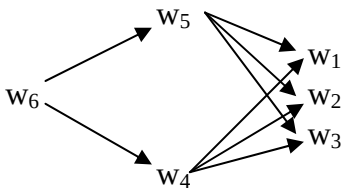
24.973 Advanced Semantics

Spring 2009

(1) P induces a strict partial order on W (strict partial order = transitive, irreflexive, asymmetric relation)
$w <_P w'$ iff w satisfies more propositions in P than w'
w satisfies p iff p is true in w, i.e. iff $p(w) = 1$, i.e. iff $w \in p$

(2) $P = \{p, q, r\}$
$w_1 \models p$
$w_2 \models q$
$w_3 \models r$
$w_4 \models p, q$
$w_5 \models q, r$
$w_6 \models p, q, r$



(3) L = {p,q}, whereby
(i) $p = \neg$PARK
(ii) q = PARK $\rightarrow$ PAY

(4) $[\![$John must pay a fine$]\!]^{w,g} = 1$ iff w is such that for any w' related to w, John pays a fine in w'

(5) w' is related to w iff
(a) John parks in w' (i.e. $w' \in f_{epist}(w)$)
(b) no w" in which John parks satisfies more propositions in L than w'

(6) w' is related to w iff $w' \in MAX_L$(the set of worlds compatible with the facts in w)
$MAX_L(W) = \{w \in W | \neg \exists w' \in W: w' <_L w\}$

(7) $[\![must]\!]^{w,g}(f)(g)(p) = 1$ iff $\forall w' \in MAX_{g(w)}(\bigcap f(w)): w' \models p$