

Errata

Raclavský, Jiří (2020): *Belief Attitudes, Fine-Grained Hyperintensionality and Type-Theoretic Logic*. Studies in Logic 88. ISBN 978-1-84890-334-0, London: College Publications.

The book occasionally contains various typographical and grammatical infelicities which the reader can easily recognize and correct. Important are rather conceptual deficiencies, I comment four of them.

1 Empty matches

Graham Oddie noticed (in winter 2021) that my ‘objectual’ reading of empty matches as existential constructions (p. 57) is by mistake overtly incoherent in most cases. My description should rather read “there is no object x [not: no construction c] constructed by C ”.

2 Explicit substitution

The type theory TTT developed in the book relies on Tichý’s explicit substitution $C_{(D/x)}$ which uses Tichý’s constructions of the form 2C called double executions. In spring 2021, my colleague Petr Kuchyňka developed counterexamples showing that substitution into double executions leads to inconsistencies, which affects some derivation rules employing $C_{(D/x)}$.

But the problems by no means relate to the substitution function SUB^n as defined on p. 75, for SUB^n does not allow substitution into executions. They only relate to the supplemented versions of the function indicated on p. 76 (they are called mates of SUB^n). In other words, all results depending on SUB^n are still unchallenged.

The simplest prevention of the problem consists in an appropriate conditioning of the relevant rules, e.g. by employing only SUB^n – as done in the book. (My proof of the Compensation Principle needs several partial omissions of the statements employing those mates of SUB^n ; the parts employing only SUB^n are unaffected.) Tichý 1988 himself used another solution: he rejected substitution for free variables occurring in executions, for he did not treat them as free.

I recently decided to completely omit double executions from the system (from its newer version I currently develop). Single executions may be omitted as well (they are of no practical use anyway). The removal of single and double executions disables any possible use of those dangerous mates of SUB^n .

But an ‘objectual’ treatment of $C_{(D/x)}$ is still needed, for which purpose I elaborated a proposal in my recent paper “Some Puzzles of Existential Generalisation from a Type-Theoretic Perspective” (accepted to Electronic Proceedings in Theoretical Computer Science in 2021).

3 Existential generalization

In the book, the rule of existential generalization, (EG), is a. stated as primitive and b. is then used for resolution of various arguments stated in natural language. In my recent paper, “The Rule of Existential Generalisation and Explicit Substitution” (2021, Logic and Logical Philosophy) I corrected a., since I derived (EG) from other, more primitive rules of the natural deduction system for TTT. (More precisely, I used there another system, TT*, whose substitution function seemingly allows the error discussed in the previous point.) Moreover, I corrected there b., i.e. I improved the explanation of how arguments should be checked for their validity using derivation rules.

4 Completeness proof

In autumn 2020, Petr Kuchyňka reacted to my plan to devise a Henkin-style completeness proof for the sequel of TTT, i.e. TT*, in a surprising way: he provided one. The existence of such a proof is, of course, fantastic! In 2021 we polished the proof (btw. presented at the NCMPL2021 conference) and completed a paper which is now submitted.