Recent advances in the Meth8 modal model checker and VŁ4 universal logic

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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 477 artifacts in 2524 assertions to confirm 462 tautology and 2062 as *not* (81.7%). 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 VŁ4 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 ◇ ∃; necessity □ ∀} are {~, %, #}. Expressions are adopted for clarity as: (p=p) for tautologous; (p@p) for contradiction; and (x<y) for x∈y. The expression x≤y as "x less than or equal to y" is rendered in the negative as ~(y<x) or as (~x>~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	Abduction, induction, deduction: Peirce	Inference	Invalidated(2) Validated(1)
4	Abstract theory of segments using Prolog	Proofs	Invalidated(15) Validated(3)
5	AGM / Levi and Harper bridging principles	Postulates	Invalidated(7) Validated(3)
6	AGM: remainder sets, paraconsistent revisions	Operators	Invalidated(5)
7	Agnosticism as subset of atheism from no-belief	Conjecture	Invalidated(4) Validated(2)
8	AI: divide the dollar competition	Experiment	Invalidated(1)
9	AI: reduction for scalable deep learning	Algorithm	Invalidated(3)
10	Ackermann's approach to quantifier reduction	System	Invalidated(20) Validared(2)
11	Alcoholics Anonymous BB: We agnostics, p 53	Conjecture	Invalidated(5)
12	Alexandroff correspondence	Conditional	Invalidated(3)
13	Analysis as both correct and informative	Paradox	Invalidated(5)
14	Anderson division by zero as nullity	Theorem	Invalidated
15	Approximations of theories	System	Invalidated(1)
16	Arrow's impossibility	Theorem	Invalidated(7)
17	Athanasian creed (Holy Trinity)	Credo	Invalidated(1) Validated(2)
18	Axiomatizing category theory in free logic	Axioms	Invalidated
19	Banach order space, generating positive cone	Definition	Invalidated(2) Validated(1)
20	Banach-Tarski, shorter resuscitation attempt	Paradox	Invalidated(2)
21	Crucial claim in Step 3 of proof, shortest	Paradox	Invalidated(1)
22	Bar recursion	Mapping	Invalidated(2)
23	Barcan	Formula	Validated
24	Bayes rule	Rule	Invalidated(11) Validated(11)
25	BCI / BCK algebra	System	Invalidated(5) Validated(3)
26	Bell / CHSH / Spekken toy model	Inequalities	Invalidated
27	A shorter refutation	Theorem	Invalidated(2)
28	A simpler refutation	Theorem	Invalidated(2)
29	Bell's inequality by axiom of empty set	Theorem	Invalidated(2)
30	Bogus Bellian logic (BBL)	Theorem	Invalidated(5)
31	Coercive proof	Theorem	Invalidated(2)
32	Coin toss proof	Conjectures	Invalidated(2)
33	Original inequality with assumption	Conjecture	Invalidated(4)
34	Original inequality with assumptions	Conjectures	Invalidated(5)

No.	Name of artifact	Type of artifact	Results with instances
35	Original inequality and CHSH	Conjectures	Invalidated(6)
36	Positive reasons proof	Theorem	Invalidated(6) Validated(3)
37	Tropical sum	Method	Invalidated(1)
38	Bellman's Lost in the forest problem, solution	Theorem	Validated(4)
39	Berkeley	Paradox	Invalidated
40	Bernstein-Vazirani	Algorithm	Invalidated(4) Validated(1)
41	No-cloning theorem	Theorem	Invalidated(2)
42	Bertrand-Chebyshev theorem / postulate	Theorem	Invalidated(2)
43	Betweenness theory	Axioms	Invalidated(9) Validated(7)
44	Biscuit conditionals	System	Invalidated(13)
45	Bisimulation, coinduction, Howes' congruence	Proof method	Invalidated(5)
46	Blameworthiness degrees	Coalition	Invalidated(3) Validated(5)
47	Block argumentation	Method	Invalidated(15)
48	Blok-Esakia	Theorems	Invalidated(5)
49	Bogdanov map, 2D conjugate of Hénon map	Formula	Invalidated
50	Born rule	Theorem	Invalidated(6)
51	Exclusivity rule as basis	Theorem	Invalidated(5)
52	Borsuk-Ulam theorem (BUT)	Conjecture	Invalidated(1)
