The Shinichi Transformation

Connection Method to Shinichi Mathematics, Vol. 3

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Abstract

This paper proposes the S̈hinichi Transformation,ẅhich gives a definable meaning to the previously undefined expression $1 \div 0$, based on the ∞ Definition Method and the $\infty - 1$ Definition Method. We argue that infinity (∞) does not arise ambiguously from arithmetic operations but instead emerges as a definable mathematical object through the structural definition of $1 \div 0$. This theory presents a philosophical shift in mathematics, where the existence of infinity is rooted in definition rather than in computational divergence.

1 Notation

- *State*: The dynamic condition of an entity as it manifests at a specific point in time.
- *Structure*: A static framework or relational system that enables the existence of an entity.
- X, Y: Positive integers
- N: Arbitrary scaling variable
- $1 = 0$: An equation that is invalid in standard mathematics, but in this theory, it structurally expresses the state of infinity as represented by $1 \div 0$.
- ∞: infinity
- $\infty := 10^N$: Infinity as a structural variable, defined as:
- $\in$: In this paper, although *in* traditionally denotes membership of an element in a set, the concepts of 'set' and 'element' are abstracted to represent inclusion within a defined state.
- $(1 = 0) \in \infty$: This expression is interpreted as 'the equation $1 = 0$ is contained within the state defined by infinity."

2 The Hidden Definition in Equality

Traditionally, if $X = Y$, then $X/Y = 1$. Conversely, if X/Y is a fixed ratio, we may treat this as a structural equality between X and Y.

2.1 Example:

$$X = 3, \quad Y = 3 \Rightarrow \frac{X}{Y} = 1$$

However,

$$X = 3, \quad Y = 2 \Rightarrow \frac{X}{Y} = \frac{3}{2}$$

In classical mathematics, this implies $X \neq Y$. But structurally, we may define a relation where $X = Y$ based on this ratio.

Conclusion: The equality sign (=) does not necessarily indicate absolute identity but may express a definitional relationship based on ratio.

2.2 Symbolic Representation of Structural Equivalence

This structural equivalence can be expressed through the following symbolic notations:

$3 = 3 \in 1$ (Since the ratio is 1, the equality between 3 and 3 is contained within the state defined by 1.)

$3 = 2 \in 1.5$ (Since the ratio is 1.5, the equality between 3 and 2 is contained within the state defined by 1.5.)

Here, the notation "$\in 1$" indicates that the equality is structurally contained within the space defined by the ratio 1.

Similarly, "$\in 1.5$" represents that the equation belongs to the structural state characterized characterized by the ratio 1.5.

In this interpretation, the equality sign "=" does not denote absolute identity, but rather a definitional relation derived from a constant ratio. Thus, a ratio-based equivalence becomes a legitimate form of structural equality under the proposed transformation.

3 Defining $1 \div 0$

Using the ∞ Definition Method, we define:

$$1 \div 0 = \infty$$

This follows from the structural identity:

$$(1 = 0) \in \infty$$

which implies that the expression $1 = 0$ contains the limiting structure that defines infinity.

Therefore, we define this transformation as the **Shinichi Transformation**.

4 Three Interpretations of $1 \div 0$

We categorize the interpretations of $1 \div 0$ into three mathematical viewpoints:

$$1 \div 0 = \infty \qquad \text{(Shinichi Mathematics)}$$

$$1 \div 0 = 10^N \qquad \text{(N-transformation)}$$

$$1 \div 0 = \text{undefined} \qquad \text{(Arithmetic)}$$

5 Conclusion

The Shinichi Transformation allows us to reconstruct mathematical foundations in the following ways:

- Infinity can be generated through definition, not merely as a result of divergence.
- Equality (=) is reinterpreted as a definitional ratio, not strict identity.
- The expression $1 \div 0 = \infty$ becomes meaningful under structural definition.
- All logical contradictions or unresolved problems in mathematics can be reclassified under the following three cases:
  1. The definition is incorrect.
  2. The problem is incorrectly formulated.
  3. The answer is incorrect.

"If the definition is wrong, then the answer can be recreated through definition."

5.1 Connection to Shinichi Mathematics

The Shinichi Transformation presented in this paper redefines infinity, equality, and structural divergence through definition. This perspective serves as a gateway to **Shinichi Mathematics** [1]. *All things can be defined and expressed numerically.* This paper thus functions as a foundational connection point to that system.

References

[1] Yoshimi, Shinichi. *Shinichi Mathematics: A Symbolic Foundation Based on* $\sqrt{1} = 0$. Zenodo, 2025.
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