Lecture 3 Seminar: propositional attitudes 10/10/2022

**Intensional independence of DPs, third readings and world variables**

## 1. World variables: review

### 1.1 The core arguments for world variables

STI – the traditional scope theory of intensionality (STI) for DPs (see Russell 1905; Montague 1973), according to which a DP can have a de re reading with respect to an intensional operator only if it occupies a higher position at LF.

(1) Mary thinks that John likes a linguist.
Context: Mary said that she thinks that John likes Ann. I know that Ann is a linguist. Mary does not know anything about Ann's job.

(2) [[a linguist] 1 [Mary thinks that John likes $t_1$]]

Several counterexamples led people to propose alternative mechanisms: world variables or situation pronouns (Percus 2000) or actuality operators (Kamp 1971; Cresswell 1990) in the syntax of DPs.

The STI system makes 2 predictions:

1) If a movement of a DP to a position higher than some operator is impossible, then this DP can only get de dicto reading with respect to this operator.

2) There are only 2 options: a DP can either have de re or de dicto reading with respect to an operator.

Both claims have been challenged in the literature.

**Third readings**

Fodor (1970) discussed examples like (3).

(3) Mary wants to buy a hat just like mine.

Fodor observes that (3) has three readings, which she labels "specific *de re*," "non-specific *de re*," and "non-specific *de dicto*."

(i) "specific *de re*": Mary wants to buy a particular hat which happens to be exactly like mine. She does not know what kind of hat I have, she shows me this hat at a store window.

(ii) "non-specific *de dicto*": Mary likes to copy my style and she just wants to buy a hat that looks exactly like mine.

And there is the so-called **'Third reading'**:

(iii) "non-specific *de re*": Mary's desire is to buy some hat or other, and the only important thing is that it be a Red Sox cap. Unbeknownst to her, my hat is one of those as well.

This reading is not captured by the movement story. If we move 'a hat just like mine out of the scope of the intensional verb, we will get the first reading: it would require for Mary to have a specific hat in mind.

(4) [a hat just like mine] 1 [Mary wants [PRO to buy $t_1$]]

If we leave below 'wants' like in (5), we will get the regular de dicto reading.

(5) [Mary wants [[a hat just like mine] 1 PRO to buy $t_1$]]

What we want is to evaluate the predicate 'hat just like mine' in the actual world (transparently), but the quantificational force introduced by 'a' should be below the verb 'wants.

The solution to Fodors's example:

(6) [1 Mary wants $w_1$ [2 [a hat just like mine $w_1$ ] 3 [PRO to buy $w_2$ $t_3$]]

- 'a hat just like mine' remains inside the embedded clause, so we are not talking about a specific hat
- the world variable that comes with the predicate 'hat just like mine' is $w_1$, it is bound by the matrix abstractor.
- thus, this predicate will be evaluated with respect to the actual world (thus, from my speaker's perspective).

**No movement from a finite clause**

(7) Some politician will address every problem.

Reading 1: every problem> some politician

Reading 2: some politician > every problem

(8) Some politician thinks that she will address every problem.

Reading 1:*every problem> some politician

Reading 2: some politician > every problem

**Things cannot move out of an *if*-clause:**

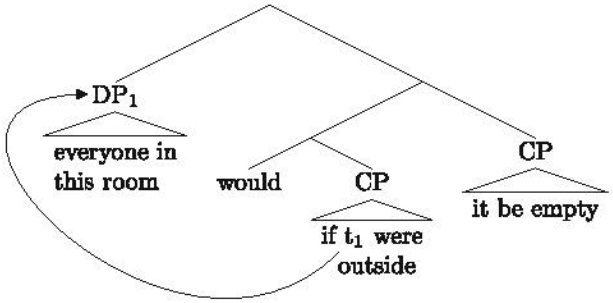
(9) John will be happy if everyone gives him a present.
(10) *What will John be happy if everyone gives him?

(11) If everyone in this room were outside, the room would be empty.

Interpreting 'everyone in this room' with respect to the same situation as the predicate 'outside' makes the restrictor contradictory.