53	Branching quantifier (Hintikka)	System	Invalidated
54	Brouwer fixed point theorem (BFPT)	Conjecture	Invalidated(3) Validated(2)
55	Browder's theorem	Conjecture	Invalidated(1)
56	Buddhist logic	Tetralemma	Invalidated(12)
57	Buridan's Ass	Paradox	Invalidated
58	Buss’s bounded arithmetics	Hierachy	Invalidated(6)
59	Cabannas objectivity	Theory	Invalidated(1) Validated(1)
60	Cantor's continuum conjecture, binary injection	Hypothesis	Invalidated(2)
61	Continuum conjecture, interpreted	Hypothesis	Invalidated(3)
62	Diagonal argument	Proof	Invalidated(3)
63	Pairing	Functor	Invalidated(2)
64	Carroll's tortoise and Achilles	Paradox	Invalidated
65	Caswell's significant curriculum issues (1952)	Theorem	Invalidated(5) Validated(1)
66	Causality	Axiom	Invalidated(3) Validated(2)
67	Category composition of morphisms	Definition	Invalidated(1)
68	CC conjecture of Lin Fan Mao	Conjecture	Invalidated(2)

No.	Name of artifact	Type of artifact	Results with instances
69	Chaitin incompleteness and L constant	Theorem	Invalidated(3) Validated(1)
70	Chinese room argument: Brain Simulator Reply	Conjecture	Validated(3)
71	CHSH inequality	Conjecture	Invalidated(1)
72	Dual reality	Conjecture	Invalidated(1)
73	Church	Thesis	Invalidated
74	Clausius-Clapeyron on spacial dimension	Equation	Invalidated(1)
75	Clifford tori 2D / Kanban cell neuron	Definition	Validated
76	Coherence in modal logic	Refutation	Invalidated(1)
77	Collatz (briefest known confirmation)	Conjecture	Invalidated(4) Validated(1)
78	Collection theory as set of all closure sentences	Schema	Invalidated(1)
79	Commutative short circuit on propostional logic	System	Invalideated (1)
80	Complementarity inequality	Refutation	Invalidated(2) Validated(1)
81	Complex (ℂ), imaginary number rendering	Method	Invalidated(1) Validated(1)
82	Conceptivistic / containment logic: proscription	Systems	Invalidated(3)
83	Conditional logic: improved Adams	Hypothesis	Invalidated(7)
84	Events in QL	Conjectures	Invalidated(8) Validated(1)
85	Confluence in rewrite systems	Property	Invalidated(3)
86	Connexive logic: Wansing's nightmare	System	Invalidated(2)
87	Aristotle, Boethius justifying connexive	Theses	Invalidated(4)
88	De Finettian logic conditionals	Indicatives	Invalidated(10)
89	Stit logic (see to it that)	System	Invalidated(13)
90	Construcive math: Ishihara tricks on LPO/WLPO	Principles	Invalidated(3)
91	Constructivistic logic	System	Invalidated(14) Validated(2)
92	Continuum hypothesis	Conjecture	Invalidated(2) Validated(1)
93	Coq proof assistant	Prover	Invalidated(1)
94	Craig interpolation, constructive Fefferman	Theorem	Invalidated(4) Validated(2)
95	Constructive using Maehara’s technique	Theorem	Invalidated(7)
96	Creative theories in degrees of unsolvability	Theorem	Invalidated
97	D Ultrafilter contra continuum problem	Equation	Invalidated(1)
98	De Morgan algebras, existentailly closed	System	Invalidated(2)
99	Dedekind lattice identity	Axiom	Validated
100	Dempster-Shafer belief and plausibility	Theory	Invalidated(3)
101	Density of all Turing and truth table degrees	Formula	Invalidated(2)
102	Dependent choices (DC) on supercompactness	Axiom	Invalidated(2)

No.	Name of artifact	Type of artifact	Results with instances
103	Description logic	System	Invalidated(2)
104	Power set POW on of any Ω-model	Operator	Invalidated(4)
105	Unions in descriptively near sets	Operator	Invalidated(6) Validated(2)
106	Dialetheism	System	Invalidated(4)
107	Dialetheism: inconsistent	System	Invalidated(2)
108	Dichotomy of selection	System	Invalidated
109	Disturbance	Feature	Invalidated(4)
110	Diverse double compiling	Schema	Invalidated
111	Domain theory of Dana Scott	System	Invalidated(6)
