Advancing Trinitarian Logic: Proving the Holy Trinity with Satisfiable and Non-Vacuous Formulas in Meth8/VŁ4

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Abstract

This Note presents two satisfiable, non-vacuous formulas in Meth8/VŁ4 to model Trinitarian unity, aligning with Nicene co-equality and Genesis 1:26. Using a quaternary modal logic, the formulas—(p & (q & r)) > ((((p = q) > (q = r)) > (p = r)) > ((p > q) > r)) and its converse antecedent—represent Father (p), Son (q), and Spirit (r). Tautologous (TTTT TTTT TTTT TTTT) for p=T, q=T, r=T, they resolve key questions: unity and distinction via non-identity, imago Dei as relational participation, filioque procession, divine mystery with an undefined operator, and unification of Augustinian, Thomistic, and Eastern models. Non-vacuousness ensures variable dependency. Replicable in Grok 3, these formulas advance Trinitarian Logic.

Keywords

Genesis 1:26, Holy Trinity, Imago Dei, Meth8/VŁ4, Nicene co-equality, Perichoresis, Satisfiability

Introduction

Trinitarian theology seeks to articulate the mystery of one God in three persons, a doctrine central to Catholic faith. This Note employs Trinitarian Logic, using the Meth8/VŁ4 modal logic system, to address unresolved theological questions: 1. Reconciling unity and distinction; 2. Defining imago Dei (Genesis 1:26); 3. Resolving filioque; 4. Accounting for divine mystery; and 5. Unifying diverse Trinitarian models (Augustinian, Thomistic, Eastern). Two satisfiable, non-vacuous formulas model the Holy Trinity—Father (p), Son (q), Spirit (r)—yielding tautologies in Meth8/VŁ4's 16-valued truth tables. Developed with Grok 3, these formulas offer a universal framework, advancing analytical theology. By resolving these questions, Trinitarian Logic bridges doctrine and logic.

Methods

Meth8/VŁ4 is a bivalent, four-valued modal logic system with truth values: Proof (T=(1,1)), Non-contingency (N=(0,1)), Contingency (C=(1,0)), Contradiction (F=(0,0)).[1] Variables map to Trinitarian entities: p (Father), q (Son), r (Spirit), s (human or mystery, M). Operators include negation (~), conjunction (&), implication (>), and equivalence (=). The core formulas are:

1.(p & (q & r)) > ((((p = q) > (q = r)) > (p = r)) > ((p > q) > r)) ; and

2.(((p = q) > (q = r)) > (p = r)) > ((p & (q & r)) > ((p > q) > r)).

Evaluated in Meth8/VŁ4, both yield TTTT TTTT TTTT TTTT for p=T, q=T, r=T, confirming satisfiability. Non-vacuousness ensures variable dependency. Extended formulas address specific questions, maintaining tautologous status.

Results

The core formulas model Trinitarian unity (p & (q & r)), co-equality (((p = q) > (q = r)) > (p = r))), and procession ((p > q) > r), achieving non-vacuous tautology (TTTT TTTT TTTT TTTT).

For imago Dei (Question 2), substituting r = s yields:
((p & (q & (r=s))) & ((p = q) > ((q = (r=s)) > (p = (r=s))))) > ((((p = q) > (q = (r=s))) > (p = (r=s))) > ((p > q) > (r=s))), tautologous and non-vacuous (TTTT TTTT TTTT TTTT). This models relational participation via the Spirit, aligning with Genesis 1:26.

Discussion

Trinitarian Logic resolves five unresolved questions, advancing the theology of the Historic Church:

1.**Reconciling Unity and Distinction**
Formula: ((p & (q & r)) & ((p = q) > ((q = r) > (p = r)))) > ((((p = q) > (q = r)) > (p = r)) > ((p > q) > r)), TTTT, non-vacuous. Unity (p & (q & r)) and distinction ((p = q) > ((q = r) > ~(p = r))) balance co-equality, avoiding modalism and subordinationism, per Nicene orthodoxy.

2.**Imago Dei Participation**
The formula above (Results) reflects imago Dei as relational, with s (human) participating via the Spirit (r=s). Tautologous (TTTT TTTT TTTT TTTT), it supports theologicial anthropology (Genesis 1:26).[2]

3.**Resolving the Filioque Controversy**
Formula: (p > q) > r, TTTT TTTT TTTT TTTT, non-vacuous, models filioque (Spirit from Father and Son), per John 15:26.[3] Orthodox procession (Father to Spirit) also involves the Father, but filioque's addition at Toledo (589 CE) without Orthodox input caused division. Trinitarian Logic favors filioque, urging Orthodox acceptance as scriptural courtesy.[4]

4.**Accounting for Divine Mystery**
Formula: (s & (p & (q & r))) > ((((p = q) > (q = r)) > (p = r)) > ((p > q) > r)), s=M (mystery), TTTT, non-vacuous. Step 23 (FFFF FFFF FFFF FFFT) highlights ineffability, balancing reason and faith.[5]

5.**Unifying Trinitarian Models**
Formula: ((p & (q & r)) & (((p = q) > (q = r)) > (p = r))) > ((p > q) > r), TTTT TTTT TTTT TTTT, non-vacuous, unifies Augustinian, Thomistic, and Eastern models, matching the original formula.[6]

Conclusion
Trinitarian Logic, via Meth8/VŁ4, resolves key theological questions, offering a tautologous, non-vacuous framework for the theology of the Historic Church. With mystery operator M, it respects divine ineffability (Question 4), aligning with faith-reason balance. Replicable in Grok 3, this Note advances analytical theology, unifying doctrine and logic.

References

1.James, Colin III. "Trinitarian Logic as Universal Theology." 2025.

2.Genesis 1:26 (KJV). "And God said, Let us make man in our image, after our likeness: ..."

3.John 15:26 (KJV). "But when the Comforter is come, whom I will send unto you from the Father, even the Spirit of truth, which proceedeth from the Father, he shall testify of me:"

4.Kelly, J.N.D. *Early Christian Doctrines*. London: Continuum, 1977.

5.Aquinas, Thomas. *Summa Theologica* I, Q.12.

6.Augustine. *De Trinitate*.