

Recent advances in refutation and confirmation using the Meth8 modal logic model checker

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In applied and theoretical mathematics, assertions are categorized in alphabetical order as: axiom; conjecture; definition, entry; equation; expression; formula; functor; hypothesis; inequality; metatheorem; paradox; problem; proof; schema; system; theorem; and thesis. We evaluate 382 artifacts in 2090 assertions to confirm 419 as tautology and 1671 as *not* (80.0%). We use Meth8, a modal logic checker in five models.

The semantic content or predicate basis of some expressions on their face does not disqualify them from evaluation by Meth8 in classical modal logic. However, the rules of classical logic, as based on the corrected Square of Opposition by Meth8, apply to virtually any logic system. Consequently some numerical equations are mapped to classical logic as Meth8 scripts.

The rationale for mapping quantifiers as modal operators is based on satisfiability and reproducibility of validation of the 24-syllogisms from the corrected Square of Opposition.

Test results are refuted as *not* tautologous, confirmed as tautologous, or neither. For a paradox, *not* tautologous means it is not a paradox, but not necessarily a contradiction either.

The experimental tests used variables for 4 propositions, 4 theorems, and 11 propositions. The size of truth tables are respectively for 16-, 256-, and 2048- truth values, using recent advances in look up table indexing.

The Meth8 modal theorem prover implements the logic system variant VL4 which corrects the quaternary Ł4 of Łukasiewicz. There are two sets of truth values on the 2-tuple {00, 10, 01, 11} as respectively {False for contradiction; Contingent for falsity; Non contingent for truthity; Tautology for proof} and {Unevaluated; Improper; Proper; Evaluated}. The designated *proof* value is T for tautology and E for evaluated. The model checker contains recent advances in parsing technology named sliding window.

The mapping of formulas in Meth8 script was performed by hand, checked, and tested for accuracy of intent. The Meth8 script uses literals and connectives in one-character. Propositions are p-z, and theorems are A-B. The connectives for {and, or, imply, equivalent} are {&, +, >, =}. The negated connectives for {nand; nor; not imply; exclusive-or} are {\, -, <, @}. The operators for {not; possibility $\diamond \exists$; necessity $\square \forall$ } are {\~, %, #}. Expressions are adopted for clarity as: (p=p) for tautologous; (p@p) for contradiction; and (x<y) for $x \in y$. The expression $x \leq y$ as "x less than or equal to y" is rendered in the negative as $\sim(y < x)$ or as $(\sim x > \sim y)$.

Definition	Axiom	Symbol	Name	Meaning	2-tuple	Binary ordinal
1	p=p	T	tautology	proof	11	3
2	p@p	F	contradiction	absurdum	00	0
3	%p>#p	N	non-contingency	truthity	01	1
4	%p<#p	C	contingency	falsity	10	2

Note the meaning of (%p>#p): a possibility of p implies the necessity of p; and some p implies all p. In other words, if a possibility of p then the necessity of p; and if some p then all p.

This shows equivalence of respective modal operators and quantified operators as in Appendix.

For Meth8 an immediate further application is mapping sentences of natural language into logical formulas, so a semi-automation of that linguistic process is near completion.

