

## Denial of consistency for the Lobachevskii non Euclidean geometry

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**Abstract:** We prove two parallel lines are tautologous in Euclidean geometry. We next prove that non Euclidean geometry of Lobachevskii is *not* tautologous and hence *not* consistent. What follows is that Riemann geometry is the same, and non Euclidean geometry is a segment of Euclidean geometry, not the other way around. Therefore non Euclidean geometries are a non tautologous fragment of the universal logic  $V\mathbb{L}4$ .

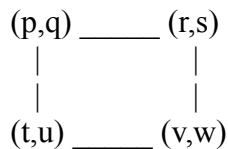
We assume the method and apparatus of Meth8/ $V\mathbb{L}4$  with Tautology as the designated proof value,  $\mathbf{F}$  as contradiction,  $\mathbf{N}$  as truthity (non-contingency), and  $\mathbf{C}$  as falsity (contingency). The 16-valued truth table is row-major and horizontal, or repeating fragments of 128-tables, sometimes with table counts, for more variables. (See ersatz-systems.com.)

LET  $\sim$  Not,  $\neg$ ; + Or,  $\vee, \cup$ ; - Not Or; & And,  $\wedge, \cap, \cdot$ ; \ Not And;  
 $>$  Imply, greater than,  $\rightarrow, \Rightarrow, \mapsto, \succ, \supset, \rhd$ ;  
 $<$  Not Imply, less than,  $\in, \prec, \subset, \neq, \not\approx, \leftarrow, \preceq$ ;  
 $=$  Equivalent,  $\equiv, :=, \iff, \leftrightarrow, \triangleq, \approx, \simeq$ ; @ Not Equivalent,  $\neq, \sqsubset$ ;  
 $\%$  possibility, for one or some,  $\exists, \diamond, \mathbf{M}$ ; # necessity, for every or all,  $\forall, \square, \mathbf{L}$ ;  
 $(z=z)$   $\mathbf{T}$  as tautology,  $\mathbf{T}$ , ordinal 3;  $(z@z)$   $\mathbf{F}$  as contradiction,  $\emptyset, \text{Null}, \perp, \text{zero}$ ;  
 $(\%z\>\#z)$   $\mathbf{N}$  as non-contingency,  $\Delta$ , ordinal 1;  
 $(\%z\<\#z)$   $\mathbf{C}$  as contingency,  $\nabla$ , ordinal 2;  
 $\sim(y < x)$  ( $x \leq y$ ), ( $x \subseteq y$ );  $(A=B)$  ( $A \sim B$ );  $(B > A)$  ( $A \vdash B$ );  $(B > A)$  ( $A \equiv B$ ).  
 Note for clarity, we usually distribute quantifiers onto each designated variable.

From: [encyclopediaofmath.org/index.php/Lobachevskii\\_geometry](http://encyclopediaofmath.org/index.php/Lobachevskii_geometry)

A [Lobachevskii] geometry [is] based on the same fundamental premises as Euclidean geometry, except for the axiom of parallelism. Lobachevskii geometry is the geometry of a Riemannian space of constant curvature. The proof of the consistency of Lobachevskii geometry is carried out by constructing an interpretation (a model).

Consider the Euclidean polygon below with  $(p,q)$ ,  $(r,s)$  parallel to  $(t,u)$ ,  $(v,w)$ :



If  $u$  is less than  $q$  and  $w$  less than  $s$ , and  $q$  is equivalent to  $s$  and  $u$  equivalent to  $w$ , and  $p$  is less than  $r$  and  $t$  less than  $v$ , then  $q$  minus  $u$  is equivalent to  $s$  minus  $w$  (thereby keeping the edge  $(p,q)$ ,  $(r,s)$  parallel to  $(t,u)$ ,  $(v,w)$ ). (1.1)

$$\begin{array}{c} (((u < q) \& (w < s)) \& ((q = s) \& (u = w))) \& ((p < r) @ (t < v)) > ((q - u) = (s - w)) ; \\ \text{TTTT TTTT TTTT TTTT} \end{array} \quad (1.2)$$

**Remark 1.2:** Eq. 1.2 is tautologous and hence consistent.

The non Euclidean spherical geometry of Lobachevskii asserts parallel lines intersect at some point and hence are not parallel at that point. (2.0)

**Remark 2.0:** We note that Eq. 2.0 also applies to hyperbolic non Euclidean geometry.

If u is less than q and w less than s, and q is equivalent to s and u equivalent to w, and p is less than r and t less than v, then q minus u is *not* equivalent to s minus w (thereby *not* keeping the edge (p,q), (r,s) parallel to (t,u), (v,w)). (2.1)

$$\begin{aligned}
 &(((u < q) \& (w < s)) \& ((q = s) \& (u = w))) \& ((p < r) @ (t < v)) > ((q - u) @ (s - w)) ; \\
 &\quad \text{T T T T} \quad \text{T T T T} \quad \text{T T T T} \quad \text{T T T T} \quad (10) , \\
 &\quad \text{T F T T} \quad \text{T T T T} \quad \text{T T T T} \quad \text{T T T T} \quad ( 1) , \\
 &\quad \text{F T T T} \quad \text{F F T T} \quad \text{T T T T} \quad \text{T T T T} \quad ( 1) , \\
 &\quad \text{T T T T} \quad \text{T T T T} \quad \text{T T T T} \quad \text{T T T T} \quad ( 2) , \\
 &\quad \text{T F T T} \quad \text{T T T T} \quad \text{T T T T} \quad \text{T T T T} \quad ( 2) \quad (2.2)
 \end{aligned}$$

**Remark 2.2:** Eq. 2.2 as rendered is *not* tautologous, meaning Eq. 2.0 is *not* consistent.

What follows is that Riemann geometry is the same, and non Euclidean geometry is a segment of Euclidean geometry, not the other way around. Therefore non Euclidean geometries are a non tautologous fragment of the universal logic VŁ4.