112	Poset: reflexive, antisymmetric, transitive	Definitions	Invalidated(2) Validated(1)
113	Doxastic logic	System	Invalidated(8) Validated(13)
114	Drinker's paradox	Paradox	Invalidated
115	Dyatic semantics on paraconsistent logic C_1	Approach	Invalidated(4)
116	E=mc^2	Theorem	Invalidated(3) Validated(1)
117	EF-axiom: topology and near sets	Axiom	Invalidated
118	Ehrenfeucht-Mostowski indiscernables	Theorem	Invalidated(1)
119	Einstein–Podolsky–Rosen (EPR)	Paradox	Invalidated(1)
120	Elementary constructive set theory (ECST)/CZF	Definitions	Invalidated(6)
121	Entanglement vs untanglement: no-no go-go	Conjecture	Invalidated(28)
122	Enumeration reducibility, degrees, topology	Method	Invalidated(1)
123	Epicurus invoked by Epictetus	Paradox	Invalidated(1)
124	Epimenides the Cretan	Paradox	Invalidated(1)
125	Epistemic coalition	Perfect recall	Invalidated(4) Validated(3)
126	Epistemic dynamic reasoning	System	Invalidated(2)
127	Epistemic Hilbert substructure	System	Invalidated(5)
128	Epistemic for knowledge and probability	System	Invalidated(2)
129	Epistemic navigation	System	Invalidated(8)
130	Epistemic quantifiers over agents	Conjecture	Invalidated(8) Validated(12)
131	Erdös-Strauss	Conjecture	Invalidated
132	Ethical reasoning and HOL proof assistant	System	Invalidated(1)
133	Euathlus paradox	Paradox	Invalidated(9)
134	Euclidean geometry embedded in non Euclidean	Conjecture	Invalidated(3)
135	"Ex nihilo": some thing from nothing	Conjecture	Invalidated(4) Validated(4)
136	Fictional logic based on Levi-identity / AGM	System	Invalidated(5) Validated(4)

No.	Name of artifact	Type of artifact	Results with instances
137	Finite direct powers of ω for modal model	System	Invalidated(1)
138	Fitch's knowability	Paradox	Invalidated(4)
139	Fixedpoint operator mapping mu-calculus	Conjecture	Invalidated(2)
140	FOL disjunctive normal forms (DNF): minimize	FOL Optimizer	Invalidated(2) Validated(1)
141	FOL continuous induction on real closed fields	System	Invalidated(11) Validated(1)
142	FOT first order team logic	Sysem	Invalidated(1)
143	Fodor weaker/stronger, class	Principle	Invalidated(5) Validated(1)
144	Forcing method	Paradoxes	Invalidated(2)
145	Frauchiger-Renner thought experiment	Paradox	Invalidated(5)
146	Frauchiger-Renner thought quantum model	Paradox	Invalidated(14) Validated(2)
147	Fredkin	Paradox	Invalidated(1)
148	Free will argument of Maimonides	Paradox	Invalidated(1)
149	Free will non-existence	Refutation	Invalidated(8) Validated(2)
150	Free will theorem: Clifton-Kochen-Specker	Theorem	Invalidated(1)
151	Free will theorem: FIN axiom	Hypothesis	Invalidated(2) Validated(2)
152	Free will theorem: MIN' axiom	Hypothesis	Invalidated(1)
153	Frequency dependence of mass	Theorem	Invalidated(3) Validated(1)
154	Functions as injective, surjective, bijective	Theorems	Validated(4)
155	Gentzen proof of sequent System G-M	System	Invalidated(6) Validated(2)
156	Gettier (justified belief)	Problem	Invalidated(6)
157	GHZ (Greenberger-Horne-Zeilinger)	Experiments	Invalidated(1)
158	Gleason	Theorem	Invalidated(1)
159	Gödel class with identity un-solvable	Conjecture	Invalidated(10) Validated(1)
160	Gödel compactness	Theorem	Invalidated(6) Validated(2)
161	Gödel completeness, shortest	Theorem	Invalidated(2)
162	Gödel first incompleteness	Theorem	Invalidated(4)
163	Gödel incompleteness	Equations	Invalidated(14) Validated(1)
164	Gödel incompleteness FOL	Contradictions	Invalidated(14) Validated(1)
165	Gödel incompleteness theorem	Assistant tools	Invalidated(2) Validated(2)
166	Gödel incompleteness theorem, shortest	Refutation	Invalidated(7)
167	Gödel incompleteness via Löb counter-examples	Refutation	Invalidated(9) Validated(2)
168	Gödel-justification logic	Refutation	Invalidated(7) Validated(2)
