1 Determiners

(1) No Beatles smoke.

- truth conditions: $[\text{No N VP}]$ is true just in case $[N] \cap [\text{VP}] = \emptyset$
- $[\text{N Beatles}]$ = the set of Beatles $B$
- $[\text{VP smokes}]$ = the set of smokers $S$

Some other determiner truth conditions (see others on p381 in Fromkin)

(2) $[\text{Every N VP}]$ is true just in case $[N] \subset [\text{VP}]$

(3) $[\text{Fewer than six N VP}]$ is true just in case $|[N] \cap [\text{VP}]| < 6$

- in general, the meaning of determiners is a relation between two sets, $[N]$ and $[\text{VP}]$
- more specifically, natural language determiners appear to be conservative relations

**conservativity** A relation $Q$ named by a determiner is conservative if and only if, for any properties $A$ and $B$, relation $Q$ holds between $A$ and $B$ if and only if relation $Q$ holds between $A$ and the things in $(A \cap B)$

For conservative $Q$, $AQ B$ is true just in case $A Q (A \cap B)$ is true.

- We only have to look at the part of predicate $B$ that overlaps with $A$ in order to determine the truth of the whole sentence
If human language determiner meanings are conservative, then sentences
whose truth conditions are \( AQB \) should be synonymous with sentences
whose truth conditions are \( A(Q \cap B) \).

<table>
<thead>
<tr>
<th>constituent</th>
<th>example</th>
<th>kind of set-theoretic object</th>
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</thead>
<tbody>
<tr>
<td>names</td>
<td>‘W.’, Paul Wolfowitz</td>
<td>individuals</td>
</tr>
<tr>
<td>VPs</td>
<td>snores, occupies Iraq</td>
<td>sets of individuals that do that activity</td>
</tr>
<tr>
<td>Ns</td>
<td>girl, Beatle</td>
<td>set of individuals that have that property</td>
</tr>
<tr>
<td>As</td>
<td>sleepy, trigger-happy</td>
<td>set of individuals that have that property</td>
</tr>
<tr>
<td>[NP that VP]</td>
<td>girl that sleeps, Beatle that is happy</td>
<td>set of individuals that have both properties</td>
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A compositional semantic rule for a class of relative clauses:

(4) \[ [NP \text{ NP that VP}] = [NP] \cap [VP] \]

Some modifiers have this kind of **intersective** meaning. But not all.

(5) a. The girl who is wearing the blue cap bought a CD.
   b. The taller girl bought a CD.

### 1.1 Are determiners really conservative? doing the experiment

What are the truth conditions of (6)

(6) Every Beatle smokes.

should be true just in case \( B \subset S \) is true in our model. If “every” is conservative, this sentence should be synonymous with a sentence having truth conditions \( B \subset (B \cap S) \). How can we make such a sentence?

(7) Every \([N \text{ Beatle } [VP \text{ is a Beatle that smokes }]]\]

(8) \[ [D \text{ a Beatle that smokes}] = (B \cap S) \]

Indeed, (7) has truth conditions \( B \subset (B \cap S) \). If “every” is really conservative, then (7) should be synonymous with (6). Is “fewer than 6” conservative?

(9) Fewer than 6 Beatles smoke.

**Non-conservative determiner meanings are definable...**

(10) owt is true just in case \( ||VP\| - ||N\| > 2 \)

<table>
<thead>
<tr>
<th>sentence</th>
<th>truth value</th>
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<tbody>
<tr>
<td>owt cars roll on the highway</td>
<td></td>
</tr>
<tr>
<td>owt animals are muskrats</td>
<td></td>
</tr>
<tr>
<td>owt bachelors are unmarried men</td>
<td></td>
</tr>
<tr>
<td>owt teachers know model-theoretic semantics</td>
<td></td>
</tr>
<tr>
<td>owt teachers are teachers that know model-theoretic semantics</td>
<td></td>
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</tbody>
</table>

...but not found in natural languages
2 Kinds of entailment: Presupposition and Assertion

assertions have meanings that are contradicted by their negation

(11)  a. It is raining.
     b. It is not raining.

presuppositions are not similarly cancelled by negation

(12)  a. I am thankful that it is raining
     b. I am not thankful that it is raining.

Both sentences in (12) entail (11)-a; (12)-a presupposes (11)-a.
     What are the presuppositions of *I regret that I lied to the queen?*

1. I regret that I lied to the queen.
2. I lied to the queen.
3. I am generally an honest person.
4. There is a queen
5. A unique queen is identifiable in the context