

A GENERALISED THEORY OF DEFAULT REASONING -
PRELIMINARY REMARKS

Richard Ball

Department of Computer Science
University of Essex
August 1992

Intuitive starting points.

This document gives an account of the main ideas and general direction of my ph.D thesis.

We start from the realisation (which I will argue for) that semi-normal defaults (and other types of prototypical reasoning with exceptions) do not fit into a recursively defined bijectional semantics.

The nearest attempt was adequate as far as it went (Etherington).

This involved a modification of the semantics at the end (ie cycling back through the default rules). A conditional logic trying to give one-to-one semantics to a semi-normal default would have to use some kind of "virtual" model. That is, since there appears to be no way to decide the truth conditions of one semi- or ab-normal default rule in the absence of the knowledge of how the other ones behave, any attempt to represent such truth conditions would necessarily involve some sort of model theoretic device to wait for the outcome of the other rules. I have no intuitions as to what such a structure would represent.

So if a wff has no denotational semantics, what are we left with? We have only a set of sentences in some language for the agent's theory of the world (this set is always finite), and we have a conviction that these sentences are true. Included in this set of sentences we have (perhaps) a number of default rules, whose meaning we do not know until we set it/them in a system of some kind.

We have the starting set of a reasoning system to be given below. The idea is that the underlying theory is simply justified on itself. Details below.

We wish to explore closely what it is for a derivation to be justified on other wffs.

Consider the intuition that a car (eg) is where one left it until someone either moves it or it is blown up. That it is where we left it is justified on the "consistency" (details later) of the assertions that nobody has moved it, blown it up ...
We will not need a temporal logic, at least not for the basic

