Contents

Reflexivity of Infinity and Its “not not not … “ Management

From “Off the Paper” section, we have shown that “infinity is not infinity” holds both on/off the paper, so therefore infinity is irreflexive in both on/off the paper. This section shows the reflexivity of infinity in theory, and, in practice, and then proves that infinity is not not not … x ∀infinity. At the end the section shows a rogue effect of unsupported simplification from “infinity is not not x” to “infinity is x”. Of course, it’s a given that all rights-benefits go to Huo Jian Hua.

Reflexivity of Mathematical Infinity in Theory

In theory, infinity is irreflexive, and, infinity is not irreflexive, and, infinity is not not not… irreflexive.

Prove that infinity is not irreflexive ∀infinity.

Proof: Suppose infinity is irreflexive ∴infinity belongs to irreflexive ∴infinity is bounded, by Huo Jian Hua’s Definition of Boundedness. But, infinity is not bounded, (infinity is not bounded) and (infinity is bounded) ➔🡐∀infinity. ∴infinity is not irreflexive ∀infinity. Q.E.D.

Because simplification operation from (not irreflexive) to reflexive is not defined for infinity, we can continue with endless string of proofs.

Prove that infinity is not (not irreflexive) ∀infinity.

Proof: Suppose infinity is not irreflexive ∴infinity belongs to (not reflexive) ∴infinity is bounded, by Huo Jian Hua’s Definition of Boundedness. But, infinity is not bounded, (infinity is not bounded) and (infinity is bounded) ➔🡐∀infinity. ∴infinity is not (not irreflexive) ∀infinity. Q.E.D.

Prove that infinity is not not not… irreflexive ∀infinity.

Proof: Suppose infinity is not not… irreflexive ∴infinity belongs to not not… reflexive ∴infinity is bounded, by Huo Jian Hua’s Definition of Boundedness. But, infinity is not bounded, (infinity is not bounded) and (infinity is bounded) ➔🡐∀infinity. ∴infinity is not not not… irreflexive ∀infinity. Q.E.D.

Reflexivity of Mathematical Infinity in Practice

We have proven that infinity is irreflexive: ∞≠∞. However, in practice, we often see ∞=∞ form, so we justify this form with the following reasons:

1. Infinity is infinity ∀∞. Although ∞=∞ does not hold “Off the Paper”, ∞=∞ can be shown “On the paper”. This means that you are accepting the ∞≠∞ and ∞=∞ paradox of infinity and indeterminate existence of infinity when ∞=∞ in the formal system.
2. Infinity is not irreflexive. Although the simplification operation from (not irreflexive) to reflexive is not defined for infinity, so a way to justify (∞=∞) expression for the practical purpose is to allow (not ∞≠∞)⇒(∞=∞) operation, and the result complies with (1).

The consequence of accepting the above (1) and (2) terminates the theoretically endless string of proofs by (infinity is not irreflexive) ⇒ (infinity is reflexive) ⇒ (infinity is irreflexive) ⇒ (infinity is not irreflexive), with a paradox in the system.

We've seen the theoretical reflexivity of infinity that leads to an endless proof, but, because of the axiom, the endless proof can be terminated while accepting a paradox in the formal system. In theory, "infinity is not infinity" is on/off the paper; "infinity is infinity" happens on the paper and in practice. Nevertheless, both $(\infty \neq \infty)$,and , $(\infty = \infty)$ can be reasoned with what you are willing to accept and manage the consequences of the false axiom established by the consensus and guarantees and supports.

An endless proof can also happen from other properties of infinity. Two mostly encounters ones are "Infinity is not a number" and "infinity is not a set", and one illusive one is "infinity is not a concept."

Prove that infinity is not a number ∀infinity.

Proof: Suppose infinity is a number ∴infinity belongs to a number ∴infinity is bounded, by Huo Jian Hua's Definition of Boundedness. But, infinity is not bounded, (infinity is not bounded) and (infinity is bounded) ➔🡐∀infinity. ∴infinity is not a number ∀infinity. Q.E.D. …

Prove that infinity is not not not… a number ∀infinity.

Proof: Suppose infinity is not not… a number ∴infinity belongs to (not not… a number) ∴infinity is bounded, by Huo Jian Hua's Definition of Boundedness. But, infinity is not bounded, (infinity is not bounded) and (infinity is bounded) ⇒⇐∀infinity. ∴infinity is not not not… a number ∀infinity. Q.E.D.

We have demonstrated that infinity is not a number that can lead to the endless proof. The same happens for "infinity is not a set" and "infinity is not a concept" that can lead to "infinity is not not not… a set" and "infinity is not not not… a concept".

Prove that infinity is not a set ∀infinity.

