Pronouns as Definite Descriptions

1. Pronouns as definite descriptions – Background

1.1 Recap of the basic motivation

- In the literature on so-called donkey sentences, the idea that pronouns are 'expanded' into definite descriptions goes back to Parsons (1978); cf. Heim & Kratzer (1998), Büring (2005) for textbook overviews.

(1) If an actress owns a cat, she treats **it** well.
  ≈ If an actress owns a cat, she treats **the cat (that she owns)** well.

(2) Every actress who owns a cat treats **it** well.
  ≈ Every actress who owns a cat treats **the cat (that she owns)** well.

⇒ Chierchia (1992:155,158) argues that at least examples like (3) require such 'expansion' strategies in a dynamic system as well.

(3) If an actress doesn't have a cat anymore, she usually gave **it** to her niece.
  ≈ If an actress doesn't have a cat anymore,
  she usually gave **the cat (that she used to have)** to her niece.

- Recent literature (in particular Elbourne 2005, Sauerland 2007, Elbourne 2013) has brought about two core developments:
  ⇒ [1.] The idea that such 'expansion' involves NP deletion (or DP deletion).
  ⇒ [2.] The idea that all 3rd person pronouns should be analyzed the same way (without a distinction of individual variables *vs* definite descriptions).

- Current approaches differ in the details; e.g. Elbourne (2013) assumes NP deletion, where pronouns spell-out definite determiners (with ϕ-features), whereas Sauerland (2007) assumes DP deletion, where pronouns spell out ϕPs.

(4) *bound pronouns*

a. Every boy said about every girl that **he** likes **her**.[1]

b. *Elbourne-style analysis*
Every boy said about every girl that [$_{DP}$ **he** [$_{NP}$ ~~boy~~]] likes [$_{DP}$ **her** [$_{NP}$ ~~girl~~]].

c. *Sauerland-style analysis*
Every boy said about every girl
that [$_{\Phi P}$ **he** [$_{DP}$ ~~the~~ [$_{NP}$ ~~boy~~]]] likes [$_{\Phi P}$ **her** [$_{DP}$ ~~the~~ [$_{NP}$ ~~girl~~]]].

[1] Example from Sauerland (2007:206).

(5) *referential pronouns*

a. My cat does not like fireworks. **It** hides under the table.

b. *Elbourne-style analysis*
My cat does not like fireworks. [$_{DP}$ **It** [$_{NP}$ ~~cat~~]] hides under the table.

c. *Sauerland-style analysis*
My cat does not like fireworks. [$_{\phi P}$ **It** [$_{DP}$ ~~the~~ [$_{NP}$ ~~cat~~]]] hides under the table.

1.2 Arguments from concord

- Argument for a generalized definite description analysis stems from concord in grammatical gender.
  - ⇒ Sauerland (2007:205) presents the examples in (6).

(6)

a.	Tim	hat	einen	Löffel	gestohlen.	**Er**	war	aus	Gold.
	Tim	has	a.MASC	spoon	stolen	*pro*.MASC	was	of	gold
b.	Tim	hat	eine	Gabel	gestohlen.	**Sie**	war	aus	Gold.
	Tim	has	a.FEM	fork	stolen	*pro*.FEM	was	of	gold
c.	Tim	hat	ein	Messer	gestohlen.	**Es**	war	aus	Gold.
	Tim	has	a.NEUT	knife	stolen	*pro*.NEUT	was	of	gold

- Elbourne (2013:201) provides analogous examples from French (attributed to Tasmowski-De Ryck & Verluyten 1982:328):

(7) (*Jean is trying to stuff a large table* (la table, *feminine*) *into the boot of his car; Marie says:*)

Tu	n'	arriveras	jamais	à	**la** /	* **le**	faire	entrer	dans
you	not	arrive-FUT-2sg	never	to	it-FEM	it-MASC	make	enter	into
la	voiture.								
the	car								

'You'll never manage to get it into the car.'

