would be preposterous. (Fodor & Sag 1982: p. 374)

According to Fodor & Sag 1982, (18a) is narrow scope only, (18b) is ambiguous, (18c) favours the wide scope reading.

- (18) a. This producer believes that every actor in our company is too fat to appear in public.
 - b. This producer believes that an actor in our company is too fat to perform in public.
 - c. This producer believes that an actor in our company that he used to know in Arkansas before the war despises him. (Fodor & Sag 1982: 368f)

Note that *there* constructions fix scope (Fodor & Sag 1982).

- (19) a. If some relatives are dead, John will be happy.
 - b. If there are some dead relatives, John will be happy.

But adding *certain* will enable a wide scope reading, as pointed out by Richard Breheny in class:

(20) If there is a certain dead relative of John's, he will be happy.

It is alleged that there are two kinds of wide scope readings (Endriss 2009, Schwarz 2011), and expressions like *certain* are necessary to get a *functional* reading (see also Cresti 1995: §3.2.2). This might be part of this phenomenon. We'll get come back to the two types of wide scope readings later.

See Reinhart 1997 for tests using sluicing and *wh*-in-situ.

Fodor & Sag 1982 also mention some observations about VP ellipsis but this has been criticised (see Abusch 1993: fn. 3 and Ruys & Spector 2017: §3.2.2; see also Elliott & Sudo 2016 for facts that are relevant).

2.2 Scope freezing

- (21) a. I showed a child every painting by Van Gogh. (*every > a)
 b. I showed every child a painting by Van Gogh.
- (22) a. The professor assigned some PhD student every article in this volume. (*every > some)
 - b. The professor assigned every phD student some article in this volume.

2.3 Semantic constraints

(23) a. No PhD student presented every paper about quantifiers. (*every > no)
 b. No PhD student presented a paper about quantifiers. (It was my paper!)

3 What are indefinites?

In addition to *a NP* and *some NP*, NPs modified by bare numerals, *several, many*, etc., also give rise to exceptional wide scope.

- (24) a. If two relatives of mine die, I will inherit a house.
 - b. If several relatives of mine die, I will inherit a house.
 - c. If many relatives of mine die, I will inherit a house.

Ruys' observation Ruys 1992 made an important observation that under the wide scope readings of (24), the distributivity still take scope inside the *if* clause. So (24a) means (25a), rather than (25b).

- (25) a. Two relatives of mine are such that if both of them die, I will inherit a house.
 - b. There are two relatives of mine, each x of whom is such that if x dies, I will inherit a house.

Some have questioned this observation with counterexamples:

(26) If some relatives of mine invite me for dinner, I will panic.

(Geurts 2010: p. 134)

(27) A: How many relatives will bequeath Paul a fortune if they die?

B: If THREE relatives of Paul die, Paul will inherit a fortune.

(Endriss 2009: p. 111)

At the same time, Winter 1997 points out that there's some truth to Ruys' generalisation nonetheless.

- (28) a. If three women gave birth to John then he has a nice mother.
 - b. Every artist who was born in three cities became famous.

(Winter 1997: p. 417)

Van Geenhoven 1998: pp. 82-83 discusses this in bit more detail. She points out that we need to be careful with the interpretation of the conditional: it's either universal/generic, or existential (a *when*-like interpretation). And under a wide scope reading, there's no way to have the universal/generic reading, because you can only die once. In fact, with repeatable events, it's easy to get the wide scope distributive reading:

(29) If two relatives of mine show up at my place, I pretend that I am not at home. (Van Geenhoven 1998: p. 83)

But this is at odds with some people's intuitions who disagree with Ruys and with the observation by Endriss 2009. We'll come back to this issue.

It seems to be a consensus that modified numerals don't give rise to exceptional wide scope, unlike bare numerals (Cresti 1995: p. 13, Reinhart 1997: §6.4, Ebert 2021: p. 5, Ruys & Spector 2017: §8):

- (30) a. If at least two relatives of mine die, I'll inherit a fortune.
 - b. If more than two relatives of mine die, I'll inherit a fortune.
 - c. If between two and five relatives of mine die, I'll inherit a fortune.
 - d. If at most five relatives of mine die, I'll inherit a fortune.
 - e. If less than five relatives of mine die, I'll inherit a fortune.

Also, bare plurals in English always take narrow scope (Carlson 1977, van Geenhoven 1998, Dayal 2011).

- (31) a. If relatives of mine die, I'll inherit a fortune.
 - b. If some relatives of mine die, I'll inherit a fortune.
- (32) a. Everyone watched French movies.
 - b. Everyone watched some French movies.

