24.973 Advanced Semantics
Spring 2009

TA 24.973, Feb 11 09, Tue Trinh

Semantics

$[\![\text{in the world of Sherlock Holmes, } \phi]\!]^{w} = 1$ iff $[\![\phi]\!]^{\text{the world of Sherlock Holmes}} = 1$

Problem: non-contingency

The semantics in (1) entails that ⌜in the world of Sherlock Holmes, ϕ⌝ would express a non-contingent proposition, i.e. a proposition which either is true in every world, or is true in no world

→ show this!

Semantics

$[\![\text{in the world of Sherlock Holmes, } \phi]\!]^{w} = 1$ iff $[\![\phi]\!]^{\text{the world of Sherlock Holmes }\underline{\text{as describe in w}}} = 1$

→ show that the non-contingency problem no longer exists!

World = totality of facts…

$[\![\text{in the world of SH, Watson has an odd number of hairs}]\!]^{w} = ?$

→ Sir Conan Doyle did not give a complete world description, but an incomplete one which could be part of many different complete world descriptions

Semantics

$[\![\text{in the world of Sherlock Holmes, } \phi]\!]^{w} = 1$ iff in every world w' compatible with the Sherlock Holmes stories in w, $[\![\phi]\!]^{w'} = 1$

Problem: non-specificity

Suppose Sir Conan Doyle wrote "Sherlock Holmes has a dog" and that was the only mention of Holmes' dog in the stories…

$[\![\text{in the world of Sherlock Holmes, he has no dogs}]\!]^{w} = ?$

Semantics

$[\![\text{in the world of Sherlock Holmes, } \phi]\!]^{w} \neq \#$ only if $[\![\text{in the world of Sherlock Holmes, } \phi]\!]^{w} = 1$ or $[\![\text{in the world of Sherlock Holmes, } \neg\phi]\!]^{w} = 1$; when $\neq \#$, $[\![\text{in the world of Sherlock Holmes, } \phi]\!]^{w} = 1$ iff for every world w' compatible with the Sherlock Holmes stories in w, $[\![\phi]\!]^{w'} = 1$

→ cf. Gajewski's neg-raising analysis: $[\![\alpha \text{ believes } \phi]\!]^{w} \neq \#$ only if $[\![\alpha \text{ believes } \phi]\!]^{w} = 1$ or $[\![\alpha \text{ believes } \neg\phi]\!]^{w} = 1$; when $\neq \#$, $[\![\alpha \text{ believes } \phi]\!]^{w} = 1$ iff for every world w' compatible with what α believes in w, $[\![\phi]\!]^{w'} = 1$

Problem: non-continuities

Suppose at one place, Sir Conan Doyle wrote "SH has an odd number of hair" and at another, he (mistakenly) wrote "SH has an even number of hairs"…

→ $[\![\text{in the world of Sherlock Holmes, he is a woman}]\!]^{w} = ?$

$[\![\text{believe } \phi]\!]^{w} = \lambda x.\forall w'$ compatible with what x believes in w: $[\![\phi]\!]^{w'} = 1$

$B = \lambda x.\lambda w.\{w' |\ w'$ is compatible with what x believes in w$\} = \lambda x.\lambda w.\lambda w'.w'$ is compatible with what x believes in w

$[\![\text{John believes } \phi]\!]^{w} = 1$ iff $\forall w' \in B(\text{John})(w)$: $[\![\phi]\!]^{w'} = 1$

[B(John)] = an 'accessibility relation'

relation = something that is true of ordered pairs