(8) (*Same scenario, but with a desk* (le bureau, *masculine*)*:*)

Tu	n'	arriveras	jamais	à	* **la** /	**le**	faire	entrer	dans
you	not	arrive-FUT-2sg	never	to	it-FEM	it-MASC	make	enter	into
la	voiture.								
the	car								

'You'll never manage to get it into the car.'

- In an Elbourne style analysis, the ϕ-features of pronouns simply reflect concord:

(9)

Tim	hat	[$_{DP}$ einen	[$_{NP}$ Löffel]]	gestohlen.	[$_{DP}$ **Er**	[$_{NP}$ ~~Löffel~~]]	war	aus	Gold.
Tim	has	a.M	spoon.M	stolen	*it*.M	spoon.M	was	of	gold

- Section 1.3 discusses a challenge for treating all pronouns as definite descriptions.

1.3 Breaking down the distinction between pronouns and non-pronominal DPs

- Traditionally (i.e. prior to analyzing pronouns as definite descriptions), pronouns are taken to be variables, whereas non-pronominal DPs cannot be variables.
  - ⇒ Traditional accounts predict that non-pronominal DPs cannot be bound, (10).
  - ⇒ However, if we treat pronouns as definite descriptions, this entails that (10a) actually *has* a Logical Form parallel to (10b); this appears to pose a challenge.

(10) a. **Every actor** believes that **he** is gifted.
b.* **Every actor** believes that **the actor** is gifted.

- We can derive the ban against (10b) in terms of Schlenker's (2005) constraint *Minimize Restrictors!* (which would regulate surface-forms in (10a) vs (10b)).

(11) *Minimize Restrictors!*
A definite description *the A B* [where the order of *A* vs. *B* is irrelevant] is deviant if *A* is redundant, i.e. if:
(i) *the B* is grammatical and has the same denotation as *the A* (= Referential Irrelevance), and
(ii) *A* does not serve another purpose (= Pragmatic Irrelevance).
(Schlenker 2005)

⇒ If we assume that (10a) is an elliptical variant of (10b), the two utterances clearly have the same meaning; since the elided NP is superfluous in (10a), it is blocked by *Minimize Restrictors!*

- NB: Elbourne (2013) claims that syntactically bound definite descriptions can, in fact, be found, as in (12). Plausibly, the repetition of the NP *cat* serves a pragmatic purpose in the spirit of (11ii).

(12) John fed **no cat of Mary's** before **the cat** was bathed.
(Elbourne 2013:126)

2. Pronouns as definite descriptions – formal implementation

- The meanings of pronouns (as of all definite descriptions) must be relativized to situations (Elbourne 2005, 2013) or possible worlds (Sauerland 2007).
  - ⇒ We discuss the situation-based view, which is currently more widely adopted. (Büring 2004; Elbourne 2005, 2013; Hinterwimmer 2014; Schwarz 2009, 2012, 2014; Kratzer 2014)

- The following formalization is a simplified adaptation of Büring (2004) and Elbourne (2013), in order to demonstrate the core assumptions.

2.1 First case study: donkey pronouns as definite descriptions

- Situation-based analyses of pronouns as definite descriptions generally start with the following three basic components (based on Heim 1990).

  [1.] Definite determiners that introduce *situation-bound* uniqueness.
  (slightly adapted from Büring 2004:40, see also Elbourne 2013:193)

  ⇒ NB: In this illustration, σ_n is a situation index on the determiner that marks its anaphoricity to a salient situation σ_n in the assignment function.

  ⇒ Alternatively, situation variables can be modeled as (null) situation pronouns in the object language.

(13) $[\![\text{the}_{\sigma n}]\!]^g = \lambda f_{<e,st>} : \exists! x\ [f(x)(g(\sigma_n)) = 1]\ .\ \iota x\ [f(x)(g(\sigma_n)) = 1]$

(14) a. $[\![\text{donkey}]\!]^g = \lambda x\ .\ \lambda s\ .\ x \text{ is a donkey in } s$
b. $[\![\text{the}_{\sigma 3} \text{ donkey}]\!]^g = \iota x\ [x \text{ is a donkey in } g(\sigma_3)]$

