

- MATTEO DE CEGLIE, *The V-logic multiverse and MAXIMIZE*.
Philosophy Department (KGW), Salzburg University, Franziskanergasse, 1 - Salzburg,
Österreich.
E-mail: decegliematteo@gmail.com.

I argue that classical set theory, $ZFC(+LCs)$, is *restrictive* compared to the V -logic multiverse (a novel set theoretic multiverse developed by the author and Claudio Ternullo). This multiverse is based upon Friedman’s Hyperuniverse and Steel’s set-generic multiverse: like the Hyperuniverse, it uses the infinitary V -logic as background logic (this logic admits formulas of length less than the first successor of the least inaccessible cardinal, but only a finite block of quantifiers in front of them) and admits all kinds of outer models of V (produced by set-generic, class-generic, hyperclass forcing). Like Steel’s set-generic multiverse, it is recursively axiomatisable and is rooted on a ground universe that satisfies ZFC . For this proof, I compare $ZFC+LCs$ and the V -logic multiverse, characterised as $ZFC + LCs+$ the Multiverse Axiom Schema (this axiom tells us that if a sentence φ is consistent in V -logic then there is an actual outer model of V satisfying it), following Maddy’s methodological principle MAXIMIZE (introduced in [3]). According to this principle, when comparing two foundational theories we should prefer the one that can prove more isomorphism types. I claim that the V -logic multiverse, as opposed to $ZFC + LCs$, does exactly that. This is because in the V -logic multiverse theory we can prove the existence of proper, uncountable, extensions of V , that we cannot have in $ZFC + LCs$ (see [2]). In turn, these extra objects means we can realise more isomorphism types that are not available in $ZFC + LCs$, since in the V -logic multiverse we can prove the existence of iterable class sharps and, more importantly, maps between them (see [1]). Moreover, when moving from $ZFC + LCs$ to the V -logic Multiverse we are not losing anything: ZFC , all the large cardinals, inner models and V are still there. On the other hand, when moving from the V -logic multiverse to $ZFC + LCs$ we lose the actual outer models of V , iterable class sharps and iterable class sharp generated models. Thus, this latter theory is restrictive compared to the V -logic multiverse theory.

[1] CAROLIN ANTOS, NEIL BARTON, SY-DAVID FRIEDMAN, *Universism and extensions of V* , **Review of Symbolic Logic**, FirstView (forthcoming), pp. 1–43.

[2] NEIL BARTON, *Forcing and the Universe of Sets: Must we lose insight?*, **Journal of Philosophical Logic**, vol. 49 (2020), no. 4, pp. 575–612.

[3] PENELOPE MADDY, *Naturalism in Mathematics*, Oxford University Press, 1998.