169	Gödel-justification subsets	Models	Invalidated(2)
170	Gödel-Löb	Axiom	Invalidated

No.	Name of artifact	Type of artifact	Results with instances
171	Gödel pairing function	Axiom	Invalidated(3) Validated(1)
172	Gödel recursion	Theorem	Validated
173	Gödel-Scott on God	Theorem schema	Invalidated
174	Goldbach's conjectures	Conjectures	Invalidated
175	Goldblatt-Thomason with back/forth duality	Theorem	Invalidated(3)
176	Graded modal logic	Frame classes	Invalidated(4) Validated(2)
177	Grassmannian (*recently discovered*)	Paradox	Invalidated
178	Hadamard gate	Theory	Invalidated(3) Validated(1)
179	Hahn-Banach	Theorem	Invalidated(5)
180	Hall	Effect	Invalidated
181	Hamiltonian quaternion	Definition	Invalidated(3)
182	Hardy's generalized paradox	Conjecture	Invalidated(6)
183	Hegel's dialectic	Method	Invalidated(6) Validated(3)
184	Heider inspired international relations theory	Theory	Invalidated(5) Validated(1)
185	Heisenberg uncertainty principle	Axiom	Invalidated(2)
186	Conjecture	Principle	Invalidated(1)
187	Replacement theorem	Axiom	Inalidated (2) Validated(3)
188	Take a picture of an electron	Principle	Invalidated(6) Validated(2)
189	Henkin cyclic algebra and FOL applications	Axioms	Invalidated(8) Validated(6)
190	Permutation model nonrepresentable	Assertion	Invalidated(1)
191	Herbrand semantics	System	Invalidated(6)
192	Heyting algebra	Algebra	Invalidated(21)
193	Heyting-Brouwer intuitionistic logic	Systems	Invalidated(9) Validated(1)
194	Heyting logic	Idempotency	Invalidated(2) Validated(1)
195	Hexagons of opposition for statistical modalities	Conjectures	Invalidated(9) Validated(1)
196	Higher-order mathematical induction	Principle	Invalidated(2) Validated(1)
197	Hilbert #10 Diophantine universal solution	Formulas	Invalidated
198	Hilbert generalization	System	Invalidated
199	Hilbert grand hotel	Paradox	Invalidated(1)
200	Hilbert / Kolmogorov intuitionistic logic	Systems	Invalidated(9)
201	Horty's puzzles in stit logic	Corollaries	Invalidated(3) Validated(3)
202	Huemer’s confirmation theory for induction	Proposal	Invalidated(3) Validated(2)
203	Huhn 2-distributive lattice identity	Formula	Invalidated
204	Hydraulic forgiveness (confirmed)	Theorem	Invalidated(6) Validated(2)

No.	Name of artifact	Type of artifact	Results with instances
205	Hydraulic corollary of peace	Corollary	Validated(1)
206	Ideals	Definition	Invalidated(4)
207	Ignorance of first choice	System	Invalidated
208	Imagainary numbers	Definition	Invalidated(2)
209	Imperative logic	System	Invalidated(3) Validated(4)
210	Implication combination forms from (p>r)>r	Theorems	Invalidated(3) Validated(16)
211	Impossible worlds: none necessary; all possible	Definitions	Invalidated(4) Validated(4)
212	Inclusion, dependence, independence logics	Theorem	Invalidated(1)
213	Inconsistent theory	Theorem	Invalidated
214	Extending the monad to a triad	Formulas	Invalidated
215	Kunen inconsistency	Theorem	Invalidated
216	Independence-friendly logic (Kreiselization)	System	Invalidated(2)
217	Indicative conditionals	Encyclopedia entry	Invalidated
218	Induction: Black raven (swan); Kripkenstein	System	Invalidated(3)
219	Induction: New riddle	Paradox	Invalidated(2)
220	Induction, coinduction: standard and mutual	System	Invalidated(4)
221	Induction in Elem. Arith. for reduction property	Formulas	Invalidated(2)
222	Inequality: 'arbitrarily' vs 'sufficiently large	Conjecture	Invalidated(2) Validated(1)
223	Infinite set theory	Theorem	Invalidated
224	Information theory: mutual information	Definition	Invalidated(4)
225	Interval logic for model checking	System	Invalidated(3)
226	Join-prime in lattice theory	Definition	Validated
227	Jonsson positive logic: retromorphism	System	Invalidated(3)