  [2.] A 'situation expansion' operator ≤ in the object language, adjoined to VPs.
  (slightly adapted from Büring 2004:38, see also Elbourne 2013:28)

  – This is required so that *minimal* base situations (mnemonically s_b), which are introduced in the restrictor of a quantifier (above VP), are extended into the larger situations in which the VP denotation holds.[2]

(15) $[\![\leq]\!]^g = \lambda f_{<e,st>}\ .\ \lambda x\ .\ \lambda s_b\ .\ \exists s_e\ [s_b \leq s_e \wedge f(x)(s_e)]$

(16) a. $[\![\text{beats}]\!]^g = \lambda x\ .\ \lambda y\ .\ \lambda s\ .\ y \text{ beats } x \text{ in } s$
b. $[\![\text{beats the}_{\sigma 3} \text{ donkey}]\!]^g = \lambda y\ .\ \lambda s\ .\ y \text{ beats } \iota x\ [x \text{ is a donkey in } g(\sigma_3)] \text{ in } s$
c. $[\![[_{VP} \leq [_{VP} \text{ beats the}_{\sigma 3} \text{ donkey}]]]\!]^g =$
$\lambda x\ .\ \lambda s_b\ .\ \exists s_e\ [s_b \leq s_e \wedge x \text{ beats } \iota z\ [z \text{ is a donkey in } g(\sigma_3)] \text{ in } s_e]$

  [3.] A rule for situation binding, formalized by means of a situation binder Σ.
  (slightly adapted from Büring 2004:40, see also Elbourne 2013:34)

  – This is required so that definite descriptions (can) covary with the base situations that are under consideration. (Otherwise, Σ is not inserted.)[3]

(17) *Situation Binding*
For all indices *n* and assignments *g*,
$[\![\Sigma_n \text{ XP}]\!]^g = \lambda x\ .\ \lambda s\ .\ [\![\text{XP}]\!]^{g[\sigma n \to s]}(x)(s)$

(18) $[\![[\Sigma_3 [_{VP} \leq [_{VP} \text{ beats the}_{\sigma 3} \text{ donkey}]]]]\!]^g =$
$\lambda x\ .\ \lambda s_b\ .\ [\![[_{VP} \leq [_{VP} \text{ beats the}_{\sigma 3} \text{ donkey}]]]\!]^{g[\sigma 3 \to s]}(x)(s_b) =$
$\lambda x\ .\ \lambda s_b\ .\ \exists s_e\ [s_b \leq s_e \wedge x \text{ beats } \iota z\ [z \text{ is a donkey in } s_b] \text{ in } s_e]$

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[2] $[\![\text{Every man sleeps.}]\!]^g$ = For every x, s_b such that s_b is a minimal situation of x being a man, there is an extended situation s_e, $s_b \leq s_e$, such that x sleeps in s_e. (Büring 2004:38)

[3] For the independence of Σ and ≤, i.e. for cases of one without the other, see Büring (2004).

- Once these components are in place, we can easily derive the meanings of donkey sentences by assuming that quantifiers quantify over situations and individuals.
  – For now, we assume the denotations in (19) (adapted from Büring 2004:38).

(19) a. $[\![\text{every man}]\!]^g$ =
$\lambda f_{<e,st>} . \lambda s . \forall x, s_b [s_b \leq s$ is a minimal situation of x being a man $\rightarrow f(x)(s_b)]$

b. $[\![\text{every man who owns a donkey}]\!]^g$ =
$\lambda f_{<e,st>} . \lambda s . \forall x, s_b [s_b \leq s$ is a minimal situation of x being a man who owns a donkey $\rightarrow f(x)(s_b)]$

– Computing a donkey sentence is then straightforward:

(20) a. $[\![[[\text{Every man who owns a donkey}] [\Sigma_3 [_{VP} \leq [_{VP} \text{beats the}_{\sigma 3} \text{ donkey}]]]]]\!]^g$ =
$\lambda s . \forall x, s_b [s_b \leq s$ is a minimal situation of x being a man who owns a donkey $\rightarrow \exists s_e [s_b \leq s_e \wedge$ x beats ιz [z is a donkey in s_b] in s_e]]

b. *in words:*
'Every minimal situation s_b (part of the evaluation situation s) that contains a man x who owns a donkey can be extended into a situation s_e in which x beats <u>the unique donkey in s_b</u>.'