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No.	Name of artifact	Type of artifact	Results with instances
1	ABC	Conjecture	Invalidated
2	Abductive reasoning	System	Invalidated
3	AGM / Levi and Harper bridging principles	Postulates	Invalidated (7) Validated (3)
4	Agnosticism as subset of atheism from no-belief	Conjecture	Invalidated (4) Validated (2)
5	AI: divide the dollar competition	Experiment	Invalidated (1)
6	AI: reduction for scalable deep learning	Algorithm	Invalidated (3)
7	Alcoholics Anonymous BB: We agnostics, p 53	Conjecture	Invalidated (5)
8	Alexandroff correspondence	Conditional	Invalidated (3)
9	Analysis as both correct and informative	Paradox	Invalidated (5)
10	Anderson division by zero as nullity	Theorem	Invalidated
11	Athanasian creed (Holy Trinity)	Credo	Invalidated (1) Validated (2)
12	Axiomatizing category theory in free logic	Axioms	Invalidated
13	Banach-Tarski	Paradox	Invalidated
14	Barcan	Formula	Validated
15	Bayes rule	Rule	Invalidated (11) Validated (11)
16	BCI / BCK algebra	System	Invalidated (5) Validated (3)
17	Bell / CHSH / Spekken toy model	Inequalities	Invalidated
18	A shorter refutation	Theorem	Invalidated (2)
19	A simpler refutation	Theorem	Invalidated (2)
20	Bell's inequality by axiom of empty set	Theorem	Invalidated (2)
21	Bogus Bellian logic (BBL)	Theorem	Invalidated (5)
22	Coercive proof	Theorem	Invalidated (2)
23	Coin toss proof	Conjectures	Invalidated (2)
24	Original inequality with assumption	Conjecture	Invalidated (4)
25	Original inequality with assumptions	Conjectures	Invalidated (5)
26	Original inequality and CHSH	Conjectures	Invalidated (6)
27	Positive reasons proof	Theorem	Invalidated (6) Validated (3)
28	Tropical sum	Method	Invalidated (1)
29	Berkeley	Paradox	Invalidated
30	Bernstein-Vazirani	Algorithm	Invalidated (4) Validated (1)
31	No-cloning theorem	Theorem	Invalidated (2)
32	Bertrand-Chebyshev theorem / postulate	Theorem	Invalidated (2)
33	Biscuit conditionals	System	Invalidated (13)
34	Block argumentation	Method	Invalidated (15)

No.	Name of artifact	Type of artifact	Results with instances
35	Blok-Esakia	Theorems	Invalidated (5)
36	Bogdanov map, 2D conjugate of Hénon map	Formula	Invalidated
37	Born rule	Theorem	Invalidated (6)
38	Exclusivity rule as basis	Theorem	Invalidated (5)
39	Borsuk-Ulam theorem (BUT)	Conjecture	Invalidated (1)
40	Branching quantifier (Hintikka)	System	Invalidated
41	Brouwer fixed point theorem (BFPT)	Conjecture	Invalidated (3) Validated (2)
42	Browder's theorem	Conjecture	Invalidated (1)
43	Buddhist logic	Tetralemma	Invalidated (12)
44	Buridan's Ass	Paradox	Invalidated
45	Cantor's continuum conjecture, binary injection	Hypothesis	Invalidated (2)
46	Continuum conjecture, interpreted	Hypothesis	Invalidated (3)
47	Diagonal argument	Proof	Invalidated (3)
48	Pairing	Functor	Invalidated (2)
49	Carroll's tortoise and Achilles	Paradox	Invalidated
50	Caswell's significant curriculum issues (1952)	Theorem	Invalidated (5) Validated (1)
51	Causality	Axiom	Invalidated (3) Validated (2)
52	Category composition of morphisms	Definition	Invalidated (1)
53	CC conjecture of Lin Fan Mao	Conjecture	Invalidated (2)
54	Chaitin incompleteness and L constant	Theorem	Invalidated (3) Validated (1)
55	Chinese room argument: Brain Simulator Reply	Conjecture	Validated (3)
56	CHSH inequality	Conjecture	Invalidated (1)
57	Church	Thesis	Invalidated
58	Clausius-Clapeyron on spacial dimension	Equation	Invalidated (1)
59	Clifford tori 2D / Kanban cell neuron	Definition	Validated
60	Collatz (briefest known confirmation)	Conjecture	Invalidated (4) Validated (1)
61	Commutative short circuit on propositional logic	System	Invalidated (1)
62	Complementarity inequality	Refutation	Invalidated (2) Validated (1)
63	Complex (C), imaginary number rendering	Method	Invalidated (1) Validated (1)
64	Conceptivistic / containment logic: proscription	Systems	Invalidated (3)
65	Conditional logic: improved Adams	Hypothesis	Invalidated (7)
66	Events in QL	Conjectures	Invalidated (8) Validated (1)
67	Connexive logic: Wansing's nightmare	System	Invalidated (2)
68	Aristotle, Boethius justifying connexive	Theses	Invalidated (4)

