IS EXTENSIONAL TYPE THEORY EXTENSIONAL?

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Kai F. Wehmeier is a German-American philosopher and logician. His research interests include logic, early analytic philosophy (especially Frege and Wittgenstein), the philosophy of language and formal semantics.

Wehmeier graduated from the University of Münster in 1992 with a dissertation on Semantical Investigations in Intuitionistic First-order Arithmetic and is best known for work on Frege's Grundgesetze der Arithmetik and the Subjunctive Modal Logic (in response to Kripke's modal logic). He currently holds the positions as Professor at the Departments of Logic & Philosophy of Science and Professor of Linguistics at the University of California, Irvine. Wehmeier is also the director of UC Irvine's Center for the Advancement of Logic, its Philosophy, History, and Applications (C-ALPHA).

IS EXTENSIONAL TYPE THEORY EXTENSIONAL?

Type theories of one sort or another have been fundamental tools in the formal semanticist's workbox ever since Montague. Intensional type theories involve a space of so-called indices – typically possible worlds, instants of time, or pairs of worlds and times – that allow a formal analysis of natural-language constructions including modal and temporal locutions. For example, that „necessarily, 5+7 = 12" and „necessarily, Berlin is the capital of Germany" have distinct truth values even though the embedded sentences „5+7 = 12" and „Berlin is the capital of Germany" have the same truth value, can be explained by assuming that under „necessarily," a sentence refers not to its truth value but to its intension, that is, to the function on the space of possible worlds that maps each world to the sentence's truth value at that world. Extensional type theories, by contrast, (at least prima facie) eschew such index spaces and involve only ordinary objects, truth values, and functions logically constructed out of them. It has occasionally been claimed, though to my knowledge rarely critically discussed, that a compositional treatment of extensional type theories requires conceiving of variable assignments as indices, and of variable-binders, such as quantifiers or abstractors, as operators taking assignment intensions as arguments; accordingly, even so-called extensional type theories would in fact be intensional. In this talk, I will examine several formulations of extensional type theory with an eye to the question whether we should think of quantifiers and lambdas as fundamentally intensional operators. I will argue that the theoretically most satisfactory versions of extensional type theory are not intensional in any sense.

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Forschung an der Schnittstelle zwischen Linguistik und Philosophie kann auf eine lange Tradition zurückblicken, die vor allem im Umfeld der analytischen Philosophie gepflegt wurde und sich als außerordentlich fruchtbar erwiesen hat.
Auch an der Universität zu Köln hat sich in den letzten Jahren eine intensive Zusammenarbeit im Bereich der Sprachwissenschaft, formalen Semantik und Pragmatik sowie der Logik und analytischen Sprachphilosophie entwickelt. Die Gründung des CLIP (Center for Language, Information and Philosophy) schafft einen institutionellen Rahmen, der es erlaubt, diese Zusammenarbeit zu fördern und zu intensivieren.

IMPORTANT PUBLICATIONS
• "Subjunctivity and Conditionals," Journal of Philosophy, Vol. CX: 3, 2013, 117–142.
• "How to Live Without Identity — and Why," Australasian Journal of Philosophy 90:4, 2012, 761–777.
• "Wittgensteinian Tableaux, Identity, and Co-Denotation," Erkenntnis 69, 2008, 363–376.
• "In the Mood," Journal of Philosophical Logic 33, 2004, 607–630.
• "Consistent Fragments of Grundgesetze and the Existence of Non-Logical Objects", Synthese 121, 1999, 309–328.