2.2 Second case study: referential pronouns as definite descriptions

- If a situation pronoun on a definite description is not bound by a situation binder, the definite description will end up having a referential interpretation.

⇒ As shown in (21), the reference of *she* and *it* is determined via their LF representations as *the actress* and *the cat* respectively.

(Without quantification, ≤ and Σ_n would plausibly have a vacuous effect.)

⇒ For the situations with respect to which *actress* and *cat* are interpreted, Elbourne (2013) suggests that they only contain the respective actress / cat.

(21) a. The actress owns a cat. She coddles it.

b. LF (Elbourne style): the$_{\sigma 3}$ actress coddles the$_{\sigma 4}$ cat

c. $[\![\text{the}_{\sigma 3} \text{ actress coddles the}_{\sigma 4} \text{ cat}]\!]^g$ =
$\lambda s . \iota x$ [x is an actress in $g(\sigma_3)$] coddles ιy [y is a cat in $g(\sigma_4)$] in s

⇒ Note that proper names must also denote properties of type <e,st> in this analysis. This should not surprise us since many languages require an overt determiner with proper names (e.g. Austrian German, Modern Greek).

⇒ Matushansky (2005) and Elbourne (2005:ch.6) suggest to treat proper names as in (22c) (*informally rendered*), adopting the approach of Burge (1973).

(22) a. Mary owns a cat. She coddles it.

b. LF (Elbourne style): the$_{\sigma 3}$ Mary coddles the$_{\sigma 4}$ cat

c. $[\![\text{Mary}]\!]^g = \lambda x . \lambda s$. x is called Mary in s

d. $[\![\text{the}_{\sigma 3} \text{ Mary}]\!]^g = \iota x$ [x is called Mary in $g(\sigma_3)$]

2.3 Third illustration: syntactically bound pronouns as definite descriptions

- We derive the meaning of a bound pronoun as in (23) (cf. Elbourne 2013:196); to simplify (glossing over possessive marking), we derive (23c), equivalent to (23b).

(23) a. Every actress loves her mother.

b. LF (Elbourne style):
$[[\text{Every actress}]\ [\Sigma_3\ [_{VP} \leq [_{VP} \text{ loves } [_{DP}\ [\text{the}_{\sigma 3} \text{ actress}]\ [\text{'s}_{\sigma 7} \text{ mother}]]]]]]$

c. simplified LF (Elbourne style):
$[[\text{Every actress}]\ [\Sigma_3\ [_{VP} \leq [_{VP} \text{ loves } [_{DP}\ [\text{the}_{\sigma 7} \text{ mother } [(\text{of}) \text{ the}_{\sigma 3} \text{ actress}]]]]]]]$

⇒ To simplify further, we only look at genitives that occurs with relational NPs (e.g. *mother*); we treat the *of* preposition as semantically vacuous.

(24) $[\![\text{mother}]\!]^g = \lambda x\ .\ \lambda y\ .\ \lambda s\ .\ y \text{ is mother in } s \text{ of } x$

⇒ What is crucial for bound readings is that the situation variable of the 'bound definite description' / 'bound pronoun' is bound via Σ_n.

(The motherhood relation does not require such binding, as long as its evaluation situation can be identified, e.g. with the utterance situation s*.)

