Which axioms of set theory should we 'believe'? We argue that these are those axioms which express 'intrinsically justified' properties of sets. Historically, intrinsic justifications have been based on the *iterative conception of set*, the rationale for accepting the axioms of ZFC. However, no new axiom beyond ZFC appears to have such an intrinsic plausibility; moreover none of the axioms justified on 'extrinsic grounds' has withstood criticism.

We propose a reformulation of the notion of 'intrinsic' which is based not on properties of sets but on properties of the universe of sets as a whole. Thus, intrinsically plausible axioms are those first-order statements which are derived from statements which express in an explicit way 'intrinsic' properties of the universe of all sets V.

How are intrinsic properties of V expressed? The axioms of ZFC refer to a 'multiverse', that is, to the collection of models which satisfy them. Many attempts have been made to isolate the correct multiverse concept. Our own conception, which in our opinion successfully defies the objections to the others (see [3] and [1]), leads to the formulation of the hyperuniverse ($\mathbb{H}$), consisting of all countable transitive models of ZFC, as the optimal multiverse construct.

In recent years, considerable attention has been paid by set-theorists to axioms expressing absoluteness across the multiverse. We examine the *absoluteness programme*, concluding that no new set of *first-order* axioms can legitimately represent the absoluteness concept.

In our alternative approach, we consider 'new axioms' as those first-order statements which hold in all universes satisfying intrinsic set-theoretic principles, expressed within the hyperuniverse, and we refer to the latter as $\mathbb{H}$-principles. $\mathbb{H}$-principles, which are higher-order statements about the universe of all sets, formulated as first-order statements about the hyperuniverse, can be used to induce the correct form of absoluteness for V. New axioms are obtained as consequences of $\mathbb{H}$-principles at the first-order level. The $\mathbb{H}$-principles which have so far been investigated have exhibited remarkable consequences (see [2], [4]), impelling, in a sense, the foundational views that we propose here. However, different choices of $\mathbb{H}$-axioms yield different first-order consequences, i.e. different 'new axioms'. The optimistic view is that there is a synthesis of the different $\mathbb{H}$-axioms which results in a unique intrinsically-justifiable extension of ZFC.

In summary, we argue that 'believing the new axioms' essentially consists of finding the correct multiverse laws ($\mathbb{H}$-principles) which express properties of V, and declaring their first-order consequences as intrinsically-justified *new axioms* of set theory.

References

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