Van Geenhoven 1998 observes that incorporated nouns in West Greenlandic and German split topics show similar interpretive properties.

In addition, it is considered that not all indefinites are made equal, e.g., the following two don't mean the same thing (see also Schwarz 2001, Endriss 2009: §3.3, Ionin 2010, Schwarz 2011: §4, Ionin 2015).

- (33) a. No boy tried every dish that a certain female relative of his had made.
 - b. No boy tried every dish that a female relative of his had made.

(Schwarz 2011: p. 893)

(33a) has a 'functional reading', (33b) doesn't, e.g. no boy tried every dish that his

mother had made, but some tried every dished that his sister made.

According to Schwarz 2001, *a certain NP* gives rise to a functional reading but *a NP* and *some NP* don't. Obviously, this needs an analysis. Note that some examples in the literature contain *a certain NP*, and we should check if it's crucial.

4 Referential indefinites

Fodor & Sag 1982 propose an ambiguity account: Indefinites have a *quantificational reading* and a *referential reading*. They see this as a lexical ambiguity.

- The quantificational reading is the good ol' existential reading. And it obeys the scope constraints just as much as other quantifiers do.
- The referential reading is similar to a demonstrative phrase with a 'private pointing' that the hearer doesn't see. Under the referential reading, an indefinite *directly refers* to a particular entity.

That the quantificational reading exists is obvious: The narrow scope readings of indefinites in sentences like (34) can only be accounted for with it.

- (34) a. No student read a book.
 - b. I didn't see a dog.

Suppose that an indefinite has a referential reading. Then, like proper names, it will not take scope, or to put it differently it will take maximally wide scope.

(35) If some relative of mine dies, I will inherit a fortune. (Reinhart 1997: p. 342)

Their main argument for the ambiguity account is conceptual in nature:

- For a simple sentence like (36), there is no convincing argument for the ambiguity.
 - (36) A dog is barking.
- But one would need "complex and *ad hoc* additions to the general theory of scope and variable binding" (Fodor & Sag 1982: p. 357) to account for wide scope readings with the quantificational reading alone.
- This is only a conceptual argument, e.g., von Stechow 2000 considers the possibility that 'existential quantifiers' do not respect the scope constraints. Schwarz 2011 concludes that there isn't conclusive empirical evidence against this analysis.

5 Intermediate Scope Readings

As empirical support for their claim, Fodor & Sag 1982 remark that wide scope indefinites always take maximally wide scope, and there is no *intermediate scope readings* for sentences like (37).

- (37) a. Each teacher overheard the rumor that a student of mine had been called before the dean.
 - b. Each teacher thinks that for a student I know to be called before the dean would be preposterous. (Fodor & Sag 1982: p. 374)

While the judgments reported here seem to be generally shared, it turns out that there are examples that do have intermediate scope readings.

In fact, Fodor & Sag 1982 themselves present (38), remarking that the narrowest scope reading is hard, but the intermediate scope reading is possible. They don't really explain it and make a vague remark on the semantics and pragmatics of *certain*.

(38) Tom said that Sandy believes that a certain boy has been cheating.

(Fodor & Sag 1982: p. 362)

The literature contains a lot of examples with intermediate scope readings. E.g., Kratzer 1998 points out that changing *mine* to *his* in (37a) enables an intermediate scope reading.

(39) Every teacher overheard the rumor that a student of his had been called before the dean. (Kratzer 1998: p. 166)

Similarly:

(40) Every professor rewarded every student who read a book he had recommended. (Abusch 1993: p. 90)

Due to the bound pronoun *he*, the wide scope reading is out for independent reasons. The following situation makes the intermediate scope reading true, while the narrow scope readings false.

- (41) a. Professor A recommended Book 1 and Book 2 and rewarded every student who read Book 1, but didn't reward students who read Book B or any other book.
 - b. Professor B recommended Book 2 and Book 3 and rewarded every student who read Book 2, but didn't reward students who read Book 3 or any other book.
 - c. Professor C recommended Book Book 3 and Book 4 and rewarded every student who read Book 3, but didn't reward students who read Book 4 or any other book.

Since the sentence is judged as true in this situation, there is an intermediate scope reading.

Sanity check: Contrast (41) with (42).

(42) Every professor/Professor Smith rewarded every student who read every book he had recommended.

If *every* could take scope outside the relative clause, it would result in a stronger reading. Such a reading is unavailable.

Crucially, Fodor & Sag 1982 has no way of deriving intermediate scope readings.