(25) a. $[\![[(\text{of}) \text{ the}_{\sigma 3} \text{ actress}]]\!]^g = \iota y\ [y \text{ is an actress in } g(\sigma_3)]$

b. $[\![[\text{mother } [(\text{of}) \text{ the}_{\sigma 3} \text{ actress}]]]\!]^g =$
$\lambda x\ .\ \lambda s\ .\ x \text{ is mother in } s \text{ of } \iota y\ [y \text{ is an actress in } g(\sigma_3)]$

c. $[\![[_{DP}\ [\text{the}_{\sigma 7} \text{ mother } [(\text{of}) \text{ the}_{\sigma 3} \text{ actress}]]]]\!]^g =$
$\iota x\ [x \text{ is mother in } g(\sigma_7) \text{ of } \iota y\ [y \text{ is an actress in } g(\sigma_3)]]$

(26) $[\![[_{VP} \leq [_{VP} \text{ loves } [_{DP}\ [\text{the}_{\sigma 7} \text{ mother } [(\text{of}) \text{ the}_{\sigma 3} \text{ actress}]]]]\!]^g =$
$\lambda x\ .\ \lambda s_b\ .\ \exists s_e\ [s_b \leq s_e \wedge x \text{ loves } \iota z\ [z \text{ is mother in } g(\sigma_7)$
$\text{of } \iota y\ [y \text{ is an actress in } g(\sigma_3)]] \text{ in } s_e]$

(27) $[\![[\Sigma_3\ [_{VP} \leq [_{VP} \text{ loves } [_{DP}\ [\text{the}_{\sigma 7} \text{ mother } [(\text{of}) \text{ the}_{\sigma 3} \text{ actress}]]]]\!]^g =$
$\lambda x\ .\ \lambda s_b\ .\ \exists s_e\ [s_b \leq s_e \wedge x \text{ loves } \iota z\ [z \text{ is mother in } g(\sigma_7)$
$\text{of } \iota y\ [y \text{ is an actress in } s_b]] \text{ in } s_e]$

(28) $[\![[[\text{every actress}]\ [\Sigma_3\ [_{VP} \leq [_{VP} \text{ loves } [_{DP}\ [\text{the}_{\sigma 7} \text{ mother } [(\text{of}) \text{ the}_{\sigma 3} \text{ actress}]]]]]]]\!]^g =$
$\lambda s\ .\ \forall x, s_b\ [s_b \leq s \text{ is a minimal situation such that } x \text{ is an actress in } s_b \rightarrow \exists s_e\ [s_b \leq s_e$
$\wedge\ x \text{ loves } \iota z\ [z \text{ is mother in } g(\sigma_7) \text{ of } \iota y\ [y \text{ is an actress in } s_b]] \text{ in } s_e]]$

in words:
'Every minimal situation s_b (part of the evaluation situation s) that contains an actress x can be extended into a situation s_e in which x loves the unique mother of the unique actress in s_b.'

⇒ Note: The identification of *x* with the unique actress in the base situation does not involve binding of an individual variable *x* in the pronoun slot!

⇒ This is done by delimiting a minimal *actress-situation* in the restrictor and picking out the unique actress in that situation:

(29) $\lambda s\,.\,\forall x, s_b\,[s_b \leq s$ is a minimal situation such that $\underline{x \text{ is an actress in } s_b} \rightarrow \exists s_e\,[s_b \leq s_e$
$\wedge$ x loves ιz [z is mother in $g(\sigma_7)$ of $\underline{\iota y\,[y \text{ is an actress in } s_b]}$] in s_e]]

2.4 Major changes from traditional views

- An analysis that generalizes the 'pronouns as definite descriptions approach' no longer assumes individual (type *e*) variables in the object language.
- Bound readings of pronouns are always due to the binding of a situational variable that is contributed by the definite determiner.

3. On the role of NP deletion in the analysis of pronouns

- Most proponents of a generalized definite description approach to pronouns argue for some type of NP deletion.
  ⇒ Core evidence stems from the insight that pronouns are subject to an *Overt NP Antecedent Constraint* (Postal 1969 and subsequent literature; see Patel-Grosz & Grosz 2010, Grosz et al. 2014 for a critical discussion and overview):

(30) *The Overt NP Antecedent Constraint*
Pronouns require a suitable explicit overt NP antecedent that must not be a subpart of another word.

⇒ The Overt NP Antecedent Constraint is illustrated for referential pronouns in (31) and for donkey pronouns in (32).
(For syntactically bound pronouns, this constraint is, of course, trivial.)