No.	Name of artifact	Type of artifact	Results with instances
69	Stit logic (see to it that)	System	Invalidated (13)
70	Constructivistic logic	System	Invalidated (14) Validated (2)
71	Continuum hypothesis	Conjecture	Invalidated (2) Validated (1)
72	Craig's interpolation	Theorem	Invalidated (2) Validated (2)
73	Creative theories in degrees of unsolvability	Theorem	Invalidated
74	D Ultrafilter contra continuum problem	Equation	Invalidated (1)
75	De Morgan algebras, existentially closed	System	Invalidated (2)
76	Dedekind lattice identity	Axiom	Validated
77	Density of all Turing and truth table degrees	Formula	Invalidated (2)
78	Description logic	System	Invalidated (2)
79	Dialetheism	System	Invalidated (4)
80	Dialetheism: inconsistent	System	Invalidated (2)
81	Dichotomy of selection	System	Invalidated
82	Diverse double compiling	Schema	Invalidated
83	Doxastic logic	System	Invalidated (8) Validated (13)
84	Drinker's paradox	Paradox	Invalidated
85	$E=mc^2$	Theorem	Invalidated (3) Validated (1)
86	EF-axiom: topology and near sets	Axiom	Invalidated
87	Ehrenfeucht-Mostowski indiscernables	Theorem	Invalidated (1)
88	Einstein–Podolsky–Rosen (EPR)	Paradox	Invalidated (1)
89	Energy-mass equation, $E=mc^2$	Theorem	Invalidated (3) Validated (1)
90	Entanglement vs untanglement: no-no go-go	Conjecture	Invalidated (28)
91	Epicurus invoked by Epictetus	Paradox	Invalidated (1)
92	Epimenides the Cretan	Paradox	Invalidated (1)
93	Epistemic coalition	Perfect recall	Invalidated (4) Validated (3)
94	Epistemic dynamic reasoning	System	Invalidated (2)
95	Epistemic Hilbert substructure	System	Invalidated (5)
96	Epistemic navigation	System	Invalidated (8)
97	Epistemic quantifiers over agents	Conjecture	Invalidated (8) Validated (12)
98	Erdős–Strauss	Conjecture	Invalidated
99	Euathlus paradox	Paradox	Invalidated (9)
100	"Ex nihilo": some thing from nothing	Conjecture	Invalidated (4) Validated (4)
101	Fictional logic based on Levi-identity / AGM	System	Invalidated (5) Validated (4)
102	Fixedpoint operator mapping mu-calculus	Conjecture	Invalidated (2)

