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From the Continuity Problem of Set Potential to Georg Cantor Conjecture

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Abstract: *Background* in 1878, Cantor puted forward his famous conjecture. Cantor's famous conjecture is whether there is continuity between the potential of the set of natural numbers and the potential of the set of real numbers. In 1900, Hilbert puted forward the first question of 23 famous mathematical problems at the International Congress of mathematicians in Paris. *Purpose* To study the continuity of set potential between the natural number set and the real number set, so as to provide mathematical support for the study of male gene fragment in human genome. *Method* The potential is extended by infinite division of sets and differential incremental equilibrium theory. There is a symmetry relation that the smallest element of infinite partition is 2. When a set A corresponds to a subset of a set B one by one, but it can't make A correspond to B one by one, the potential of A is said to be smaller than that of B. If *a* is the potential of A, and *b* is the potential of B, then a<b. We use ～·0 to express the potential of natural number set and ～·1 to express the potential of real number set. At present, it is not known whether there is a set X, the potential of X satisfies ～·0 <*x*<～·1. *Results* There is no continuity problem in the set potential of the natural number set and the real number set, and four mixed potentials can be formed. It belongs to the category of super finite theory. *Conclusion* Cantor's conjecture is proved that potential of the natural number set and the real number set. That is, the potential of X satisfies $\dot{\sim}0 < x < \dot{\sim}1$ does not exist.

Keywords: Natural Number Set, Real Number Set, Set Potential, Continuity Problem, Mixed Potential, Hyperfinite Theory, Infinite Classification

1. Introduction

1.1. Cantor's Famous Conjecture Is Whether There Is Continuity Between the Potential of Natural Number Set and That of Real Number Set

Further proof on the continuity of set potential. When a set A corresponds to a subset of a set B one by one, but it can't make A correspond to B one by one, the potential of A is said to be smaller than that of B. If *a* is the potential of A, and *b* is the potential of B, then a<b. We use $\dot{\sim}0$ to express the potential of natural number set and $\dot{\sim}1$ to express the potential of real number set. At present, it is not known whether there is a set X, the potential of X satisfies $\dot{\sim}0 < x < \dot{\sim}1$. Cantor put forward his famous conjecture that the above X set does not exist.

In order to study continuity of set potential between the natural number set and the real number set, four mixed potential are formed, which belong to the category of transfinite theory and are discontinuous set potential. The connection in the complexity of human genes is formed by the continuity of set potential. It is found that the complex pairing of genomes also has weak order and law, the continuity and controllability of the whole pairing potential of gene chain, and the discontinuity of DNA gene fragment, and the continuity of DNA forming chromosome skeleton to life body, so as to ensure the relative stability of species.

1.2. The continuity Problem of Proving Set Potential in Detail

Sets $A^i \subset A, B^i \subset B$, potential $a^i \leftrightarrow b^i \subset A$, and $a^i \leftrightarrow b^i \subset B$

$\forall a^i \leftrightarrow b^i \subset A,\ \forall a^i \leftrightarrow b^i \not\subset B$

Let $a^i$is $\dot{\sim}^i\, 0, b^i$ is $\dot{\sim}^i\, 1$,

If $\forall a^i \leftrightarrow b^i \subset A$

$$\forall \dot{\sim} 0 \leftrightarrow \dot{\sim} 1 \subset \dot{\sim}^{i} 0, \forall \dot{\sim} 0 \leftrightarrow \dot{\sim} 1 \not\subset \dot{\sim}^{i} 1$$

$$\forall \dot{\sim} 0 \leftrightarrow \dot{\sim} 1 \not\subset \dot{\sim}^{i} 0,\ \forall \dot{\sim} 0 \leftrightarrow \dot{\sim} 1 \subset \dot{\sim}^{i} 1$$

The potential of the set of $\exists X$ is X^i
$X^i \subset \dot{\sim} 1, \dot{\sim} 0 < x < \dot{\sim} 1 X^i \subset \dot{\sim}^{i} 0, \not\ni \dot{\sim} 0 < x < \dot{\sim} 1$

All X sets satisfy $\dot{\sim} 0 < x < \dot{\sim} 1$, It is not stable, so there is no relation between the potential of natural number set N and real number set R that is $\dot{\sim} 0 < x < \dot{\sim} 1$.

