Logical Module

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0.0 Introduction

1.0 Definitions

We assume a *logical module* or grammatical fragment suitable for first and higher-order implementations. More precisely, I define a *module* m per the following:

(1) A *negation operator* {¬}.
(2) A set of *conceptual variables* {λ1, ..., λn}.
(3) A *belief operator* {●}.
(4) A set of *temporal operators* {t1, ..., tn}.
(5) A *time indexing operator* {@}.
(6) The following grammatical rules:

(where *wff* is any well-formed formula in the language of implementation)

(i) ¬*wff* is a well-formed formula.
(iia) ●(λa , λb) is a well-formed formula
(iib) ●(λa) is a well-formed formula
(iic) where λa , λb range over *conceptual variables*.
(iii) *wff* @ ta is a well-formed formula where ta ranges over *temporal operators*.

A *module* m is *implemented* by a language *L* whenever:

(7) The syntactic marks (symbols) in (1) – (5) are in *L*'s vocabulary.
(8) The grammatical rules in (6) are consistent with and part of *L*'s grammar.

I define *plug and play* with respect to a language *L* as an attribute of a *module* whenever it, the *module*, can satisfy conditions (7) and (8) with respect to *L*.

Tertiary bits (no pun): a *module* m *interfaces* whenever it is *implemented* by two languages *L*1, *L*2. Usually we think of this as a morphism (a kind of relation) between two languages. I'd prefer to focus on the *module* here.

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2.0 Potential Applications

Carnap's *Linguistic Frameworks*
Hegel's *Dialectical Method* and *Science of Logic*

A *conceptual variable* denotes a *logic*.