(31) *referential pronoun*
a. Max's **parents** are dead and he deeply misses **them**.
b.# Max is an *orphan* and he deeply misses **them**.
(*orphan* = 'a child whose **parents** have died')
(stylistically adapted from Postal 1969:206)

(32) *donkey pronoun*
a. Every man who has a **wife** sits next to **her**.
b.# Every *married* man sits next to **her**.
(*married* = 'having a **spouse**')
(stylistically adapted from Heim 1990:165)

⇒ Elbourne (2001) argues that this constraints is parallel to the well-documented licensing conditions on deletion, cf. VP deletion in (33).

(33) *Context: Sag produces a cleaver and prepares to hack off his left hand.*

Hankamer: Don't be alarmed, ladies and gentlemen, we've rehearsed this act several times, … # and he never actually **does**.

(stylistically adapted from Hankamer & Sag 1976:392)

- What is still poorly understood are the conditions that underlie the licensing of pronouns without antecedents (cf. Grosz et al. 2014 for recent discussion).

  ⇒ A case in point is Greene et al.'s (1994) Marilyn Monroe example.

(34)a. *Context:* Two people are watching Madonna's "Material Girl" video.

b. *Speaker 1:* The set is a rip-off from "Gentlemen Prefer Blondes".

c. *Speaker 2:* Is that the one where **she**'s standing over the grate and **her** dress blows up?

(Greene et al. 1994:512)

⇒ The simplified version of (34c) in (35a) would be analyzed as in (35b-d).

(35) a. **She**'s standing over the grate.

b. LF (Elbourne style):
$[_{DP}$ the$_{\sigma 3}$ $[_{NP}$ Marilyn Monroe$]]$ is standing over the grate

c. $[\![$Marilyn Monroe$]\!]^g = \lambda x . \lambda s$. x is called Marilyn Monroe in s

d. $[\![$the$_{\sigma 3}$ Marilyn Monroe$]\!]^g = \iota x$ [x is called Marilyn Monroe in $g(\sigma_3)$]

4. Situation semantics: motivations and refinements

4.1 Original motivations for situations and minimality

- Original support for a situation-based analysis of donkey sentences stems from the so-called *uniqueness problem*.

  ⇒ In examples like (36) (Heim 1990:159), it would be nonsensical to map *it* to an 'absolutely' unique sage plant.

(36) Every woman who bought a sage plant here bought eight others along with **it**.

⇒ However, as Elbourne (2001) observes, this problem is independent from pronouns, since it also carries over to overt definite descriptions.

(37) Every woman who bought a sage plant here bought eight others along with **the sage plant**.

⇒ Restricting the reference of a definite description to minimal situations allows us to circumvent the uniqueness problem.

(38) a. LF: [every woman who bought a sage plant] [Σ_3 [$_{VP}$ ≤ [$_{VP}$ bought eight others along with **the$_{\sigma 3}$ sage plant**]]].

b. *denotation in words:*
'Every minimal situation s_b (part of the evaluation situation s) that contains a woman x who bought a sage plant can be extended into a situation s_e in which x bought eight other sage plants along with the unique sage plant in s_b.'

⇒ Minimality plays a crucial role: a minimal situation in which a woman buys a sage plant contains the woman, the sage plant and nothing else.

(Similarly, there may be even smaller woman-sized situations and sage-plant-sized situations.)

4.2 Refinements

- Situations are structured differently from individuals; whereas individuals are always atoms or sums of atoms, situations are possibly non-discrete entities, defined in terms of the part-of / containment relation.

  ⇒ We thus need an understanding of the aspects of situations that are relevant for natural language.

- As Kratzer (2014) observes, the minimality restriction (introduced by quantifiers such as *every*, amongst other lexical elements) is in need of further refinement.

  ⇒ Kratzer argues that examples such as (39) are at odds with minimality, since a minimal situation in which snow falls would not capture the truth conditions of this utterance.

(39) When **snow** falls around here, it takes ten volunteers to remove **it**.

⇒ The analysis presented above would derive a denotation along the lines of (40), though *the snow* must involve exhaustification, roughly denoting 'the entire amount of snow' (rather than '#the unique snow').