Relaxing the movement requirement does not help:

(12)




Predicted meaning:

(13) Every individual in this room is such that if she were outside, this room would be empty.

We need: the absence of the totality of people will make the room empty:

(14) In all the worlds w' accessible from $w_0$ such that **everyone in this room in $w_0$** is outside in w', the room is empty in w'.

"Everyone in this room" takes scope below "would", but the predicate "ones in this room" is evaluated relative to the actual world.

One possible solution: world or situation variables in syntax (Percus 2000, Keshet 2008).

(15) 0 [would w0 [1 if [everyone in this room in $w_0$ ] were outside in $w_1$]]
[2 the room would be empty in $w_2$]

We change the denotation of every predicate in such a way that they are looking to combine with a world variable.

(16) $[\![\text{person in this room}]\!]^g$ = [λw. λx. x person in this room in w]

(17) $[\![\text{be outside}]\!]^g$ =[λw. λx. x is outside in w]

It has been claimed that the system undergenerates and overgenerates. We are going to discuss both issues in this class and the classes that follow.

## 2. What the system cannot do

### 2.1. De re interpretations of referential expressions

Quine (1956) observed that an attitude report containing a referential term (say, a proper name), like the one in (18), cannot be captured by a simpleminded semantic analysis. Specifically, Quine argued that the intensional verb *believe* in (18) cannot be represented as a relation between Ralph and the proposition [λw. Ortcutt is a spy in w].

(18) Ralph believes that Ortcutt is a spy.

(19) **The scenario**: Ralph knows Ortcutt under two different guises. Ralph saw Ortcutt several times 'under some questionable circumstances' and decided that the guy was a spy. Later that day Ralph met Ortcutt at the beach, did not recognize him, and decided that he was an important and respectable man and not a spy.

In this scenario, it has to be the case that both sentences (18) and (20) are true at the same time.

(20) Ralph believes that Ortcutt is not a spy.

However, intuitively it does not seem that Ralph is irrational and that he holds contradictory views. Scenarios like the one described above are called *double-vision scenarios* and reports like (18) and (20) are known as *de re* reports.

This problem cannot be solved with world variables because proper name are not sensitive to worlds, they are referential expressions that pick the same object in every world (Kripke 1980)

**2.2 Hard cases of third readings?**

Schwager (2011):

**Burj Khalifa:**

(21) Mary wants to buy a building with 192 floors.

(22) **The scenario:** Mary is looking at the Burj Khalifa the building in Dubai that has 191 floors. No other currently existing building has more floors that that number. However, Mary doesn't know this. She also doesn't know how many floors Burj Khalifa has. She says, 'Wow, I want to buy a building that's even one floor higher!'

There are two possible LFs that the Standard solution can give to this sentence. In the one given in (23) the DP "building with 192 floors" comes with the world variable that is bound by the embedded lambda abstractor. Schwager rejects this LF because Mary does not know the height of the building.

(23) [1 Mary wants in $w_1$ [2 PRO to buy in $w_2$ a [building with 192 floors in $w_2$ ] ]

The other option is the LF given in (24), where the world variable on the predicate "building with 192 floors" is bound by the matrix lambda abstractor. This ensures that the predicate is evaluated transparently (with respect to the actual world).

(24) [1 Mary wants in $w_1$ [2 PRO to buy in $w_2$ a [building with 192 floors in $w_1$ ] ]

The problem with the LF in (24) is that the predicate "building with 192 floors" has an empty set as its extension in the actual world (because no such building exists in the actual world). There will be no worlds where the existential claim holds true, therefore the entire sentence can be true only if the set of Mary's desire-alternatives is empty. (This is due to the properties of the universal quantifier that is involved in the interpretation of the intensional verb "want" that yields true if its restrictor is empty).

**Malte's Jacket**

(25) Adrian wants to buy a jacket like Malte's.

The context that makes this example problematic is as follows.

