Non-verbal predicates. Modifiers.
[Heim-Kratzer Chapter 4]

1. Introduction.

■ Semantically vacuous words: *of*, *be* and *a* in (1)-(3):
  (1) Paul is rich.
  (2) Kaline is a cat.
  (3) Susan is proud of John.

■ Verbal and non-verbal predicates:

(4) Samples:

<table>
<thead>
<tr>
<th></th>
<th>1-Place Predicates (&quot;intransitive&quot;)</th>
<th>2-Place Predicates (&quot;transitive&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbs</td>
<td>sleep, jump, snore</td>
<td>kiss, love, touch</td>
</tr>
<tr>
<td>Nouns</td>
<td>cat, table, girl</td>
<td>part(-of), relative(-of), advisor(-of)</td>
</tr>
<tr>
<td>Adjectives</td>
<td>red, vegetarian, female</td>
<td>fond(-of), keen(-on), proud(-of)</td>
</tr>
<tr>
<td>Prepositions</td>
<td></td>
<td>from, to, on</td>
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QUESTION 1: Give the denotation of the 2-place adjective *proud(-of)* in $\lambda$-notation.

(5) $\lambda[proud(-of)] =$

QUESTION 2: Do the compositional semantic interpretation of (6), spelling out the meaning of each non-vacuous lexical item. Treat *and* as conjoining the 1-place predicates *student* and *female*.

(6) Ani is a student and female.
2. Predicates as restrictive modifiers.

(7) Ani is a female student.

Possible IMPLEMENTATION A: Type <e,t> and new compositional rule.

(8) $\lambda x \in D_e. \text{FEMALE}(x)$

Predicate Modification (PM):
If $\alpha$ has the form $\alpha$, and $\beta$ and $\gamma$ are both in $D_{<e,t>}$,
then $\llbracket \alpha \rrbracket^s = \lambda x \in D_e. \llbracket \beta \rrbracket^s(x) \land \llbracket \gamma \rrbracket^s(x)$

QUESTION 3: Give a syntactic structure for (10) and spell out its corresponding semantic computation under implementation A:

(10) Ani is a female student proud of Pat.

Possible IMPLEMENTATION B: Type $<<e,t>,<e,t>>$ and just Functional Application.

(11) $\lambda f \in D_{<et>}. \lambda x \in D_e. f(x) = 1 \land \text{FEMALE}(x)$

(12) Functional Application:
If $\alpha$ has the form $\alpha$, then $\llbracket \alpha \rrbracket^s = \llbracket \beta \rrbracket^s(\llbracket \gamma \rrbracket^s)$, whatever is defined.

QUESTION 4: Spell out the denotation of proud under implementation B. Then, do the semantic computation of (10).

(13) $\llbracket \text{proud(-of)} \rrbracket^s =$

Problem with implementation B: the predicates at issue can also appear after be by themselves.

(14) a. Ani is female.
    b. Ani is fond of Pat.

Possible solutions:
• To give a suitable denotation for be. See QUESTION 5. But be $+ <e,t>$ also possible.
• Dummy N’ (Siegel)
• Every predicate has two denotations:
two different lexical entries in Lexikon or
one entry in Lexikon, associated with several related denotations by type-shifting.

QUESTION 5: Propose a denotation for be as taking an argument of type $<<e,t>,<e,t>>$.

(15) $\llbracket \text{be}^{<<e,t>,<e,t>>} \rrbracket^s =$
3. Kinds of adjectives. (Siegel 76, Partee 95)

- Intersective adjectives: carnivorous, four-legged, red(?)…

(16) Intersectivity:
Intuitively, if we view predicates as denoting sets:
\[ [[\text{carnivorous N}']]^s \subseteq [\text{carnivorous}]^s \cap [N']^s \]

(17) a. Aphrodita is a carnivorous orchidee.
   b. Aphrodita is carnivorous and Aphrodita is an orchidee.
   c. Aphrodita is a present from Carl.
   d. Aphrodita is a carnivorous present from Carl.
Conjunction: a \Rightarrow b; Substitution: a and c \Rightarrow d

- Non-intersective adjectives: skillful, beautiful, proud,…

(18) a. Suzanne is a skillful lawyer.
    b. Suzanne is skillful and Susanne is a lawyer.
    c. Suzanne is a plumber.
    b. Suzanne is a skillful plumber.
   * Conjunction: a /⇒ b; *Substitution: a and c /⇒ d

QUESTION 6: Think of examples with beautiful and proud illustrating the same point.

(19) Subsectivity:
Intuitively, if we view predicates as denoting sets:
\[ [[\text{skillful N}']]^s \subseteq [N']^s \]

(20) a. Suzanne is a skillful lawyer.
    b. Suzanne is a lawyer.
   “Conservation”: a ⇒ b

- Non-intersective, non-subsective adjectives: former, alleged, …

(21) a. Esmeralda is a former senator.
    b. Esmeralda is former and Esmeralda is a senator.
    c. Esmeralda is a golf-player.
    d. Esmeralda is a former golf-player.
   * Conjunction: a /⇒ b; *Substitution: a and c /⇒ d

(22) a. Esmeralda is a former senator.
    b. Esmeralda is a senator.
   “Conservation”: a /⇒ b
(23) Possible overlap:
Intuitively, if we view predicates as denoting sets:
It is not necessary that $[[\text{former/alleged } N']]^s \cap [[N']]^s = \emptyset$

(24) a. Diamandis is an alleged thief.
b. Diamandis is a thief.