(40) a. When **snow** falls around here, it takes ten volunteers to remove **the snow**.

b. *sketch of the denotation (in words):*
'Every minimal situation s_b (part of the evaluation situation s) in which snow falls around here can be extended into a situation s_e in which it takes ten volunteers to remove the entire amount of snow in s_b.'

- This issue is independent from (donkey) pronouns, but rather a problem of situation semantics; for instance, it arises in (41) with denotation in (42d).
  - ⇒ Crucially, a cat that eats one can of Super Supper plus a tiny, insignificant surplus amount may not yet get sick, indicating that minimality will not do.

(41) Every cat that eats more than one can of Super Supper in a day gets sick.

(42) a. $[\![\text{gets sick}]\!]^g = \lambda x . \lambda s . \text{ x gets sick in s}$

b. $[\![[_{VP} \leq [_{VP} \text{gets sick}]]]\!]^g =$
$\lambda x . \lambda s_b . \exists s_e [s_b \leq s_e \wedge \text{x gets sick in } s_e]$

c. $[\![\text{every cat that eats more than one can of Super Supper in a day}]\!]^g =$
$\lambda f_{<e,st>} . \lambda s . \forall x, s_b [s_b \leq s$ is a minimal situation of x being a cat that eats more than one can of Super Supper in a day $\rightarrow f(x)(s_b)]$

d. $[\![[[\text{every cat that eats more than one can of Super Supper in a day}]$
$[_{VP} \leq [_{VP} \text{gets sick}]]]]\!]^g =$
$\lambda s . \forall x, s_b [s_b \leq s$ is a minimal situation of x being a cat that eats more than one can of Super Supper in a day $\rightarrow \exists s_e [s_b \leq s_e \wedge \text{x gets sick in } s_e]]$

- To capture such observations, Kratzer proposes that *minimal situations* must be defined as exemplifiying situations (this version is adapted from Potts 2013):

(43) For any proposition p: a situation s such that p(s) = 1 exemplifies p iff:
i. for all s' < s, p(s') = 1; or
ii. there is no s' such that s' < s and p(s') = 1

⇒ Exemplifying snow-fall-situations satisfy the condition in (43i):

– Every situation s' in which *n* mm of snow fall is part of a situation s in which *n*+1 mm of snow fall, making s a potentially exemplifying (minimal) situation.

(Quantification then quantifies over "maximal self-connected situations exemplifying the proposition expressed by *snow falls around here*, [which] include complete snowfalls", Kratzer 2014)

⇒ Exemplifying sage-plant-buying-woman-situations are of type (43ii):

– A (minimal) situation s in which one woman owns one sage plant does not contain any smaller situations in which *a woman buys a sage plant* is true.

– A (non-minimal) situation s in which one woman buys two sage plants contains <u>both</u> situations in which *a woman buys a sage plant* is <u>true</u> and situations (e.g. woman-sized situations) in which *a woman buys a sage plant* is <u>false</u>.

- Coming back to (19b), repeated in (44), a variant adopted by Hinterwimmer (2014) and Schwarz (2014) is given in (45); here, the relevant restricting relation *EX* between base situations s_b and the proposition in the quantifier's restrictor is explicitly defined as an exemplification relation.

(44) ⟦every man who owns a donkey⟧^{g} =

$\lambda f_{<e,st>} . \lambda s . \forall x, s_b$ [$s_b \leq s$ is a minimal situation of x being a man who owns a donkey $\rightarrow f(x)(s_b)$]

(45) ⟦every man who owns a donkey⟧^{g} =

$\lambda f_{<e,st>}.\lambda s.\forall x,s_b$ [[$s_b \leq s \wedge$

EX({s | x is a man who owns a donkey in s})(s_b)] $\rightarrow f(x)(s_b)$]

where *EX(P)(s_b)* means 's_b exemplifies *P*' and a situation s_b exemplifies a situation predicate [i.e. proposition] *P* iff whenever there is a part of s_b in which *P* is not true, then s_b is a minimal situation in which *P* is true.
(adapted from Hinterwimmer 2014:74)

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