(26) **The scenario**: Malte has a green Bench jacket. The attitude holder, Adrian, also wants a green Bench jacket but he does not know what kind of jacket Malte has.

Native speakers of English report that (25) is acceptable in this context.

The reading that (25) has in the context given above is a third reading: Adrian is not specific and what he wants to buy is described from the point of view of the speaker.

Since Adrian does not know what kind of jacket Malte has, evaluating "jacket like Malte's" with respect to Adrian's doxastic alternatives does not give us the right interpretation.

However, as (Schwager, 2011) points out, evaluating this predicate with respect to the actual word does not help us either. In order to see this, let us consider the LF in (27), where the world variable on the predicate "jacket like Malte's" is bound by the matrix lambda abstractor.

(27) [1 Adrian wants $w_1$ [2 [a [jacket like Malte's-$w_1$ ]] 3 PRO to buy-$w_2$ $t_3$ ] ]

Interpreting this LF results in the truth-conditions given in (28).

(28) $[\![(27)]\!]^g(w_0)$ =T iff $\forall$w'[w' $\in$Desire-Alt (Adrian, $w_0$)$\rightarrow\exists$x[x is a jacket like Malte's in $w_0$ & Adrian buys x in w']

The problem: (28) predicts that, in his desire alternatives, Adrian has to choose from the actual green Bench jackets (under the reasonable assumption that "like" stands for "being of the same type and color"). This does not seem to be right.

- Colors are not essential properties of objects
- A jacket can have one color in one world and a different color in another world.
- The truth conditions in (28) predict that Adrian in his doxastic alternatives will buy a red Bench jacket as long as it is a green Bench jacket in the actual world. Thus, in the case of example (25), the Standard Solution seems to overgenerate.

On the other hand:

- If some jacket happens to be a green Bench jacket in one of Adrian's bouletic alternatives but is a red Bench jacket in the actual world, Adrian should be able to buy this jacket in that alternative world.
- This, however, is not captured by the truth- conditions in (28). According to (28), Adrian, in his bouletic alternatives, has to be buying one of those jackets that happen to be green Bench jackets in the actual world.
- Thus, the Standard Solution seems to undergenerate as well.

We can conclude that the predicted interpretation of the LF given in (27) does not reflect the fact that the sentence in (25) is intuitively true in the given context.

Schwager (2011) argued that the challenging cases discussed above require us to abandon the Standard solution. Essentially she proposes to abandon the principle of compositionality!

(29) **Replacement Principle:** For the sake of reporting an attitude, a property that is involved in the content of the attitude that is to be reported (the reported property) can be replaced by a different property (the reporting property) as long as the reported property is a subset of the reporting property at all relevant worlds. (Schwager 2011)

**Answer to these two challenging cases**

Kusliy & Vostrikova 2018

**Malte's Jacket**

I believe, there is an error with the analysis of Malte's jacket example. We are dealing with an equative construction (Heim, 2000; Bhatt and Pancheva, 2004) that, like other comparative constructions, assumes comparative deletion (Bresnan, 1973; Lechner, 2014).

The elided NP, like all other NPs, comes with a world variable that can be bound by a matrix lambda operator.

(30) Adrian wants to buy a jacket like Malte's jacket

(31) [1 Adrian wants $w_1$ [2 [a [jacket $w_2$ like –$w_2$ Malte's jacket $w_1$]] 3 PRO to buy-$w_2$ $t_3$ ] ]

Observe that (31) and (32) lead to the same interpretation:

(32) [1 Adrian wants- $w_1$ [2 [a [green- $w_2$ Bench- $w_2$ jacket- $w_2$]] [3 [PRO to buy- $w_2$ $t_3$]]]]

This is because the following get the identical interpretations:

(33) [2 [a [jacket- $w_2$ like- $w_2$ Malte's jacket- $w_1$]] [3 [PRO to buy- $w_2$ $t_3$]]]

(34) [2 [a [green- $w_2$ Bench- $w_2$ jacket- $w_2$]] [3 [PRO to buy- $w_2$ $t_3$]]]

In any world:

- being a jacket like Malte's jacket is in the real world **is** being a jacket of the same brand and color as Malte's jacket is in the real world
- which is being a green Bench jacket.