- Non-intersective, non-subsective, non-overlapping adjectives, privative: counterfeit, fake…

(25) a. This is a counterfeit dollar.
b. This is a dollar.
   a  ?? $\Rightarrow$  b

- The big picture:

(26) Kinds of adjectives

<table>
<thead>
<tr>
<th>Intersective</th>
<th>Non-intersective</th>
</tr>
</thead>
<tbody>
<tr>
<td>carnivorous</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subsective</td>
</tr>
<tr>
<td></td>
<td>Skillful</td>
</tr>
<tr>
<td></td>
<td>Poss. overlapping</td>
</tr>
<tr>
<td></td>
<td>Alleged</td>
</tr>
<tr>
<td></td>
<td>Privative</td>
</tr>
<tr>
<td></td>
<td>Counterfeit</td>
</tr>
</tbody>
</table>

- CONCLUSION 1: we have non-intersective adjectives for which our Predicate Modification Rule in (9) would not work. For those, we should use the alternative line, where adjectives have a more underspecified denotation of type $<<et>,<et>>$.

- Context dependent adjectives: tall, small, …

(27) a. Win is a tall 14-year old.
b. Win is a basket-ball player.
c. Win is a tall basket-ball player.
   a and b $/\Rightarrow$ c

(28) Jumbo is a small elephant.
a. “Small for an elephant”
b. “Small for some comparison class” (King Kong scenario).

- CONCLUSION 2: even though tall/small do not seem intersective prima facie, they can still be analysed as such once we bring in context-dependency. Hence, add them to (26).

- Two possible strategies to deal with Modifiers:
  - Implementation A: Predicate Modification; **female** has type <e,t>
  - Implementation B: Just Functional Application; **female** has both type <e,t> and <<e,t>, <e,t>>, related by type-shifting.

- There are several types of adjectives, according to the way they modify the denotation of the N': schema (26). Also, some may be context dependent: **tall/small**.

- Some adjectives (non-intersective ones) need type <et,et> anyway. So, at least for those we need implementation B. In the book, though, they mostly use intersective adjectives and their <e,t> denotation, for the sake of simplicity.

5. The definite article: the.

- **The** + NP (definite description) as a “compound” proper name (FREGE’s approach):

  (29)  
a. Maria Rosa.
b. My older sister. (=the older sister of mine)
c. The person next to me.

- Its denotation; existence and uniqueness (when singular) presupposition:

  (30)  
  \[
  \text{DP} = \text{D} \leftarrow \text{NP} \\
  \text{the} \quad \text{N} \quad \text{PP} \\
  \text{person} \quad \text{next to me}
  \]

  (31)  
a. The ballroom in building G.
b. The bathroom in building G.

  (32)  
  \[\text{The} is a partial function from D_{<e,t>} to D_e. Hence, } [\text{the}] \in D_{<<e,t>,e>>.}\]

  (33)  
  \[\text{The}_{<e,t>,e>>}^{[e]} = \lambda P : P \in D_{<e,t>} \text{ and there is exactly one } x \text{ for which } P(x)=1. \text{ the unique } y \text{ such that } P(y)=1.\]
Partial denotations.
There is a difference between presupposition (= information taken for granted) and at-issue content (=what we are actually asserting, negating, questioning, hypothesizing, etc).
Take s to be the actual situation:

(34)  
  a. \[[\text{The Dept. Linguistics is on the fifth floor}]\]^s = 0
  b. \[[\text{The Dept. Linguistics isn’t on the fifth floor}]\]^s = 1

(35)  
  a. \[[\text{The ballroom in building G is on the fifth floor}]\]^s = 0?
  b. \[[\text{The ballroom in building G isn’t on the fifth floor}]\]^s = 1??

(36)  Susanne will be late again.  
      Susanne won’t be late again.  
      Will Susanne be late again?  
      If Susanne is late again, people will be upset.  
  a. Presupposition: Susanne has been late in the past.  
  b. At-issue content: Susanne will be late.

(37)  Susanne stopped drinking.  
      Susanne didn’t stop drinking.  
      Did Susanne stop drinking?  
      If Susanne stops drinking, then we will be happier.  
  a. Presupposition: Susanne drank for an indefinite period of time previous to t.  
  b. At-issue content: At certain point in time t and for a while, she didn’t drink.

(38)  The ballroom in building G is on the fifth floor.  
  a. Presupposition: There is a unique ballroom in building G.  
  b. Assertion: That object (the unique ballroom in G) is on the fifth floor.

(39)  \[[\text{The ballroom in Williams Hall is on the fifth floor}]\]^{s_1} =
  1 if there is a unique ballroom in G and it is on 5th floor in s_1.
  0 if there is a unique ballroom in G and it is not on 5th floor in s_1.
  No semantic value if there is no unique ballroom in G.

The position of modifiers within the Determiner Phrase

(40)  \hspace{1cm}  \begin{array}{c} \text{DP} \\ \text{the} \\ \text{NP} \\ \text{N} \\ \text{PP (Mod)} \\ \text{cat} \\ \text{on the right} \end{array} 

(41)  \hspace{1cm}  \begin{array}{c} \text{DP} \\ \text{the} \\ \text{NP} \\ \text{on the right} \end{array}