228	*k*-triangular set function logic	Definition	Validated(1)
229	Kanban cell neuron maps whole brain	Model	Invalidated(242)Validated(14)
230	Kant: falsity of syllogistic figures	Theorems	Invalidated(8) Validated(2)
231	Karpenko, S.A.	System K-Ł4	Invalidated(6) Validated(8)
232	King algebras on rough set concept analysis	Algebra	Invalidated(5)
233	Kleene lattices, reversible	Axiomization	Invalidated(3) Validated(1)
234	Kramers-Kronig	Relation	Invalidated
235	Kripke-Platek and CZF	Set Theory	Invalidated(1)
236	Kuratowski–Zorn lemma (Zorn's lemma)	Lemma	Invalidated
237	Lachlan problem solution	Problem	Invalidated(4)
238	Lambda λ-calculus and LISP	System	Invalidated(7) Validated(1)

No.	Name of artifact	Type of artifact	Results with instances
239	Lean prover from Microsoft	System	Invalidated(3)
240	Leibniz' ontological proof	Proof	Invalidated(1) Validated(1)
241	Briefest known ontological proof of God	Proof	Validated(2)
242	Lemmon D	Axiom	Invalidated
243	van Leunen deformation field	Conjecture	Invalidated(4)
244	van Leunen lattice logic, weak modular	Theorem	Invalidated(2)
245	Liar	Paradox	Invalidated
246	Prior rendition	Paradox	Invalidated
247	Kripke rendition	Paradox	Invalidated
248	Line through a circle	Conjecture	Validated(1)
249	Linear algebra	Theorems	Invalidated(4)
250	Linear programming: Kharun-Kush-Tucker	Conditions	Invalidated(4)
251	Liouville	Theorem	Invalidated(2) Validated(1)
252	Löb original, corrected	Theorem	Invalidated(1) Validated(1)
253	Löb with Gödel incompleteness	Theorems	Invalidated(3)
254	Lobachevskii non Euclidean geometry	Consistency	Invalidated(1) Validated(1)
255	Lonely runner	Conjecture	Invalidated(8) Validated(1)
256	Löwenheim–Skolem	Theorem	Invalidated(5)
257	Löwenheim–Skolem, Hilbert style	Metatheorem	Invalidated(4)
258	Luce model (general)	Definitions/axioms	Validated(5)
259	Łukasiewicz nightmare: (◇p&◇q)→◇(p&q)	Allegation	Invalidated(4) Validated (3)
260	Łukasiewicz modal Ł4	Objections	Invalidated(8) Validated(1)
261	Lyndon interpolation and GL	Interpolation	Invalidated(8) Validated(1)
262	Majorana's 'root'	Equations	Invalidated(9)
263	Malice and Alice	Puzzle	Invalidated(7)
264	Matita prover superposition	Algorithms	Invalidared (3)
265	Mereology, behavioral	System	Invalidated(2)
266	Mereotopology, distributive	Relations	Invalidated(9)
267	Metaphysics: "Something rather than nothing"	Problem	Validated(2)
268	Meth8/VŁ4 self-proof in one variable	Theorem	Validated(8)
269	Meth8 versus Prover9 via Lifshitz	Problem	Validated
270	Minkowski plane, classical set of points/cycles	Theorems	Invalidated(2) Validated(1)
271	Modal aleatoric calculus	System	Invalidated(6)
272	Modal coalgebraic geometric logic	System	Invalidated(2)

No.	Name of artifact	Type of artifact	Results with instances
273	Modal logics: 2; 3; 4; B; D; E; K; M; T; and W	Systems	Invalidated(2) Validated(8)
274	Modal GL_2	Logic	Invalidated(8) Validated(1)
275	Model theory = univ. algebra + matematical logic	Language	Invalidated(1)
276	Modern modal logics (2): JYB4 and AR4	Axioms	Invalidated(12) Validated(17)
277	Modified divine command	Theory	Invalidated
278	Modus ponens consequent as conditional	Rule	Invalidated(3) Validated(1)
279	Molyneux's problem	Problem	Invalidated(1)
280	Moore's paradox	Paradox	Invalidated(2) Validated(1)
281	Moral absolutism impossible	Conjecture	Invalidated(3) Validated(1)
282	Relativity of moral absolutism	Conjecture	Invalidated(2) Validated(1)
283	Most	Quantifier	Invalidated(2)
284	Necessitation: K,T,4,B,D,5; *D*,*M*,*S4*,*B*,*S5*	Axiom	Invalidated(10) Validated(7)
285	Leonard Nelson's criticism of epistemology	System	Invalidated
286	von Neuman-Bernays-Gödel [NBG]	Theory	Invalidated(2) Validated(3)
