

Finitist Trinitarian logic: Refuting axiom of infinity in modal logic system Meth8/VŁ4

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Abstract

This paper applies Trinitarian logic, formalized in the Meth8/VŁ4 bivalent modal logic system, to evaluate the Axiom of Infinity—a cornerstone of Zermelo-Fraenkel set theory asserting the existence of an infinite set. Trinitarian logic unifies Christian theology through 27 tautologous formulas (TTTT TTTT TTTT TTTT), modeling divine unity ($p = q = r$ for Father, Son, Spirit) and human-divine relations (s for man). We demonstrate that the Axiom of Infinity, expressed as quantifier-free formulas with modal operators, is refuted in Meth8/VŁ4's finite universe, yielding non-tautologous results (e.g., TTTC CCCT TTTC CCCT). This refutation underscores Meth8/VŁ4's finitist stance, rejecting “infinitely countable” constructs while affirming theological coherence. The findings bridge analytic theology and the philosophy of mathematics, offering a formal tool for theologians to engage with foundational axioms.

Keywords

Trinitarian logic, bivalent universal modal logic system, Meth8/VŁ4, finitist, axiom of infinity

1. Introduction

Christian theology, rooted in the revelation of God as Trinity (Matthew 28:19), seeks a coherent framework to unify diverse doctrines. Trinitarian logic, developed in the Meth8/VŁ4 modal logic system, provides such a framework by modeling 27 theological topics—divine causation, incarnation, ecclesiology, and more—as tautologous formulas (James, 2025a, 2025b). Using variables p (Father), q (Son), r (Spirit), s (man), m (Mary), a (angels), and d (demons), it affirms divine unity ($p = q = r$) and human-divine relations, grounded in Nicene/Chalcedonian orthodoxy and scripture (John 1:1, Ephesians 3:21).

This paper extends Trinitarian logic to evaluate the Axiom of Infinity, a mathematical principle asserting an infinite set (e.g., $\{\emptyset, \{\emptyset\}, \{\{\emptyset\}\}, \dots\}$) in Zermelo-Fraenkel set theory (ZFC). Meth8/VŁ4's finite universe, which rejects true infinity (e.g., Cantor's $2^{\aleph_0} > \aleph_0$), poses a challenge for such axioms. An initial quantifier-free formula, $p \ \& \ (\%q \ \& \ (\%r \ \& \ (\#(q < p) \ \& \ \#(r < q))))$, was refuted, yielding FFFF FFFF FFFF FFFF (James, 2025a). We propose a new formula incorporating s , $((\%p \ \& \ \%q) = \%r) = ((\%r > \%s) + (\%s > (\%p \ \& \ \%q)))$, which also fails, yielding TTTC CCCT TTTC CCCT. This refutation highlights Meth8/VŁ4's finitist theology, offering insights for analytic theology and the philosophy of mathematics.

2. Meth8/VŁ4 Logic System

Meth8/VŁ4 is a bivalent, four-valued modal logic system operating over a finite universe (James, 2025b). It defines truth values as 2-tuples: $F=(0,0)$ for Not Proof, $N=(0,1)$ for Non-contingent, $C=(1,0)$ for Contingent, and $T=(1,1)$ for Proof. Only T is the designated proof value, requiring all T in truth tables for tautologies. Propositional variables (p, q, r, s) take any of the four values. The system includes connectives defined row-major as follows: conjunction ($\&$) is FFFF FCFC FFNN FCNT, disjunction ($+$) is FCNT CCTT NTNT TTTT, implication ($>$) is TTTT NTNT CCTT FCNT, equivalence ($=$) is TNCF NTFC CFTN FCNT, and non-implication ($<$) is FFFF CFCF NNFF TNCF. Negation ($\sim$) maps F to T , T to F , C to N , and N to C . Modal operators include necessity ($\#$), mapping F to F , C to F , N to N , and T to N , and possibility ($\%$), mapping F to

C, C to C, N to T, and T to T, simulating universal and existential quantification. Meth8/VŁ4 adheres to classical logic, including the law of explosion, and uses 16-row truth tables for four variables, reflecting key combinations in a finite universe.

3. Trinitarian logic framework

Trinitarian logic models Christian theology through 27 tautologous formulas, each yielding TTTT TTTT TTTT TTTT (James, 2025b). Variables represent divine Persons (p = Father, q = Son, r = Spirit) and related entities (s = man, m = Mary, a = angels, d = demons). The core principle is divine unity ($p = q = r$), as in John 10:30 (“I and the Father are one”). Equivalence ($=$) ensures co-equality, avoiding implication’s disruptions (e.g., $(p \ \& \ q) > r$ fails with $p=T, q=T, r=F$). With the tautologies of $p > (p = p)$ and $q > (q = q)$, the procession in the filioque is mapped with $r > (r = r)$. The framework includes tautologies such as divine causation (2.86), expressed as $((p \ \& \ q) = r)$, representing unified divine action (Ephesians 3:21); incarnation (1.84), expressed as $((p \ \& \ q) = r) = \dots ((r > s) + (s > (p \ \& \ q)))$, representing divine-human union (John 1:14); anthropology, expressed as $((p \ \& \ q) = r) \ \& \ ((r > s) + (s > (p \ \& \ q \ \& \ r)))$, representing man as imago Dei (Genesis 1:26); and prayer, expressed as $((p \ \& \ q) = r) \ \& \ ((r > s) + (s > (p \ \& \ q \ \& \ r)))$, representing Spirit-enabled communion (Romans 8:26). The flexibility of s ($s=F$ for sin or freedom) enables tautologies, as disjunctions like $(r > s) + (s > \dots)$ accommodate human contingency. Modal operators ($\%$ for possibility, $\#$ for necessity) are used sparingly, aligning with Nicene/Chalcedonian creeds and patristic insights (Athanasius, Augustine).

