Semantic Rules for QL^f

(Q0)	For atomic *wff* A (n-place predicate followed by n terms): (a) If $n = 0$, then $A \Rightarrow_q$ T if the q-value of A is true. Otherwise $A \Rightarrow_q$ F. (b) If $n > 0$, then $A \Rightarrow_q$ T if the n-tuple formed by taking, in order, the references under q (objects in the domain) of the terms in A is an element of the q-value of A (the extension of the predicate in A). Otherwise $A \Rightarrow_q$ F.
($Q0^+$)	An atomic *wwf* of the form $t_1 = t_2$ is true under q just if the terms t_1 and t_2 are assigned the same objects by q.
(Q1)	For any *wff* A: $\neg A \Rightarrow_q$ T if $A \Rightarrow_q$ F. Otherwise $\neg A \Rightarrow_q$ F.
(Q2)	For *wffs* A, B: $(A \wedge B) \Rightarrow_q$ T if both $A \Rightarrow_q$ T and $B \Rightarrow_q$ T. Otherwise $(A \wedge B) \Rightarrow_q$ F.
(Q3)	For *wffs* A, B: $(A \vee B) \Rightarrow_q$ F if both $A \Rightarrow_q$ F and $B \Rightarrow_q$ F. Otherwise $(A \vee B) \Rightarrow_q$ T.
(Q4)	For *wffs* A, B: $(A \supset B) \Rightarrow_q$ F if $A \Rightarrow_q$ T and $B \Rightarrow_q$ F. Otherwise $(A \supset B) \Rightarrow_q$ T.
(Q5)	For *wffs* A, B, $(A \equiv B) \Rightarrow_q$ T if $A \Rightarrow_q$ T and $B \Rightarrow_q$ T, or if $A \Rightarrow_q$ F and $B \Rightarrow_q$ F; otherwise $(A \equiv B) \Rightarrow_q$ F.
(Q6)	For *wff* $C(...v...v...)$ with variable v free, $\forall v C(...v...v...) \Rightarrow_q$ T if $C(...v...v...) \Rightarrow_{q^+}$ T for every v-variant q^+ of q. Otherwise $\forall v C(...v...v...) \Rightarrow_q$ F.
(Q7)	For *wff* $C(...v...v...)$ with variable v free, $\exists v C(...v...v...) \Rightarrow_q$ T if $C(...v...v...) \Rightarrow_{q^+}$ T for at least one v-variant q^+ of q. Otherwise $\exists v C(...v...v...) \Rightarrow_q$ F.

Some Results

(V1)	If a q-valuation q makes $\forall v C(...v...v...)$ true, then, if c is a constant in q's vocabulary, then q makes $C(...c...c...)$ true. If c is not a constant in q's vocabulary, then there is an extension q^+ of q with a vocabulary that contains c and that makes $C(...c...c...)$ true. (*If a q-valuation makes a universal quantifier wff true, it makes all its instances true, too.*)
(V2)	If a q-valuation q makes $\exists v C(...v...v...)$ true, and c is a constant that does not occur in q's vocabulary, then there is an extension q^+ of q with a vocabulary that contains c and that makes $C(...c...c...)$ true. (*If a q-valuation makes an existential quantifer wff true, then it has an extension that makes an instance of the existential wff true, too.*)
(V3)	If a q-valuation makes $\neg\forall v C(...v...v...)$ true, then it also makes $\exists v \neg C(...v...v...)$ true.
(V4)	If a q-valuation makes $\neg\exists v C(...v...v...)$ true, then it also makes $\forall v \neg C(...v...v...)$ true.
(V5)	Suppose a q-valuation q has a vocabulary V that does not contain the constant c; and suppose q^+ is an extension of q that assigns to c some object in the domain. Let W be a *wff* using symbols in V. Then if $W \Rightarrow_q$ T, then $W \Rightarrow_{q^+}$ T. (*Extending a q-valuation to cover a new constant c doesn't affect the truth values of wffs that do not contain c.*)