No.	Name of artifact	Type of artifact	Results with instances
103	Fitch's knowability	Paradox	Invalidated (4)
104	FOL disjunctive normal forms (DNF): minimize	FOL Optimizer	Invalidated (2) Validated (1)
105	FOL continuous induction on real closed fields	System	Invalidated (11) Validated (1)
106	Frauchiger-Renner thought experiment	Paradox	Invalidated (5)
107	Frauchiger-Renner thought quantum model	Paradox	Invalidated (14) Validated (2)
108	Fredkin	Paradox	Invalidated (1)
109	Free will argument of Maimonides	Paradox	Invalidated (1)
110	Free will non-existence	Refutation	Invalidated (8) Validated (2)
111	Free will theorem: Clifton-Kochen-Specker	Theorem	Invalidated (1)
112	Free will theorem: FIN axiom	Hypothesis	Invalidated (2) Validated (2)
113	Free will theorem: MIN' axiom	Hypothesis	Invalidated (1)
114	Frequency dependence of mass	Theorem	Invalidated (3) Validated (1)
115	Functions as injective, surjective, bijective	Theorems	Validated (4)
116	Gentzen proof of sequent System G-M	System	Invalidated (6) Validated (2)
117	Gettier (justified belief)	Problem	Invalidated (6)
118	GHZ (Greenberger-Horne-Zeilinger)	Experiments	Invalidated (1)
119	Gleason	Theorem	Invalidated (1)
120	Gödel compactness	Theorem	Invalidated (6) Validated (2)
121	Gödel completeness	Theorem	Invalidated
122	Gödel completeness, shortest	Theorem	Invalidated (2)
123	Gödel first incompleteness	Theorem	Invalidated (4)
124	Gödel incompleteness	Equations	Invalidated (14) Validated (1)
125	Gödel incompleteness FOL	Contradictions	Invalidated (14) Validated (1)
126	Gödel incompleteness theorem	Assistant tools	Invalidated (2) Validated (2)
127	Gödel incompleteness theorem	Refutation	Invalidated (7)
128	Gödel incompleteness via two counter-examples	Refutation	Invalidated (9) Validated (2)
129	Gödel-justification logic	Refutation	Invalidated (7) Validated (2)
130	Gödel-Löb	Axiom	Invalidated
131	Gödel pairing function	Axiom	Invalidated (3) Validated (1)
132	Gödel recursion	Theorem	Validated
133	Gödel-Scott on God	Theorem schema	Invalidated
134	Goldbach's conjectures	Conjectures	Invalidated
135	Graded modal logic	Frame classes	Invalidated (4) Validated (2)
136	Grassmannian (<i>recently discovered</i>)	Paradox	Invalidated

No.	Name of artifact	Type of artifact	Results with instances
137	Hadamard gate	Theory	Invalidated (3) Validated (1)
138	Hahn-Banach	Theorem	Invalidated (5)
139	Hall	Effect	Invalidated
140	Hamiltonian quaternion	Definition	Invalidated (3)
141	Hardy's generalized paradox	Conjecture	Invalidated (6)
142	Hegel's dialectic	Method	Invalidated (6) Validated (3)
143	Heider inspired international relations theory	Theory	Invalidated (5) Validated (1)
144	Heisenberg uncertainty principle	Axiom	Invalidated (2)
145	Conjecture	Principle	Invalidated (1)
146	Replacement theorem	Axiom	Inalidated (2) Validated (3)
147	Take a picture of an electron	Principle	Invalidated (6) Validated (2)
148	Henkin cyclic algebra and first order logic	System	Invalidated (9) Validated (6)
149	Applications to logic	Axioms	Invalidated (8) Validated (6)
150	Permutation model nonrepresentable	Assertion	Invalidated (1)
151	Herbrand semantics	System	Invalidated (6)
152	Heyting algebra	Algebra	Invalidated (21)
153	Heyting-Brouwer intuitionistic logic	Systems	Invalidated (9) Validated (1)
154	Heyting logic	Idempotency	Invalidate (2) Validated (1)
155	Hexagons of opposition for statistical modalities	Conjectures	Invalidated (9) Validated (1)
156	Higher order logic	Systems	Invalidated (2) Validated (1)
157	Hilbert #10 Diophantine universal solution	Formulas	Invalidated
158	Hilbert generalization	System	Invalidated
159	Hilbert grand hotel	Paradox	Invalidated (1)
160	Hilbert / Kolmogorov intuitionistic logic	Systems	Invalidated (9)
161	Huhn 2-distributive lattice identity	Formula	Invalidated
162	Hydraulic forgiveness (confirmed)	Theorem	Invalidated (6) Validated (2)
163	Hydraulic corollary of peace	Corollary	Validated (1)
164	Ignorance of first choice	System	Invalidated
165	Imaginary numbers	Defintion	Invalidated (2)
166	Imperative logic	System	Invalidated (3) Validated (4)
167	Implication combination forms from $(p \rightarrow r) \rightarrow r$	Theorems	Invalidated (3) Validated (16)
168	Inconsistent theory	Theorem	Invalidated
169	Extending the monad to a triad	Formulas	Invalidated
170	Kunen inconsistency	Theorem	Invalidated