**Burj Khalifa:**

(35) Mary wants to buy a building with 192 floors.

If there was a replacement, this replacement is based on the compositionality principle! The interpretation of (36) is equivalent to the interpretation of (37).

This is because in any world, being a building that is one floor higher than Burj Khalifa is in the real world means having 192 floors!

(36) [1 Mary wants-$w_1$ [2 [a building-$w_2$ that is one floor higher in $w_2$ than Burj Khalifa is high-$w_1$] [3 [PRO to buy-$w_2$ $t_3$]]]]

(37) [1 Mary wants-$w_1$ [2 [a building-$w_2$ that has 192 floors-$w_2$] [3 [PRO to buy-$w_2$ $t_3$]]]]

But there is an easier solution as well: we treat 192 like a referential expression (similar to the example with Ortcutt in (18). We use the same (independently needed!) mechanism that we use for referential expressions (forthcoming in this class!). This mechanism allows us to substitute referential expressions with 'concepts' that attitude holders have about the individuals or objects denoted by the referential expressions. In this case the concept for '192' she has is 'being one floor higher than this building over there'.

**3. The world variable system overgenerates!**

Percus 2000:

(38) Mary thinks that my brother is Canadian.

We predict that the following LF is a possibility:

(39) [1 Mary thinks $w_1$ [that 2 my brother $w_2$ is Canadian $w_1$]

In this LF, 'my brother' gets an opaque interpretation: $w_2$ is bound by the nearest abstractor λ2. However, the predicate 'Canadian' gets a transparent evaluation the variable $w_1$ is bound by the matrix abstractor.

What this reading would be:

(40) The sentence is predicted to be true whenever there is some *actual* Canadian who *Mary thinks* is my brother. This person can be not my brother in the reality and Mary might mistakenly think that he is American, not Canadian. For instance, the sentence is predicted to be true if Mary thinks that Pierre (the actual Canadian) is my brother and naturally concludes — since she knows that I am American — that Pierre too is American.

This reading is not available. Thus, there is Generalization X:

(41) Generalization X:
The situation variable on the main predicate (the verb) must be bound by the nearest abstractor above it.

Another restriction on the world pronouns:

Intersective Predicate Generalization (Keshet 2008): Any two intersectively interpreted predicates have to be evaluated relative to the same situation (or the same time and world).

(42) #In 1964, every U.S. senator at Harvard got straight A's.

(43) #Mary thinks the married bachelor is confused.

## 4. Accounting for the observed restrictions in terms of a new rendition movement theory

Ezra Keshet. 2011. Split intensionality: a new scope theory of *de re* and *de dicto* (Ling and Phil)

This paper defends the scope theory:

a) By bringing new data where high (de re) readings disappear when the movement is blocked.

b) By introducing into syntax an unpronounced type-shifting operatorwhich creates an additional scopal position. This helps to explain the problematic for the traditional scope theory data.

c) By showing that the new theory – the split theory of intensionality – does not overgenerate unlike the world/situation variable theory.

### 4.1. New Data for the Scope Theory

#### 4.1.1 Syntactic Islands

The Scope Theory of Intensionality (STI) correctly predicts that a DP cannot receive *de re* reading when it is trapped in a syntactic island.

A. If-clause

(44) Mary thinks that if A, B and C were professors, the classes would be better taught.

Context: Mary sees three professors (A, B and C) giving presentations, but mistakes them for students. Mary thinks that if they were professors, the classes would be better taught.

(45) #Mary thinks that if three professors were professors, the classes would be better taught.

In this context, (44) is true but (45) is unacceptable. The DP "three professors" in (45) does not have *de re* reading. This fits nicely with STI, according to which to be interpreted *de re*, the DP "three professors" has to scope above the intensional operator "thinks". But in (45), the movement is blocked by the if-clause island.

B. Because-clause

(46) The teacher thinks John should be punished because Sally wrote papers A, B, and C.