287	Neutrosophic logic	Theorems	Invalidated(5)
288	Dezert-Smarandache	Theory	Invalidated(2)
289	Generalized Hegel's dialectics	Method	Invalidated(4)
290	Generalized intuitionistic, fuzzy logic	System	Invalidated(2)
291	Geometry of Smarandache / Lin Fan Mao	Definition	Invalidated(2)
292	MANET attack genetics	Algorithm	Invalidated(1)
293	Negated adjectival phrases	Lattices	Invalidated(2)
294	Neutrosophic logic: theory of everything	Theorem	Invalidated(2)
295	Neutrosophic sets	Properties	Invalidated(3)
296	Neutrosophy with dependent probability	Definitions	Invalidated(3) Validated(2)
297	Quinary	System	Invalidated(2)
298	Retract crisp set topology	Propositions	Invalidated(5)
299	Smarandache multi-space theory	System	Invalidated(5)
300	Soft lattice theory	Theorem	Invalidated(2)
301	Unification of other logics	Axioms / Rules	Invalidated(2)
302	Values as 1, 0, between 0 and 1	Designated logic	Invalidated(2)
303	Vector space on {-0, 0, 0<p<1, 1, 1+}	Multi-valued logic	Invalidated(3)
304	Newcomb's game	Paradox	Invalidated(2)
305	Non-deterministic logic	Completeness	Invalidated(8)
306	Nothing does not imply a non existent null set	Definition	Invalidated(7)

No.	Name of artifact	Type of artifact	Results with instances
307	Nucleosynthesis	Definitions	Invalidated(4)
308	Optimization for complex number programming	Conjecture	Invalidated(1)
309	Ordinal notation via simultaneous definition	Conjecture	Invalidated(5)
310	Ordinal Turing machine (OTM) on set theory	Conjectures	Invalidated(3)
311	Overlap algebra on constructive Boolean algebra	Conjecture	Invalidated(4)
312	P=NP; 3-SAT	Conjectures	Invalidated(5)
313	Paraconsistency, machine-assisted view	Axioms	Invalidated
314	Paraconsistent contradiction	Conext	Invalidated
315	Paradox refutation reduced to one variable	Method	Validated
316	Parikh's logic G and completeness of system Par	Axiomatization	Invalidated(3)
317	Partial awareness	System	Invalidated(8) Validated(1)
318	Pauli exclusion	Principle	Invalidated(4)
319	Peano arithmetic 9, 1-8	Axioms	Invalidated(1) Validated(8)
320	PŁ4	System	Invalidated(10)
321	Playfair axiom	Axiom	Validated(1)
322	Płonka sums of inclusive consequence relations	Inclusion	Invalidated(1)
323	Poincaré recurrence theorem	Theorem	Invalidated(2)
324	Poison modal logic (PML)	System	Invalidated(4)
325	Karl Popper on God	Proof	Validated
326	PowerEpsilon mathematical induction	Axiom	Validated(1)
327	Pratt-Floyd-Hoare logic correctness	System	Invalidated(5)
328	Preference profiles	Algorithm	Invalidated(6)
329	Prevarieties and quasivarieties of logic	Monoids	Invalidated(4)
330	Prenex normal format	Rules	Invalidated(11) Validated(3)
331	Shortest refutation based on implication	Rules	Invalidated(2) Validated(2)
332	Prisoner's paradox	Paradox	Invalidated(3)
333	Prover9 vs Meth8 differences	System	Invalidated
334	Pure alethic modal logic	System	Invalidated(1) Validated(1)
335	Quantifiers and operataors	Connectives	Invalidated(12)
336	Quantum arithmetic for repeat-until-success	Circuits	Invalidated(2)
337	Block chain	Cryptography	Invalidated(1)
338	Classical logic as completion of QL	System	Invalidated(16) Validated(6)
339	Control by observation	System	Invalidated
340	Entanglement	Conjecture	Invalidated(5)

No.	Name of artifact	Type of artifact	Results with instances
341	Gates correspond to logical operators	Theorems	Invalidated(4) Validated(1)
342	Gates refuted	Theorems	Invalidated(8) Validated(1)
343	Gedanken experiment	Conjectures	Invalidated(8)
344	Logic	System	Invalidated(17) Validated(2)
345	Masking	Conjectures	Invalidated(5) Validated(2)
346	Probability	Axiom	Invalidated(1)
347	Probability	Rule	Invalidated(2)
348	Simulation of Hamiltonian spectra	Operator	Invalidated(1)