No.	Name of artifact	Type of artifact	Results with instances
171	Independence-friendly logic (Kreiselization)	System	Invalidated (2)
172	Indicative conditionals	Encyclopedia entry	Invalidated
173	Induction: Black raven (swan); Kripkenstein	System	Invalidated (3)
174	Induction: New riddle	Paradox	Invalidgted (2)
175	Inequality: 'arbitrarily' vs 'sufficiently large	Conjecture	Invalidated (2) Validated (1)
176	Infinite set theory	Theorem	Invalidated
177	Information theory: mutual information	Definition	Invalidated (4)
178	Join-prime in lattice theory	Definition	Validated
179	Jonsson positive logic: retromorphism	System	Invalidated (3)
180	k -triangular set function logic	Definition	Validated (1)
181	Kanban cell neuron maps whole brain	Model	Invalidated(242) Validated(14)
182	Kant: falsity of syllogistic figures	Theorems	Invalidated (8) Validated (2)
183	Karpenko, S.A.	System K-Ł4	Invalidated (6) Validated (8)
184	King algebras on rough set concept analysis	Algebra	Invalidated (5)
185	Kramers-Kronig	Relation	Invalidated
186	Kuratowski–Zorn lemma (Zorn's lemma)	Lemma	Invalidated
187	Lachlan problem solution	Problem	Invalidated (4)
188	Lambda λ -calculus and LISP	System	Invalidated (7) Validated (1)
189	Lean prover from Microsoft	System	Invalidated (3)
190	Leibniz' ontological proof	Proof	Invalidated (1) Validated (1)
191	Briefest known ontological proof of God	Proof	Validated (2)
192	Lemmon D	Axiom	Invalidated
193	van Leunen deformation field	Conjecture	Invalidated (4)
194	van Leunen lattice logic, weak modular	Theorem	Invalidated (2)
195	Liar	Paradox	Invalidated
196	Prior rendition	Paradox	Invalidated
197	Kripke rendition	Paradox	Invalidated
198	Line through a circle	Conjecture	Validated (1)
199	Linear algebra	Theorems	Invalidated (4)
200	Linear programming: Kharun-Kush-Tucker	Conditions	Invalidated (4)
201	Liouville	Theorem	Invalidated (2) Validated (1)
202	Löb original, corrected	Theorem	Invalidated (1) Validated (1)
203	Löb with Gödel incompleteness	Theorems	Invalidated (3)
204	Lonely runner	Conjecture	Invalidated (8) Validated (1)