(47) # The teacher thinks John should be punished because Sally wrote every paper he/John wrote.

C. NP complement

(48) Mary believes that there's a nasty rumor going around that A is a man.

(49) # Mary believes that there's a nasty rumor going around that a man in my class is a man.

D. Subject of a finite clause

(50) Yesterday, Bob thought that A, B, and C were outside.
(51) # Yesterday, Bob thought that everyone in this room was outside.

### 4.1.2 Polarity Items

The STI predicts that polarity items have limited numbers of intensional readings.

A DP whose determiner is a Positive Polarity Item (PPI) has to scope over negation; so (52) has *de re* reading.

(52) Mary doesn't want to buy **some inexpensive dress at Macy's** because she thinks it is expensive.

A DP whose determiner is a Negative Polarity Item (NPI) has to scope below negation; so (53) does *not* have *de re* reading.

(53) # My mother thinks I managed not to fail **any class** that I failed.

### 4.1.3 Subconstituents

The STI predicts the unavailability of *de re* reading of certain subconstitutents.

(54) John wants to meet the wife of the president.

Available readings:
a. Wife de dicto; president de re: The president, Barack Obama, is such that John wants to meet his wife, whoever she may be.

b. Both de re: The wife of the president, Michelle Obama, is such that John wants to meet her, though perhaps he does not even know she's the wife of the president.

c. Both de dicto: John wants to meet whoever the wife of the current president is, though perhaps he does not even know who the president is, or who his wife is.

The unavailable reading:

d. Wife de re; president de dicto:

#John wants to meet a particular woman. I know that this woman is the wife of the prime minister of the UK. John is an American in London and he believes the prime minister to be the (non-existent) president of the United Kingdom.

On the STI, only the following structures can generate the unavailable reading:

(55) [the wife]$_x$ John wants to meet [x of the president].
(56) [wife]$_x$ John wants to meet [the x of the president].

(55) involves a movement of something that is not a constituent, which is illicit; (56) violates the Head Movement Constraint (HMC).

**4.2 Split intensionality**

Keshet's proposal:

Every intensional operator comes with an operator ^ (after the ''up'' operator in Montague 1970) that sits below it. This operator shifts the type of its sister from extensional to intensional.

We need a new rule:

(57) **Intensional Abstraction:** if $\alpha$ is a branching node and $\{\beta, \gamma\}$ is the set of its daughters, where $\beta$ dominates only an ^ operator, then, for any situations s and variable assignment g $[\![\alpha]\!]^{s,g}=\lambda s' \in D_s.\ [\![\gamma]\!]^{s', g}$.

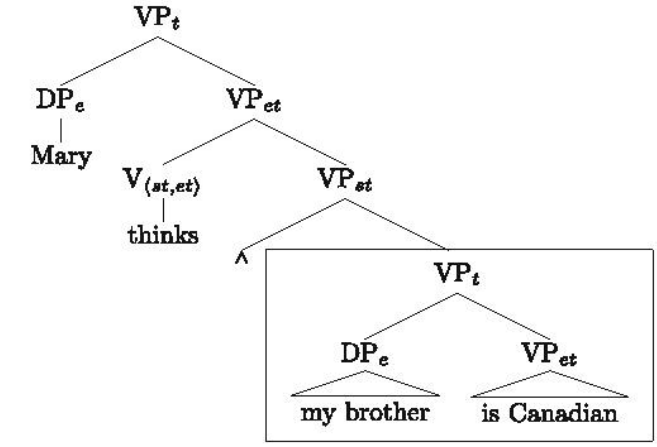
This operator basically is doing the job of the IFA rule (Intensional Functional Application) (the rule that allows to compose an operator that requires an argument of an intensional type with an argument of an extensional type by type-shifting the type of this argument from an extension to an intension).

The difference is that this operator is in syntax and in order to get a de re reading a DP must move out of the scope of this operator.