More examples of the same kind from the literature:

- (43) a. Each choreographer believes that it would be damaging for a dancer of his to quit the company.
 - b. Each choreographer believes that it would be damaging for almost every dancer of his to quit the company. (Abusch 1993: p. 92)
- (44) a. Every professor got a headache whenever a student he hated was in class.
 - b. Every professor got a headache whenever there was a student he hated in class. (Abusch 1993: p. 95)

You might think that this is something about bound pronouns (cf., Winter 2001: p. 119) but there are examples without bound pronouns (at least on the surface).

- (45) a. Each student has to come up with three arguments which show that some condition proposed by Chomsky is wrong.
 - b. Everybody told several stories that involved some member of the Royal family. (Farkas 1981: p. 64)
- (46) a. Each professor had a dream that a famous football player ran for President.
 - b. Each author in this room despises every publisher who would not publish a book that was deemed pornographic. (King 1988: p. 434)
- (47) a. At most four committee members resisted a proposal that a candidate be turned down.
 - b. At most four committee members resisted a proposal that every candidate be turned down. (Abusch 1993: p. 92)
- (48) A: John is a total neurotic. He got so worked up when Chomsky gave a talk.B: Big deal. *Everybody* got nervous when *some speaker* talked.
 - B': Somebody got nervous when almost every speaker talked.¹

(Abusch 1993: p. 94)

- (49) a. Every gambler will be surprised if one horse wins.²
 - b. Every purported miracle attributed to Moses would have been less impressive if a now uncontroversial scientific theory had been known at the time.
 - c. Every one of them moved to Stuttgart because a woman lived there. (Abusch 1993: p. 94)
- (50) a. Most linguists have looked at every analysis that solves some problem.
 b. Each student has to find all arguments in the literature which showed that some condition proposed by Chomsky is wrong.

(Reinhart 1997: p. 346)

- (51) a. Every movie director is happy to direct every film that features some actor.
 - b. Every country's security will be threatened if some building is attacked

¹Abusch 1993: fn. 10 remarks that this sentence sounds better with *every*, which would be another exception to the finite clause island constraint.

²Abusch 1993: fn. 11 observes that the intermediate scope reading of this sentence is not possible with a, but ok with *some*.

by terrorists.

(Winter 1997: p. 431)

(52) John wasn't examined by every professor competent on some problem. (Schwarz 2011: p. 889)

Examples with donkey anaphora:

- (53) a. When everybody an agent works with trusts him, he is usually a traitor.
 - b. Rarely does every critic who reviews a book by Henry Miller like it.

(Abusch 1993: p. 93)

- (54) a. Every critic who reviews each and every book that some author writes quickly grows sick of him.
 - b. Every country whose security is threatened if a building is attached by terrorists protects it well.
 - c. Whenever Beatrix overhears the rumor that some politician is corrupt, the poor slob loess his job. (Ruys & Spector 2017: p. 23)

6 Singleton indefinites

Schwarzschild 2002 develops a more sophisticated theory of referential indefinites, which can derive (certain) intermediate readings.

6.1 Implicit domain restriction

Schwarzschild 2002 analyses all indefinites as existential quantifiers and assumes that they respect the scope constraints.

The crucial assumption is that the domain of quantification for quantifiers, including indefinites, can be implicitly restricted. This is a reasonable assumption for *the*, *every*, *all*, *most*, etc.

- (55) *Context: We are at UCL.*
 - a. The students are really diverse, but the professors are not.
 - b. Obviously not every student lives in London.
 - c. Not all students are British.

The implicit restriction interacts with grammatical operators.

- (56) a. At these three universities, the students are really diverse.
 - b. At each university, not every student is British, but every professor is British.
 - c. In 10 years, the students will be more diverse.

If indefinites are quantifiers, they should also come with implicit domains. And there's evidence that this is so.

- (57) *Context: We are at UCL.*
 - a. There are some students from Japan.
 - b. I've never met a student from Bulgaria.
 - c. Are there many professors from Japan?

6.2 Indefinites with singleton domains

Suppose that the domain of an indefinite can be very restricted. If the domain is a singleton, the indefinite basically functions as a referential term.

(58) A man entered. $\exists x \in D[M(x) \land E(x)]$

If $D = \{a\}$, then (58) will be equivalent to $M(a) \wedge E(a)$, so we get a referential indefinite.