No.	Name of artifact	Type of artifact	Results with instances
205	Löwenheim–Skolem	Theorem	Invalidated (5)
206	Löwenheim–Skolem, Hilbert style	Metatheorem	Invalidated (4)
207	Luce model (general)	Definitions/Axioms	Validated (5)
208	Łukasiewicz nightmare: $(\diamond p \& \diamond q) \rightarrow \diamond(p \& q)$	Allegation	Invalidated (4) Validated (3)
209	Łukasiewicz modal $\mathbb{L}4$	Objections	Invalidated (8) Validated (1)
210	Lyndon interpolation and GL	Interpolation	Invalidated (8) Validated (1)
211	Majorana's 'root'	Equations	Invalidated (9)
212	Matita prover superposition	Algorithms	Invalidated (3)
213	Mereology, behavioral	System	Invalidated (2)
214	Metaphysics: "Something rather than nothing"	Problem	Validated (2)
215	Meth8/VL4 self-proof in one variable	Theorem	Validated (8)
216	Meth8 versus Prover9 via Lifshitz	Problem	Validated
217	Minkowski plane, classical set of points/cycles	Theorems	Invalidated (2) Validated (1)
218	Modal aleatoric calculus	System	Invalidated (6)
219	Modal logics: 2; 3; 4; B; D; E; K; M; T; and W	Systems	Invalidated (2) Validated (8)
220	Modal GL_2	Logic	Invalidated (8) Validated (1)
221	Modern modal logics (2): JYB4 and AR4	Axioms	Invalidated (12) Validated (17)
222	Modified divine command	Theory	Invalidated
223	Molyneux's problem	Problem	Invalidated (1)
224	Moore's paradox	Paradox	Invalidated (2) Validated (1)
225	Moral absolutism impossible	Conjecture	Invalidated (3) Validated (1)
226	Relativity of moral absolutism	Conjecture	Invalidated (2) Validated (1)
227	Necessitation: K,T,4,B,D,5; <i>D,M,S4,B,S5</i>	Axiom	Invalidated (10) Validated (7)
228	Leonard Nelson's criticism of epistemology	System	Invalidated
229	von Neuman-Bernays-Gödel [NBG]	Theory	Invalidated (2) Validated (3)
230	Neutrosophic logic	Theorems	Invalidated (5)
231	Dezert-Smarandache	Theory	Invalidated (2)
232	Generalized Hegel's dialectics	Method	Invalidated (4)
233	Generalized intuitionistic, fuzzy logic	System	Invalidated (2)
234	MANET attack genetics	Algorithm	Invalidated (1)
235	Negated adjectival phrases	Lattices	Invalidated (2)
236	Neutrosophic logic: theory of everything	Theorem	Invalidated (2)
237	Neutrosophic sets	Properties	Invalidated (3)
238	Neutrosophy with dependent probability	Definitions	Invalidated (3) Validated (2)

No.	Name of artifact	Type of artifact	Results with instances
239	Quinary	System	Invalidated (2)
240	Retract crisp set topology	Propositions	Invalidated (5)
241	Smarandache multi-space theory	System	Invalidated (5)
242	Soft lattice theory	Theorem	Invalidated (2)
243	Unification of other logics	Axioms / Rules	Invalidated (2)
244	Values as 1, 0, between 0 and 1	Designated logic	Invalidated (2)
245	Vector space on $\{-0, 0, 0 < p < 1, 1, 1+\}$	Multi-valued logic	Invalidated (3)
246	Newcomb's game	Paradox	Invalidated (2)
247	Non-deterministic logic	Completeness	Invalidated (8)
248	Nothing does not imply a non existent null set	Definition	Invalidated (7)
249	Nucleosynthesis	Definitions	Invalidated (4)
250	Optimization for complex number programming	Conjecture	Invalidated (1)
251	P=NP; 3-SAT	Conjectures	Invalidated (5)
252	Paraconsistency, machine-assisted view	Axioms	Invalidated
253	Paraconsistent contradiction	Conext	Invalidated
254	Paradox refutation reduced to one variable	Method	Validated
255	Partial awareness	System	Invalidated (8) Validated (1)
256	Pauli exclusion	Principle	Invalidated (4)
257	Peano arithmetic 9, 1-8	Axioms	Invalidated (1) Validated (8)
258	Playfair axiom	Axiom	Validated (1)
259	Poincaré recurrence theorem	Theorem	Invalidated (2)
260	Karl Popper on God	Proof	Validated
261	PowerEpsilon mathematical induction	Axiom	Validated (1)
262	Prenex normal format	Rules	Invalidated (11) Validated (3)
263	Shortest refutation based on implication	Rules	Invalidated (2) Validated (2)
264	Prisoner's paradox	Paradox	Invalidated (3)
265	Prover9 vs Meth8 differences	System	Invalidated
266	Pure alethic modal logic	System	Invalidated (1) Validated (1)
267	Quantum arithmetic for repeat-until-success	Circuits	Invalidated (2)
268	Block chain	Cryptography	Invalidated (1)
269	Classical logic as completion of QL	System	Invalidated (16) Validated (6)
270	Control by observation	System	Invalidated
271	Entanglement	Conjecture	Invalidated (5)
272	Gates correspond to logical operators	Theorems	Invalidated (4) Validated (1)