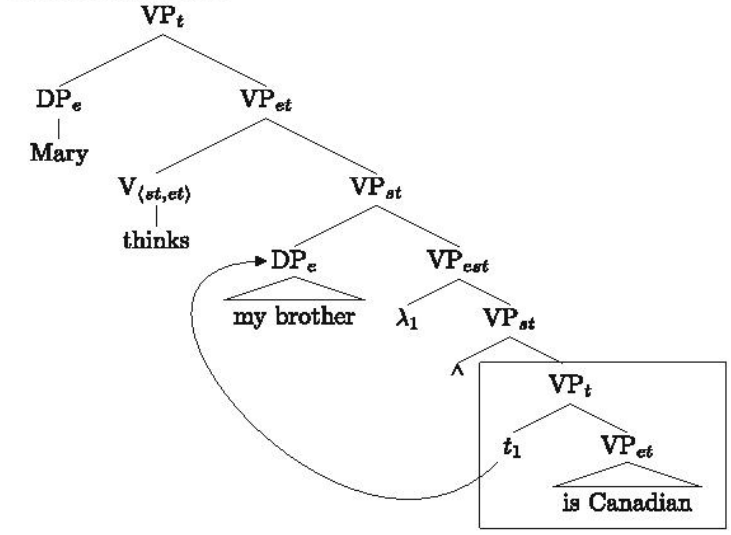
Consider an example:

(58) Mary thinks my brother is Canadian.

a. *De dicto* for *my brother*:

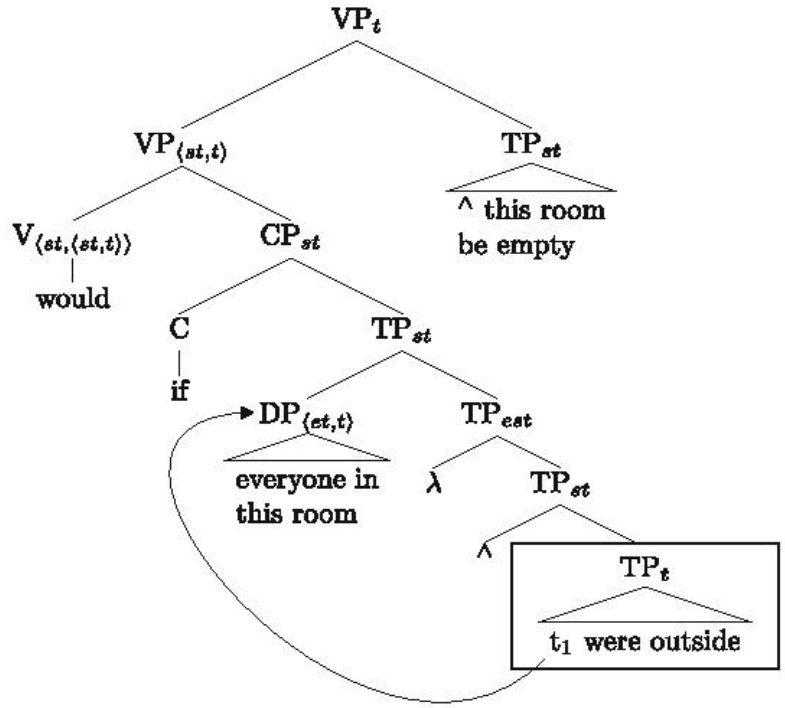



b. *De re* for *my brother*:




### 4.3. Solutions for the challenging for the movement story data

(59) If everyone in this room were outside, it would be empty.