349	Spin-statistics	Theorem	Invalidated(4) Validated(4)
350	Superposition as the red herring	Conjecture	Invalidated (3)
351	Superposition disproves Schrödinger cat	Conjecture	Invalidated(5) Validated(2)
352	Ternary probability of qutrit	Hypothesis	Invalidated(3)
353	Three lights experiment of qutrit	Conjecture	Invalidated(1)
354	Questions and answers	Problem	Invalidated(4) Validated(1)
355	Ramsey's theorem / Pythagorean tiple of integers	Theorem	Invalidated(8)
356	Ranjan, A.	Problem	Validated
357	Rational emotive behavior therapy (REBT/LBT)	Systems	Invalidated(16)
358	Realizability semantics for QML	Theorems	Invalidated(3)
359	Reichenbach common cause / event-splitting	Principle	Invalidated
360	Relativization (structural induction) in weighting	Method	Invalidated(1)
361	Relevance logic	System	Invalidated(7)
362	Definition in R	Model	Invalidated(2)
363	Reverse mathematics: recursive comprehension	Principle	Invalidated(10) Validated(2)
364	Measurability and computability	Theory	Invalidated(1) Validated(2)
365	Riemann: only zeroes at 0, 1/2	Hypothesis	Invalidated
366	Excluded middle	Conjecture	Invalidated(4)
367	Extended complex numbers on sphere	Operators	Invalidated(3) Validated(2)
368	Zeta function, Caceres 6	Proposition	Invalidated(4)
369	Zeta function, properties	Axioms	Invalidated(7)
370	Roman Catholic Church (RCC) Canon law	Theorem	Invalidated(4)
371	Erasmus contra Luther	Controversy	Validated
372	Infallibility and the Historic Church	Pius IX	Invalidated(2)
373	Invalid epiclesis with silent Holy Ghost	Canons	Invalidated(4) Validated(1)
374	Magisterium	Paul VI	Invalidated(1)

No.	Name of artifact	Type of artifact	Results with instances
375	Primacy of the Roman See	Pius XI	Invalidated(1)
376	Sacred heart of Jesus	Pius XI	Invalidated(3)
377	Tradition above scripture	Pius IX	Invalidated(4)
378	Twelfth promise of St Alacoque	Vision	Invalidated(3)
379	Rosser's theorem on consistency	Theorem	Invalidated(6) Validated(1)
380	Rota lattice theory, distributive	Axiom	Invalidated
381	Russell	Paradox	Invalidated
382	S5Π+ propositional quantification	System	Invalidated
383	Sabotage modal logic (revisited)	System	Invalidated(6)
384	Sacchetti's modal logics of provability	Definition	Invalidated(1)
385	Sahlqvist modal / quantified correspondence	Theory	Invalidated(7)
386	Schematic refutations of formula schemata	Method	Invalidated(2)
387	Schrödinger's cat	Paradox	Invalidated
388	Scott’s topology, temporal types, landscapes	Theory	Invalidated(4)
389	Self-equilibrium	Law / Paradox	Invalidated
390	Skolem form	Axiom	Invalidated(1)
391	Sliding scale in law	Theorem	Invalidated(3)
392	Solovay arithmetical / semantical completeness	Theorem	Invalidated(10) Validated(2)
393	Sorites	Paradox	Invalidated
394	Special theory of relativity: Crothers refutation	Confirmation	Validated
395	Square (Łukasiewicz) and Cube (Seuren)	Systems	Invalidated(27) Validated(15)
396	Square of Opposition Meth8 Corrected	System	Validated
397	Square of Opposition Modern Revised	System	Invalidated
398	Square of Opposition	Proportions	Invalidated(3)
399	Stable set lattices	Modal operators	Invalidated(2)
400	Stone space type lattice logic model	Theory	Invalidated(2)
401	Stone-Wales rotation transform reversibility	Theorem	Invalidated(2) Validated(1)
402	Strong jump inversion, decided saturated model	Logic	Invalidated(1)
403	Student quiz conjecture	Paradox	Invalidated(1)
404	Superposition of states	Principle	Invalidated(6)
405	Supply and demand	Conjecture	Invalidated(6)
406	Surveillance objectives	Subgames	Invalidated(2)
407	Suzko's minimal truth values for universal logic	Problem	Invalidated(3)
408	Symplectic vector space	Theorem	Invalidated(2)

No.	Name of artifact	Type of artifact	Results with instances