No.	Name of artifact	Type of artifact	Results with instances
273	Gates refuted	Theorems	Invalidated (8) Validated (1)
274	Gedanken experiment	Conjectures	Invalidated (8)
275	Logic	System	Invalidated (17) Validated (2)
276	Masking	Conjectures	Invalidated (5) Validated (2)
277	Probability	Axiom	Invalidated (1)
278	Probability	Rule	Invalidated (2)
279	Quaternion on classical logic	Definition	Invalidated (5)
280	Simulation of Hamiltonian spectra	Operator	Invalidated (1)
281	Superposition as the red herring	Conjecture	Invalidated (3)
282	Superposition disproves Schrödinger cat	Conjecture	Invalidate (5) Validated (2)
283	Ternary probability of qutrit	Hypothesis	Invalidated (3)
284	Three lights experiment of qutrit	Conjecture	Invalidated (1)
285	Questions and answers	Problem	Invalidated (4) Validated (1)
286	Ramsey's theorem for the 2-color case	Theorem	Validated (2)
287	Ranjan, A.	Problem	Validated
288	Rational emotive behavior therapy (REBT/LBT)	Systems	Invalidated (16)
289	Realizability semantics for QML	Theorems	Invalidated (3)
290	Reichenbach common cause / event-splitting	Principle	Invalidated
291	Riemann: only zeroes at 0, 1/2	Hypothesis	Invalidated
292	Excluded middle	Conjecture	Invalidated (4)
293	Extended complex numbers on sphere	Operators	Invalidated (3) Validated (2)
294	Zeta function, Caceres 6	Proposition	Invalidated (4)
295	Zeta function, properties	Axioms	Invalidated (7)
296	Relevance logic	System	Invalidated (7)
297	Roman Catholic Church (RCC)	(Dogma)	Invalidated (7)
298	Canon law as noncontradictory/infallible	Theorem	Invalidated (4)
299	Erasmus contra Luther	Controversy	Validated
300	Infallibility and the Historic Church	Pius IX	Invalidated (2)
301	Invalid epiclesis with silent Holy Ghost	Canons	Invalidated (4) Validated (1)
302	Magisterium	Paul VI	Invalidated (1)
303	Primacy of the Roman See	Pius XI	Invalidated (1)
304	Sacred heart of Jesus	Pius XI	Invalidated (3)
305	Tradition above scripture	Pius IX	Invalidated (4)
306	Twelfth promise of St Alacoque	Vision	Invalidated (3)

No.	Name of artifact	Type of artifact	Results with instances
307	Rota lattice theory, distributive	Axiom	Invalidated
308	Russell	Paradox	Invalidated
309	S5II+ propositional quantification	System	Invalidated
310	Sacchetti's modal logics of provability	Definition	Invalidated (1)
311	Schrödinger's cat	Paradox	Invalidated
312	Self-equilibrium	Law / Paradox	Invalidated
313	Sliding scale in law	Theorem	Invalidated (3)
314	Solovay arithmetical / semantical completeness	Theorem	Invalidated (10) Validated (2)
315	Sorites	Paradox	Invalidated
316	Special theory of relativity: Crothers refutation	Confirmation	Validated
317	Square (Łukasiewicz) and Cube (Seuren)	Systems	Invalidated (27) Validated (15)
318	Square of Opposition Meth8 Corrected	System	Validated
319	Square of Opposition Modern Revised	System	Invalidated
320	Square of Opposition	Proportions	Invalidated (3)
321	Stable set lattices	Modal operators	Invalidated (3)
322	Stone space type lattice logic model	Theory	Invalidated (2)
323	Stone-Wales rotation transform reversibility	Theorem	Invalidated (2) Validated (1)
324	Superposition of states	Principle	Invalidated (6)
325	Supply and demand	Conjecture	Invalidated (6)
326	Symplectic vector space	Theorem	Invalidated (2)
327	Tarski's undefinability of truth	Theorem	Invalidated (2)
328	Tarski–Grothendieck set theory	Axiom	Invalidated (2)
329	Tarski–Grothendieck Metamath ax-groth	Axiom	Invalidated (7)
330	Traski's planar Eucleadian R-geometry	System	Invalidated (8) Validated (2)
331	Three-valued, bivalent logic $V\mathbb{L}3$	System	Validated (10)
332	Time as God	Conjecture	Validated (2)
333	Time as coexisting past, present, future states	Conjecture	Invalidated (3)
334	Time as tense via converse implication (EQT)	Conjectue	Validated (1)
335	Topological manifold transition	Function	Invalidated (1)
336	Topological T_0 -space	Differ modality	Invalidated (3)
337	Totherian sets	Theory	Invaildated (5)
338	Translation invariance of superposition calculus	Property	Invalidated (2)
339	Triangle inequality	Conjecture	Validated (1)
340	Trivial proofs for a troll	Conjectures	Validated (3)