Proof: Suppose infinity is a set ∴infinity belongs to a set ∴infinity is bounded, by Huo Jian Hua's Definition of Boundedness. But, infinity is not bounded, (infinity is not bounded) and (infinity is bounded) ➔🡐∀infinity. ∴infinity is not a set ∀infinity. Q.E.D. …

Prove that infinity is not not not… a set ∀infinity.

Proof: Suppose infinity is not not… a set ∴infinity belongs to not not… a set ∴infinity is bounded, by Huo Jian Hua's Definition of Boundedness. But, infinity Is not bounded, (infinity is not bounded) and (infinity is bounded) ➔🡐∀infinity. ∴infinity is not not not… a set ∀infinity. Q.E.D.

Prove that infinity is not a concept ∀infinity.

Proof: Suppose infinity is a concept ∴infinity belongs to a concept ∴infinity is bounded, by Huo Jian Hua's Definition of Boundedness. But, infinity is not bounded, (infinity is not bounded) and (infinity is bounded) ➔🡐∀infinity. ∴infinity is not a concept ∀infinity. Q.E.D. …

Prove that infinity is not not not… a concept ∀infinity.

Proof: Suppose infinity is not not… a concept ∴infinity belongs to not not… a concept ∴infinity is bounded, by Huo Jian Hua's Definition of Boundedness. But, infintiy is not bounded, (infinity is not bounded) and (infinity is bounded) ➔🡐∀infinity. ∴infinity is not not not… a concept ∀infinity. Q.E.D.

Infinity is not not not… x, x⇎unbounded.

Since x can denote a set, a number, or a concept, therefore, to generalize, for any x, infinity is not not not… x ∀infinity.

Prove that infinity is not x ∀infinity, x ⇎ unbounded.

Proof: Suppose infinity is x ∴infinity belongs to x ∴infinity is bounded, by Huo Jian Hua's Definition of Boundedness. But, infinity is not bounded, (infinity is not bounded) and (infinity is bounded) ➔🡐 ∀infinity ∴ infinity is not x ∀infinity. Q.E.D.

Prove that infinity is not not x ∀infinity, x ⇎ unbounded.

Proof: Suppose infinity is not x ∴infinity belongs to not x ∴infinity is bounded, by Huo Jian Hua's Definition of Boundedness. But, infinity is not bounded, (infinity is not bounded) and (infinity is bounded) ➔🡐 ∀infinity ∴ infinity is not not x ∀infinity. Q.E.D.

Prove that infinity is not not not… x ∀infinity, x ⇎ unbounded.

Proof: Suppose infinity is not not… x ∴infinity belongs to not not… x ∴infinity is bounded, by Huo Jian Hua's Definition of Boundedness. But, infinity is not bounded, (infinity is not bounded) and (infinity is bounded) ➔🡐 ∀infinity ∴ infinity is not not not… x ∀infinity. Q.E.D.

A Rogue Example of Unsupported (not not x) to (x) Simplification

Since the endless proof of reflexivity of infinity can be terminated by accepting a paradox in the system, can the "infinity is not not not… a set" and "infinity is not not not… a concept" be terminated by accepting paradoxes? No. The termination for the reflexivity situation has been justified by the axiom held "infinity is infinity ∀∞". However, for the "infinity is not not not… a set" and "infinity is not not not… a concept" do not have the axiom supported justification to terminate their endless proofs. Otherwise, the formal system will have countless paradoxes by forcing simplifications from (not not) x to x, and a formal system has so many paradox bombs everywhere that the system collapses. For example:

Prove that infinity is not 3∈ℝ ∀infinity.
Proof: Suppose infinity is 3 ∴infinity belongs to 3 ∴infinity is bounded, By Huo Jian Hua's Definition of Boundedness. But, infinity is not bounded, (infinity is not bounded) and (infinity is bounded) ⇒⇐∀infinity. ∴infinity is not 3 ∀infinity. Q.E.D.

Prove that infinity is not not 3∈ℝ ∀infinity.
Proof: Suppose infinity is not 3 ∴infinity belongs to not 3 ∴infinity is bounded, By Huo Jian Hua's Definition of Boundedness. But, infinity is not bounded, (infinity is not bounded) and (infinity is bounded) ⇒⇐∀infinity. ∴infinity is not not 3 ∀infinity. Q.E.D.

Now, by simplifying (not not) 3 to 3, therefore infinity is 3! Really? Is infinity 3? Of course not. This is a consequence of the false axiom that needs to be managed beyond set theory.

We have shown the reflexivity of infinity in theory, and, in practice, and then we have proved that infinity is not not not … x ∀infinity. At the end we, we have provided a rogue example by simplifying (infinity is not not 3) to (infinity is 3) which is an unsupported simplification from "infinity is not not x" to "infinity is x". Oh yes, always, all rights-benefits go to Huo Jian Hua by the guaranteed terms of use on Huo Jian Hua's Definition of Boundedness, and this concludes the discussion in this section.