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Report 1: Computer-Assisted Analysis of the Anderson-H ajek Ontological Controversy

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This article presents a formalisation in the Isabelle proof assistant of several variants of Gödel's God proof, all of which aim at avoiding modal collapse, a consequence of Gödel's axioms that is generally considered to be needlessly strong, and hence an indication that the axioms are too strong (while being consistent).

The analysis relies on automatic theorem provers and model finders for higher-order logic, which is used to embed higher-order modal logic. The approach should be familiar to anybody who has been following Christoph Benzmüller's research since 2010 or so.

I found the paper nice and comparatively easy to read. Figure 8, and its helpful color scheme, is particularly enlightening. It is also commendable that the Isabelle formalisation is available on GitHub. (One minor comment: For the proof of A4 in `AndersonSimplification_var.thy`, the metis proof seems to take forever with Isabelle2016-1. Or is it just very slow?)

On p. 1, Metis is referred to as a higher-order prover, but the reference given is to a first-order prover. I believe this is the usual confusion between Joe Hurd's Metis-the-first-order-prover and Paulson & Susanto's metis-proof-method for Isabelle/HOL, which incorporates sledgehammer's higher-to-first-order translation and is therefore a higher-order prover. Writing `\emph{metis}` or `metis` instead of `Metis`, and adding a citation to Paulson & Susanto, should suffice to dispell the confusion.

The work was presented at the First Congress on Logic and Religion. Was the work published before? I could only find a 2-page abstract. In any case, it would be useful if the article had a brief explanation or footnote explaining its relation to the seminar talk and to any previous papers with the same title -- in the interest of transparency and also just to reduce confusion.

A few minor comments:

"God-like" is inconsistently capitalised as "god-like" on p. 2.

Bjørndal is sometimes called Bjorndal (e.g. in caption of Fig. 7).

On p. 3, "p. 5-6" should be written "pp. 5--6" ("pp." when there are several pages, and en-dash instead of hyphen for ranges).

Careful typesetting distinguishes apostrophes and primes. "A3'" should be written A3\$'\$.

On p. 4, "aswell" -> "as well".

Figure 8 looks low quality, with big pixels. I doubt I will convince the authors to redo it using, say, LaTeX's nice-looking "booktabs" package, but perhaps there's a way to retake the screenshot with smaller pixels (e.g. by doubling or quadrupling the size of the font and scaling down the image accordingly).

What is called yellow on p. 8 looks like light green on my printout, which is confusing since green also has a meaning). Also, color-blind people will struggle with the difference between red and green. My recommendations:

1. Use blue instead of green. Color-blind people can usually distinguish blue and red.

2. Use the colors in the legend, e.g. put the word "yellow" in "Cells highlighted in yellow" in a yellow box. Some people will see that three different colors are used and be able to connect them, even if they don't know what yellow is.