(60) [[would]]$^{s,g}$= $\lambda P_{st} \lambda Q_{st}.\forall s'$ accessible from s. $P(s') \rightarrow Q(s')$

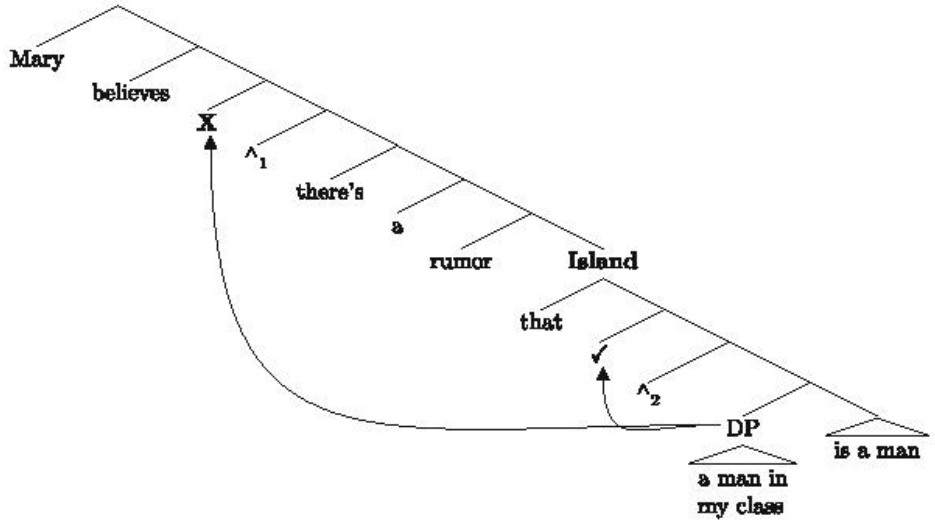
(61) [[if [everyone in this room] $\lambda_1$ ^ $t_1$ were outside]]$^{s,g}$ = $\lambda s'$.everyone in this room in s is outside in s'

(62) [[(59) ]]$^{s,g}$= 1 iff $\forall s'$where everyone in this room is s is outside in s', this room is empty in s'.

### 4.4. Accounting for the new data

This theory makes a prediction: whenever the movement of a DP is illegal, there will be no higher scope reading of this DP.

(31) #Mary believes that there's a nasty rumor going around that **a man in my class** is a man.



### 4.5. Accounting for the generalization X

The system by itself does rule out the problematic reading of (63):

(63) Mary thinks my brother is Canadian.
(64) Mary thinks [that [Canadian]$_1$ ^ [my brother is $T_1$]]

The restriction should follow from the fact that predicates do not move.

### 4.6 Remaining Issues

#### 4.6.1 Belief Reports and Conditionals

(65) The dean thinks if **everyone in this room** learns to get a little better with others, there won't be any major conflict over the hiring.
(uttered in the context of a secret meeting that the dean does not know about)

**Problem for Split Intensionality**: the theory predicts only a *de dicto* reading, but a de re reading *is* available.

**Keshet**: (65) might have an LF in which if-clause scope above *think*, for it is "almost synonymous" to (66); semantically, if-clause restricts the dean's thought worlds.

(66) If everyone in this room learns to get on a little better with others, the dean thinks there won't be any major conflict over the hiring.

This strategy doesn't work for (67), which requires the object of *think* to be a conditional proposition.

(67) The dean thinks if everyone in this room learns to get a little better with others, <u>then</u> there won't be any major conflict over the hiring.

#### 4.6.2. Prediction about 2 DPs

There is a key prediction that any movement story of the intensional independence of DPs makes that usually does not get much attention in the literature.

**The prediction is this**: a DP cannot get a transparent interpretation if it takes scope under a DP that has an opaque interpretation.

This is my objection and my example (constructed based on example from Angelika Kratzer's Spring 1999 lecture notes).

(68) John thinks that every linguist$_1$ in this room wrote **a paper that she$_1$ did not write**.

'A paper that she$_1$ did not write' must be read *de re*.

The question: can "every linguist" have a de dicto reading?

Scenario: John is at a seminar, which he thinks is a linguistics seminar (actually it is a philosophy seminar). He thinks that he is surrounded by linguists. He also thinks that each of them wrote a paper: a person A wrote PTQ, a person B wrote "Situations, worlds, and contexts" etc.

Can this sentence be true in this scenario?

**5. World variable theory restricted:**

Florian Schwarz. 2012. Situation Pronouns in Determiner Phrases. Natural language semantics

This paper argues that we still need world variables, however, they do not occur with every predicate. They are only introduced by strong determiners.