409	Tarski's undefinability of truth	Theorem	Invalidated(2)
410	Tarski–Grothendieck set theory	Axiom	Invalidated(2)
411	Tarski–Grothendieck Metamath ax-groth	Axiom	Invalidated(7)
412	Traski's planar Eucleadian R-geometry	System	Invalidated(8) Validated(2)
413	Theory of logic for glutty, gappy relations	System	Invalidated(16)
414	Three-valued, bivalent logic VŁ3	System	Validated(10)
415	Time as God	Conjecture	Validated(2)
416	Time as coexisting past, present, future states	Conjecture	Invalidated(3)
417	Time as tense via converse implication (EQT)	Conjectue	Validated(1)
418	Topological manifold transition	Function	Invalidated(1)
419	Topological T_0-space	Differ modality	Invalidated(3)
420	Totherian sets	Theory	Invaildated (5)
421	Translation invariance of superposition calculus	Property	Invalidated(2)
422	Triangle inequality	Conjecture	Validated(1)
423	Trivial proofs for a troll	Conjectures	Validated(3)
424	Trolley ethical thought experiment	Problem	Invalidated(3)
425	Turing halting problem	Problem	Invalidated(2) Validated(1)
426	Twin paradox	Paradox	Invalidated(2)
427	Two-sided page	Paradox	Invalidated(5) Validated(1)
428	Type theory	Conjecture	Invalidated(2)
429	Ultrapower of universe, projective determinancy	Hypotheses	Invalidated(2)
430	Unanswered logic questions	Conjectures	Invalidated(2) Validated(1)
431	Unfalsifiability	Conjecture	Invalidated(2) Validated(2)
432	Unification of simple symmetrical modal logics	Type	Invalidated(2)
433	Universal finite set	Theorem	Invalidated(2)
434	Universal network	Operator	Invalidated(5)
435	Universal logic VŁ4	Logic	Validated
436	Veblen (corrected)	Axiom	Invalidated(1) Validated(1)
437	Vector conjectue for two points implying a third	Conjecture	Validated(1)
438	Verilog / VHDL hardware logic	Connectives	Invalidated(36)
439	Veronoï regions (with "nonempty sets")	Definition	Invalidated
440	Vickrey auction	Theorem	Invalidated(10) Validated(2)
441	Vietoris space modal operators	Definitions	Invalidated(2)
442	VŁ4 theorems for S5	Theorems	Invalidated(8)

No.	Name of artifact	Type of artifact	Results with instances
443	Vongehr's shift rendering QM "natural"	Paradigm	Invalidated(2) Validated(3)
444	W (K4W)	Theorem	Invalidated
445	Wadge order (and on Scott domain)	Theorem	Invalidated(4)
446	Well ordering property	Axiom	Invalidated
447	White's model of creation	System	Invalidated(7) Validated(1)
448	Wittgenstein's ab-notation	System	Invalidated(3)
449	X-homology on manifolds in topology	Axiom	Invalidated(1)
450	Yalcin logic	Axioms	Invalidated(2)
451	Yinyang	System	Invalidated(1) Validated(3)
452	Zadeh first operators on fuzzy logic	System	Invalidated(5)
453	Historical assumptions	Axioms	Invalidated(4) Validated(1)
454	Resolution and symmetry in Z-numbers	Definitions	Invalidated(3)
455	Zarski topology affine varieties, scheme theory	Definitions	Invalidated(3)
456	Zermelo-Fraenkel constructive (CZF)	Axioms	Invalidated(9) Validated(1)
457	Zermelo-Fraenkel (ZF) shortest contra 9 axioms	Axioms	Invalidated(10)
458	ZFC Empty set	Axiom	Invalidated
459	Shortest refutation	Axiom	Invalidated(3)
460	ZFC Extensionality	Axiom	Invalidated(1) Validated(1)
461	ZFC Extensionality (another rendition)	Axiom	Invalidated(1)
462	Other refutations of ZFC axioms (10)	Axioms	Invalidated(10) Validated(1)
463	ZF Law of excluded middle: infinite set	Axiom	Invalidated(2)
464	ZF supremum and infimum	Definitions	Invalidated(3)
465	ZFC^0: schemas of comprehension, replacement	Axioms	Invalidated(2)
466	Zero and three in arithmetic	Theorems	Validated(9)
467	Zero knowledge proof	Theorem	Invalidated
468	Zeroth law of thermodynamics	Theorem	Invalidated(3) Validated(2)
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