

Normalisation and Harmony in Bilateral Logic

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Ian Rumfitt [3] has put forward a bilateralist account of logic in which the meaning of the connectives is given by rules governing the assertion and rejection of sentences containing them. According to Rumfitt, an advantage of this setting is that it allows for a harmonious formalisation of classical logic. Rumfitt’s rules for the classical connectives are harmonious according to criteria proposed for standard (‘unilateral’) systems. In the first part of the talk, I argue that the bilateral framework requires its own notion of harmony. In particular, it should be possible to restrict the application of all coordination principles to atomic formulae. This is not possible in Rumfitt’s calculus for classical logic, which is therefore not harmonious after all. To solve the problem I introduce calculi \mathbf{HBCL}_1 and \mathbf{HBCL}_2 . They are equivalent to Rumfitt’s, but in them coordination principles can be restricted to atoms.

The demand that coordination principles should be reducible to atomic applications motivates a notion of normal form for bilateral settings. In the second part of the talk I show that \mathbf{HBCL}_1 and \mathbf{HBCL}_2 normalise, and that derivations in normal form have the subformula and separation properties. I then compare this notion of normal form to two related proposals by Nils Kürbis [2] and Marcelo D’Agostini, Dov Gabbay and Sanjay Modgyl [1].

References

- [1] Marcello D’Agostino, Dov Gabbay, and Sanjay Modgil. “Normality, Non-Contamination and Logical Depth in Classical Natural Deduction”. In: *Studia Logica* 108.2 (2020), pp. 291–357. DOI: 10.1007/s11225-019-09847-4.
- [2] Nils Kürbis. “Normalisation for Bilateral Classical Logic with Some Philosophical Remarks”. In: *Journal of Applied Logics* 2.8 (2021), pp. 531–556.
- [3] I. Rumfitt. “Yes and No”. In: *Mind* 109.436 (2000), pp. 781–823. DOI: 10.1093/mind/109.436.781.