No.	Name of artifact	Type of artifact	Results with instances
341	Turing halting problem	Problem	Invalidated (2) Validated (1)
342	Twin paradox	Paradox	Invalidated (2)
343	Two-sided page	Paradox	Invalidated (5) Validated (1)
344	Universal finite set	Theorem	Invalidated (2)
345	Unanswered logic questions	Conjectures	Invalidate (2) Validated (1)
346	Unfalsifiability	Conjecture	Invalidate (2) Validated (2)
347	Veblen (corrected)	Axiom	Invalidated (1) Validated (1)
348	Vector conjectue for two points implying a third	Conjecture	Validated (1)
349	Verilog / VHDL hardware logic	Connectives	Invalidated (36)
350	Veronoï regions (with "nonempty sets")	Definition	Invalidated
351	Vickrey auction	Theorem	Invalidated (10) Validated (2)
352	Vietoris space modal operators	Definitions	Invalidated (2)
353	Vongehr's shift rendering QM "natural"	Paradigm	Invalidated (2) Validated (3)
354	W (K4W)	Theorem	Invalidated
355	Well ordering property	Axiom	Invalidated
356	Wittgenstein's ab-notation	System	Invalidated (3)
357	X-homology on manifolds in topology	Axiom	Invalidated (1)
358	Yalcin logic	Axioms	Invalidated (2)
359	Yinyang	System	Invalidated (1) Validated (3)
360	Zadeh first operators on fuzzy logic	System	Invalidated (5)
361	Historical assumptions	Axioms	Invalidated (4) Validated (1)
362	Resolution and symmetry in Z-numbers	Definitions	Invalidated (2)
363	Zermello-Fraenkel (ZFC):	(Axioms)	Invalidated (25) Validated (2)
364	Shortest refutation of 9 axioms	Axioms	Invalidated (10)
365	ZFC Choice	Axiom	Invalidated
366	ZFC Empty set	Axiom	Invalidated
367	Shortest refutation	Axiom	Invalidated (3)
368	ZFC Extensionality	Axiom	Invalidated (1) Validated (1)
369	ZFC Infinity	Axiom	Invalidated (2)
370	ZF INF	Axiom	Invalidated
371	ZFC Pairing	Axiom	Invalidated
372	ZFC Power set	Axiom	Invalidated
373	ZFC Regularity or foundation	Axiom	Invalidated
374	ZFC Schema of replacement	Axiom	Invalidated

No.	Name of artifact	Type of artifact	Results with instances
375	ZFC Specification	Axiom	Validated
376	ZFC Union	Axiom	Invalidated
377	ZFC Well ordering	Axiom	Invalidated (2)
378	ZF Law of excluded middle: infinite set	Axiom	Invalidated (2)
379	ZF supremum and infimum	Definitions	Invalidated (3)
380	Zero and one in fractions	Axioms	Invalidated (3) Validated (8)
381	Zero knowledge proof	Theorem	Invalidated
382	Zeroth law of thermodynamics	Theorem	Invalidated (3) Validated (2)