Such *singleton indefinites* look as if they take maximal scope:

(59) No student has watched a French film Phil likes.

$$\neg \exists x \in D'[S(x) \land \exists y \in D[F(y) \land W(x, y)]]$$

If $D = \{a\}$, then this is equivalent to $\neg \exists x \in D'[S(x) \land D[F(a) \land W(x, a)]]$, which means that no student has watched *a*, which is a French film. Similarly:

(60) Every man loves some woman.

$$\forall x \in D'[M(x) \rightarrow \exists y \in D[W(y) \land L(x, y)]]$$

If $D = \{a\}$, then this is equivalent to $\forall x[M(x) \rightarrow [W(a) \land L(x, a)]]$, meaning every man loves the same woman a.

Schwarzschild 2002 points out that singleton indefinites do exist. Suppose that Phil only said of one movie that it was his favourite. We do get the scoping effect as predicted.

(61) Everyone at the party voted to watch a movie that Phil said was his favourite. (Schwarzschild 2002: p. 292)

Since the indefinite never scopes out, this account is unproblematic with respect to Ruys' observation.

(62) If two of Mary's relatives die, M will inherit a fortune.

For the sake of illustration, let's assume the material implication analysis of the conditional:

(63)
$$(\exists x \in D[2(x) \land R^*(x,m) \land D^*(x)]) \to I(m)$$

The wide scope reading of this is derived with the domain containing a single plurality, e.g., $D = \{a \sqcup b\}$, where *a* and *b* are relatives of Mary's, then (63) amounts to: $D^*(a \sqcup b) \rightarrow I(m)$.

Note that he would have to say that the domain of an indefinite can be restricted even when it's in a partitive with a numeral like (64).

(64) If two of my 10 relatives die, I'll inherit a fortune.

Here, indefinites and quantifiers (that are not upward monotonic in the restrictor) seem to diverge.

- (65) a. Each of my 10 relatives died in the accident.
 - b. None of my 10 relatives died in the accident.
 - c. Most of my 10 relatives died in the accident.

6.3 Intermediate scope

So far the theory is not so different from Fodor & Sag 1982, except that we've gotten rid of the lexical ambiguity. The crucial extra advantage of this theory is that it derives intermediate scope readings.

Key observation: quantifiers bind into implicit domains of quantification.

- (66) a. In most of John's classes he fails exactly three Frenchmen.
 - b. Every farmer remembers at least one year when every crop failed.
 - c. Many an overzealous linguist has at one time or another mistakenly believed that every outstanding problem could be solved by the correct application of the latest technical innovation.

(Schwarzschild 2002: p. 296)

- (67) a. In all the PhD programmes here, not every student is British.
 - b. Every department reported that most professors experienced some form of harassment last year.

For instance, (67a) can be analysed as (68).

(68) $\forall x \in D'[P(x) \to \neg \forall y \in D_x[S(y) \to B(y)]]$ where D_x is the students/people in programme x

Such 'functional domains' should be available for indefinites too. If an indefinite has a singleton domain for each value of the variable its domain is dependent on, we will get an intermediate reading.

(69) Every boy ate all the cookies that a girl in his class brought. $\forall x \in D'[B(x) \rightarrow \forall y \in D''[(C(y) \land \exists z \in D_x[G(z) \land B(z, y)]) \rightarrow A(x, y)]$

Suppose that for each boy x, D_x is a singleton set, containing some particular girl in x's class. Then, (69) will mean: For each boy x, x ate all the cookies that that girl in x's class brought, which is the intermediate reading.

6.4 Problem 1: Overgeneration

According to this theory, the *there*-construction shouldn't necessarily fix the scope.

- Indefinites in *there*-sentences can have implicit domain restriction.
 - (70) a. *Context: In my class*
 - Last year, there were some students who worked on Croatian.
 - b. Every department head reported that there are some undergraduate students who are unhappy about the first-year courses.
- A movie that Phil likes can get exceptional wide scope.
 - (71) Every boy smiled at every adult who voted for a movie that Phil likes.

- Combining the two, we'd expect *a movie that Phil likes* in *there*-sentences to be able to take exceptional wide scope, but this prediction doesn't seem to be borne out.
 - (72) a. If there's a movie that Phil likes on Netflex, I'll pay for it.
 - b. No one is paying for a subscription service on which there is a movie that Phil likes.

Also, it's unclear how to block (certain) modified numerals from taking exceptional wide scope.

