Interpretability[1]

The function of the semantic system is to take syntactic representations (SRs) and to yield statements of truth conditions. It is very reasonable to expect that there will be SRs that the semantic system will not be able to convert into truth conditions. These SRs will correspond to a piece of sound but not to a (usable) piece of meaning. This can serve as an account of the "unacceptability" of various pieces of sound (sometimes called strings).

Possible examples:

(1) %Colorless green ideas sleep furiously.

(2) %Mary arrived Fred.

(3) a. %The flower bloomed Mary.
b. %Fred bloomed.
c. %Mary bloomed Fred.

(4) %Saw Mary.

(5) %And Fred slept.

(6) a. %Fred introduced.
b. %Fred loved.

(7) %Fred loved the.

Function Application

Assume a syntactic system in which all non-terminal nodes are binary branching. We might entertain the possibility that the only semantic composition rule is Function Application (FA).

(8) Function Application (FA): If α is a constituent whose two daughters β and γ have the extensions [[β]] and [[γ]], where [[β]] is a function with [[γ]] in its domain, then [[α]] = [[β]]([[γ]]).

[1] This handout is adapted from one put together by Danny Fox (MIT), with minimal changes.

Lexical entries (just meanings)

[[**Fred**]] = f

[[**Mary**]] = m

[[**Sue**]] = s

[[**to**]] = $[\lambda x: x \in D_e . x]$

[[**bloom**]] = the function f, from individuals to {0,1}, such that f(x) =1 iff x blooms.

= the function f of type <e,t> ($f_{<e,t>}$), such that f(x)=1 iff x blooms.

= $[\lambda x: x \in D_e .$x blooms]

[[**sleep**]] = $[\lambda x: x \in D_e .$x sleeps]

[[**arrive**]] = $[\lambda x: x \in D_e .$x arrives]

[[**see**]] = the function f, from individuals to functions from individuals to {0,1}, such that f(o)(s) =1 iff s sees o.

= the $f_{<e,<e,t>>}$, such that f(x)(y) =1 iff y sees x.

= $[\lambda x: x \in D_e .[\lambda y: y \in D_e .$ y sees x]]

[[**love**]] = $[\lambda x: x \in D_e .[\lambda y: y \in D_e .$ y loves x]]

[[**introduce**]] = the function f, from individuals to
functions from individuals to
functions from individuals to {0,1},
such that f(o)(io)(s) =1 iff s introduces io to o.

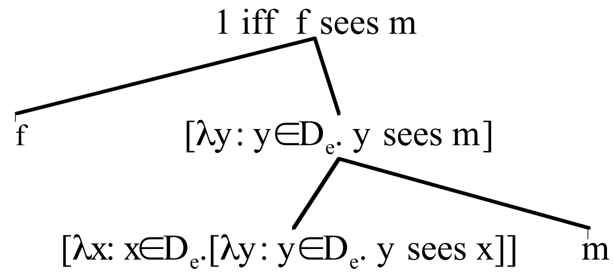
= the $f_{<e,<e,<e,t>>.}$, such that f(x)(y)(z) =1 iff z introduced x to y.

= $[\lambda x: x \in D_e . [\lambda y: y \in D_e . [\lambda z: z \in D_e .$ z introduces x to y]]]

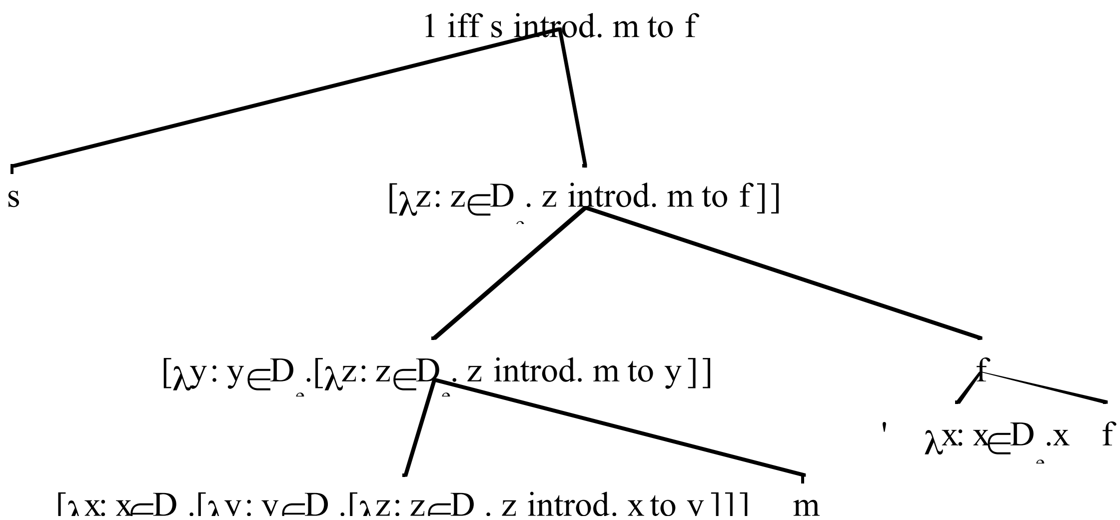
[[**and**]] **=** $[\lambda p: p \in D_t .[\lambda q: q \in D_t .$ p=1 and q=1]]

A few good derivations

(9) Fred see Mary.



(10) Sue introduce Mary to Fred.



<u>Practice exercise</u>: Derive the truth conditions of (11). Explain the last step of (14).

(11) Fred see Mary and Sue introduce Mary to Fred.

- 1 iff s introd. m to f
  - s
  - [λz: z∈D_e . z introd. m to f]]
    - [λy: y∈D_e .[λz: z∈D_e . z introd. m to y]]
      - [λx: x∈D_e .[λy: y∈D_e .[λz: z∈D_e . z introd. x to y]]]
      - m
    - f
      - λx: x∈D_e .x
      - f

A few bad derivations

(12) %Mary arrive Fred.

- ???
  - m
  - 1 iff f arrives
    - [λx: x∈D_e. x arrives]
    - f

(13) %See Fred.

- [λy: y∈D_e.y sees f]
  - [λx: x∈D_e. [λx: x∈D_e.y sees x]
  - f

(14) %And Fred sleep.

- [λq: q∈D_t.f sleeps and q =1]
  - 1 iff f sleeps
    - f
    - [λx: x∈D_e. z sleeps]
  - [λp: p∈D_t. [λq: q∈D_t.p =q =1]