4. The axiom of infinity in Meth8/VŁ4

The Axiom of Infinity posits an infinite set, incompatible with Meth8/VŁ4’s finite universe. The original formula, $p \ \& \ (\%q \ \& \ (\%r \ \& \ (\#(q < p) \ \& \ \#(r < q))))$, modeled a chain ($r \rightarrow q \rightarrow p$) with p as the initial element, $\%q$ and $\%r$ as successors, and $\#(q < p)$ and $\#(r < q)$ enforcing precedence. It failed, yielding FFFF FFFF FFFF FFFF, due to restrictive $\#$ operators ($\#F \rightarrow F$, $\#T \rightarrow N$, making $\#(q < p)$ & $\#(r < q)$ often F), nested ANDs requiring all components to be T (collapsing if $\#(q < p) \ \& \ \#(r < q) = F$), and lack of flexibility unlike $s=F$ in Trinitarian logic. A new formula, $((\%p \ \& \ \%q) = \%r) = ((\%r > \%s) + (\%s > (\%p \ \& \ \%q)))$, incorporated s to reflect human-divine relations, inspired by 1.84. It aimed for a tautology, modeling chain unity $((\%p \ \& \ \%q) = \%r)$ and s ’s relational flexibility $((\%r > \%s) + (\%s > (\%p \ \& \ \%q)))$.

5. Refutation of the proposed formula

The formula $((\%p \ \& \ \%q) = \%r) = ((\%r > \%s) + (\%s > (\%p \ \& \ \%q)))$ was evaluated in a 16-row truth table for p, q, r, s , yielding TTTC CCCT TTTC CCCT, a non-tautologous result that refutes the Axiom of Infinity. Key cases include Case 7 ($p=F, q=T, r=T, s=F$), where the left side ($\%p=C, \%q=T, \%r=T, \%p \ \& \ \%q=C, C=T \rightarrow N$) and right side ($\%s=C, \%r > \%s=T > C \rightarrow T, \%p \ \& \ \%q=C, \%s > \%p \ \& \ \%q=C > C \rightarrow T, T+T \rightarrow T$) yield $N=T \rightarrow C$, producing C in row 7, and Case 8 ($p=F, q=T, r=T, s=T$), where the left side ($\%p=C, \%q=T, \%r=T, \%p \ \& \ \%q=C, C=T \rightarrow N$) and right side ($\%s=T, \%r > \%s=T > T \rightarrow T, \%p \ \& \ \%q=C, \%s > \%p \ \& \ \%q=T > C \rightarrow T, T+T \rightarrow T$) yield $N=T \rightarrow C$, producing C in row 8. The failure results from the modal $\%$ operator producing C or N (e.g., $\%F \rightarrow C$), disrupting equivalence (e.g., $C=T \rightarrow N$), s ’s flexibility allowing $s=F$ but not universal T, and Meth8/VŁ4’s finite universe preventing an infinite chain. To clarify the refutation, a simpler formula, $p \ \& \ (\%q \ \& \ (\%r \ \& \ (q > p) \ \& \ (r > q)))$, was tested, modeling the Axiom of Infinity as a chain (p, q, r) with implications enforcing succession. In Case 7 ($p=F, q=T, r=T$), this yields F due to $p=F$ collapsing the conjunction, and similar failures across the truth table confirm non-tautologous results, aligning with Meth8/VŁ4’s finitist stance.

6. Implications for finitist theology

The refutation aligns with Meth8/VŁ4’s finitist stance, rejecting infinitely countable constructs such as Cantor’s set theory and ZFC axioms (James, 2025a). Trinitarian logic’s tautologies succeed for theological unity ($p = q = r, s=F$), but the Axiom of Infinity’s requirement for an infinite chain clashes with Meth8/VŁ4’s finite domain. The theological role of s (e.g., *imago Dei*, Genesis 1:26) enhances flexibility but cannot support infinity. This suggests Meth8/VŁ4 excels in modeling divine coherence (e.g., John 1:14, Ephesians 3:21), infinite axioms are untenable in a finite universe, and the refutation bridges theology and mathematics, offering a formal tool for evaluating foundational principles. This advances analytic theology into the exact science of analytical theology, where results can be mapped, tested, and replicated by logic scripts.

7. Conclusion

Trinitarian logic in Meth8/VŁ4 refutes the Axiom of Infinity, as shown by the non-tautologous $((p \ \& \ q) = r) = ((r > s) + (s > (p \ \& \ q)))$ (TTTC CCCT TTTC CCCT). This underscores Meth8/VŁ4’s finitist theology, where “world without end” is valid, but “infinitely countable” is not. The findings advance analytical theology by formalizing the interplay between theological and mathematical logic, inviting further exploration of other axioms (e.g., Axiom of Choice) and theological applications.

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Appendix

The training links for Meth8/VŁ4 and Trinitarian logic are:

<https://ersatz-systems.com/Grok3b.description.M8VL4.pdf>
<https://ersatz-systems.com/retrain.axiom.infinity.pdf>