**5.1 What Keshet's story does not deliver in a straightforward way.**

Another example of an intensional independence of a DP:

(69) A fugitive is in jail (Enç 1986)

This is related to time rather than worlds.

However, not all DPs can do that:

(70) #There is a fugitive in jail. (Musan, 1995; Kusumoto, 2005)

(71) Some members of congress knew each other in college. In fact, . . .
a. . . . three U.S. Senators were attending Harvard together in 1964.
b. #. . . there were three U.S. Senators attending Harvard together in 1964.
(Keshet, 2008, adapted from Musan)

DPs that can occur in 'there is', 'there are' constructions are called weak DPs (Milsark 1977).

**5.2 Challenging Keshet's data**

Because-clauses:

Context: The teacher thinks the glasses A, B, and C, which contained a clear liquid, were filled with vodka (they actually contained water).

(72) The teacher thinks John should be punished because he drank glasses A, B, and C.

(73) The teacher thinks John should be punished because he drank every glass with water in it.

NP complements:

(74) Mary thinks that Bill's suggestion that Sue's husband is married is based on shaky evidence.

The context: I know that this specific person John is Sue's husband. Mary and Bill do not know this. Mary thinks that Bill's ideas about John's marital status are stupid.

(75) Mary thinks that Bill's suggestion that most bachelors are not married yet is based on shaky evidence.

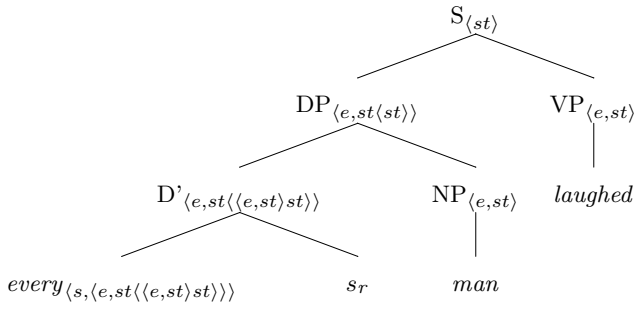
The context: I know that this specific group of individuals are bachelors. Mary and Bill do not know this.

**5.3 Accounting for Generalization X and for the weak/strong determiners difference.**

He used situation rather than world variables. Situations are spatio-temporal parts of possible worlds (Kratzer 2007).

They are introduced with determiners (the strong ones)

(76)




(77) $[\![\text{laughed}]\!]^g = \lambda x.\ \lambda s.$ x laughed in s

(78) $[\![\text{man}]\!]^g = \lambda x.\ \lambda s.$ x is a man in s

(79) $[\![\text{every}]\!]^g = \lambda s.\lambda Q_{<e,st>}.\lambda P_{<e,st>}.\lambda s'.\ \forall x[Q(x)(s) \rightarrow P(x)(s')]$

(80) $[\![\text{a}]\!]^g = \lambda s.\lambda Q_{<e,st>}.\lambda P_{<e,st>}.\lambda s'.\ \exists x[Q(x)(s)\ \&\ P(x)(s')]$

As a consequence of this, a strong DP is always intentionally independent of the situation with respect to which the main predicate is evaluated. A special operator Σ is introduced at LFs to generate the transparent interpretations.

(81) John thinks a professor danced.

(82) John thinks [Σ a professor $s_1$ danced]

(83) $[\![\Sigma]\!]^g = \lambda s'.\ [\![\Sigma]\!]^{g[sn->s']}(s')$

(84) $[\![$ [Σ a professor $s_1$ danced] $]\!]^g = \lambda s'.\ \exists x[$x is a professor in s' & x danced in s]

This theory captures:

- The intensional independence of DPs from each other
- Generalization X

- The difference between strong and weak DPs with respect to their ability to be independent
- NPI lacking an independent reading (they are weak!)
- All NPs inside one DP much be interpreted with respect to the same situation! (#'the fugitive who is in jail')

Issues:

- Not too sure how to block the missing reading of 'the wife of the president'

**Literature:**

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