- *Between 5 and 10 students* can have implicit domain restriction.
 - (73) a. *Context: Talking about our MA programme.* I don't remember the exact number, but between 5 and 10 students ran experiments last year.
 - b. In each of these classes, between 5 and 10 students are from Russia.
 - c. Every programme director reported that each year, between 5 and 10 students drop out for financial reasons.
- But *between 5 and 10 students* cannot take exceptional wide scope.
 - (74) a. If between 5 and 10 students want to run experiments, then the department can cover the cost.
 - b. No student is taking a course that has between 5 and 10 students from Russia.

Similarly for bare plurals:

- Bare plurals can have implicit domain restriction.
 - (75) *Context: Talking to my colleague.*
 - a. Last year we asked PhD students to teach the statistics course.
 - b. In every programme, some professors are currently working with PhD students.
- If the domain can be a singleton set with a plural entity, there should be a 'wide scope' reading.
 - (76) a. If relatives of mine die, I'll inherit a fortune.
 - b. I showed no child paintings by Van Gogh.

Cf.

- (77) a. If two relatives of mine die, I'll inherit a fortune.
 - b. I showed no child two paintings by Van Gogh.

6.5 **Problem 2: Undergeneration**

The theory also undergenerates (Ruys & Spector 2017).

(78) John wasn't examined by every professor who is competent on some problem. (Ruys & Spector 2017: p. 32)

This sentence has an intermediate scope reading wan't > some > every, (79a). We want to derive it by domain restriction in (79b).

- (79) a. $\neg \exists x [B(x) \land \forall y [(P(y) \land C(y, x)) \rightarrow E(y, j)]]$ b. $\neg \forall y \in D'[P(y) \rightarrow \exists x \in D_y [B(x) \land C(y, x) \land E(y, j)]]$
 - If no matter what y is, $D_y = \{a\}$, then (79b) is equivalent to the widest scope reading.
 - If for each y, D_y is a (different) singleton set, then that's a narrow scope reading with a restriction on *some*. E.g., it'll be true in (80), but the intended intermediate scope reading is false.
 - (80) a. Professors A, B, and C are competent only on Problem 1.
 - b. Professors D and E are competent only on Problem 2.
 - c. No other professors are competent on any problem.
 - d. Professors A, B, and C examined John, Professors D and E didn't.
 - Note that the intermediate scope reading can involve a large domain for *some problem*: There is no problem whatsoever such that John was examined by every professor who is competent on it.
 - Negation doesn't bind a variable, so the indefinite's domain cannot be directly dependent on it.

A related issue arises with (81).

(81) No boy ate all the cookies that a girl in his class brought.

This sentence can receive the intermediate scope reading, no > a > all, (82a). But this cannot be derived from (82b) by domain restriction.

- (82) a. $\neg \exists x [B(x) \land \exists y [G(y,x) \land \forall z [(C(z) \land R(y,z)) \rightarrow A(x,z)]]]$ b. $\neg \exists x \in D'[B(x) \land \forall z \in D''[(C(z) \land \exists y \in D_{x,z}[G(y,x) \land R(y,z)]) \rightarrow A(x,y)]]$
 - If for each x and for each z, $D_{x,z} = \{a\}$, then that's the maximal scope reading.
 - We could have: for a given value of x, $D_{x,z}$ is the same singleton set for each value of z, and for different values of x, it is a different singleton. This will scope the indefinite above *every*, but it weakens the truth-conditions: No boy is such that there's a *particular girl* such that he ate all the cookies she brought.
 - As in the previous case, the intermediate scope reading can have a stronger truth-condition: For no boy, is there any girl such that he ate all the cookies she brought.

7 Problem 3: Scalar Implicature

How can we derive the scalar implicature of the 'wide scope' reading of (83) (Charlow 2019)?

(83) If some of my relatives die, I will inherit a fortune.

The implicature being: \neg (each of my relatives is such that if they die, I will inherit a fortune).

The alternative with *all*:

- (84) If all of my relatives die, I will inherit a fortune.
 - If *all* in (84) has the same singleton domain, its meaning will be entailed, so no scalar implicature will be derived.
 - If it's domain can be different to (83) and contain more things, a scalar implicature could potentially be derived, but that would be the negation of (84). It depends on one's view on the semantics of conditionals whether this is compatible with the assertion, but in any case, it won't be the inference we want.

Basically, we would need a wide scope universal as the alternative. Note that the distributivity has to take wide scope as well, contrary to Ruys' observation, because if it's narrow scope, the implicature will be merely: \neg (the entirety of my relatives is such that if they all die, I will inherit a fortune). This doesn't seem to be an inference of the sentence.

As Charlow 2019 argues, this is an issue for most theories of wide scope indefinites, including Fodor & Sag 1982 and choice function theories.

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