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Non-canonicity: Two Stories

Probably the most popular examples of non-canonical modal formulas are those of McKinsey-Sobociński (**M**), Löb (**GL**) and Grzegorczyk (**Grz**); the essence of non-canonical behaviour of **Grz** and **GL** is captured by the weak Grzegorczyk formula **wGrz**, derivable from either of them. All these formulas axiomatize logics which enjoy the finite model property without being strongly Kripke complete. All of them are naturally encountered in applications and in purely mathematical investigations. Each of them can be used and was used to construct examples of logics which are Kripke-incomplete or Kripke-inconsistent (i.e, having no frames whatsoever).

In this talk, I am going to show that when we abstract away from Kripke frames and consider more general notions of canonicity and completeness, the behaviour of **M** becomes radically different to that of **wGrz** (and hence **Grz** and **GL**). Except for my own observations, I would like to advertise an important, somewhat overlooked result of Timothy Surendonk. Better understanding of some of these notions should be relevant for the study of 1) coalgebraic logic 2) canonical extensions of lattice expansions 3) still unsolved open questions concerning superintuitionistic propositional logics.