See axis below

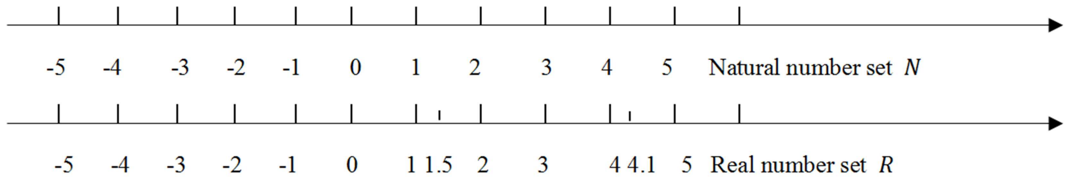

Figure 1. *Coordinate axes of natural number set and real number set [set potential].*

Subsets of set N of natural numbers$a = \{0,1,2,3,4,5\}, a \subset N$
Subsets of real set R set $b = \{0,1,1.5,2,3,4,4.1,5\}, b \subset R$
Sets $c = \{0,1,2,3,4,5\}, c \subset N \subset R$
a, b, c All known as, A is the potential of N set, B is the potential of R set, C is the potential of N set.
$\forall a, c$, potential$a < b \not\subset$ a $< x^i < b$
$\forall a, c$, One to one corresponding subset, and a, c are natural numbers.
Potential $a < b \not\subset$ a $< x^i < b$, $\because \dot{\sim} 0 \nless x < \dot{\sim} 1$

$$\dot{\sim} 0 < x \nless \dot{\sim} 1$$

$$\dot{\sim} 0 \nless x \nless \dot{\sim} 1$$

From the above not strict derivation, it may be considered that $\dot{\sim} 0 < x < \dot{\sim} 1$ does not exist
A strict, systematic and structured deep mathematical proof of $\dot{\sim} 0 < x < \dot{\sim} 1$
From $a = \{0,1,2,3,4,5\}, b = \{0,1,1.5,2,3,4,4.1,5\}$, there is

$$a = \{0,1,2, \dots, n\}, b = \{0,1,2, \dots, R\}$$

Potential $\forall \bigcup_{i=1}^{m} a^{0^-}, i = 1,2, \dots, m, m+1, \dots, n$; potential $\forall \bigcup_{j=1}^{p} b^{0^-}, j = 1,2, \dots p, p+1, \dots, n$
Subset $\forall \bigcup_{i=1}^{m} \Delta a^{0^-} \subset \forall(\cup)\left[\int^{\Delta} b^{0^-} + \Delta a^{0^-}\right]$, $\Delta a^{0^-} < \int^{\Delta} b_i^{0^-}$, Analysis from set unit

$$\forall \bigcup_{i=1}^{m} \Delta a^{0^-} = \{\Delta a_1^{0^-}, \Delta a_2^{0^-}, \Delta a_3^{0^-}, \dots, \Delta a_k^{0^-}, \dots\}, \forall(\cup)\left[\int^{\Delta} b^{0^-} + \Delta a^{0^-}\right] = \left[\int^{\Delta} b_1^{0^-}, \Delta a_2^{0^-}, \int^{\Delta} b_3^{0^-}, \dots, \Delta a_{k+1}^{0^-}, \Delta a_k^{0^-}, \dots\right] \quad (1)$$

Explain $\Delta a_2^{0^-} = \Delta^* a_2^{0^-}, \Delta a_k^{0^-} = \Delta^* a_{k+1}^{0^-} + \int^{\Delta} b_1^{0^-}$
$\forall(\cup)\Delta a^{0^-}$takes a subset, i.e. potential a, so that $a = \dot{\sim} 0$
Take a subset from $\forall(\cup)\left[\int^{\Delta} b^{0^-} + \Delta a^{0^-}\right]$, potential b
Let $b = \dot{\sim} 1$
When $\forall(\cup)\Delta a^{0^-}$ and $\forall(\cup)\left[\int^{\Delta} b^{0^-} + \Delta a^{0^-}\right]$ is infinitely classification, there is $\forall(\cup)\Delta a^{0^-} \approx \forall(\cup)\left[\Delta a^{0^{--}} + \mathrm{Lim} \int^{\Delta} {}_{0^-}^{\infty} b^{0^-}\right]$
Further structure

$$\forall(\cup)\Delta a_i^{0^-} \approx \forall(\cup)\left[\Delta a_j^{0^{i-}} + Lim \int^{\Delta} {}_{0^-}^{\infty} b_j^{0^-}\right] \quad (2)$$

From formula (2), we can see that there is no comparability of set X, so

$$\text{Let } \forall(\cup)\Delta a_i^{0^-} \to a^*, \forall(\cup)\left[\Delta a_j^{0^{i-}} - Lim \int^{\Delta} {}_{0^-}^{\infty} b_j^{0^-}\right] \to b^*$$

Let $a^* \to \dot{\sim} 0, b^* \to \dot{\sim} 1$ again, and suppose that there is an X set, then there is $\dot{\sim} 0 \approx x \approx \dot{\sim} 1$
Therefore,$\dot{\sim} 0 \nless x \nless \dot{\sim} 1$

$$\forall(\cup)\Delta a_i^{0^-} \approx \forall(\cup)\left[\Delta a_j^{0^{i-}} - Lim \int^{\Delta} {}_{0^-}^{\infty} b_j^{0^-}\right] \quad (3)$$

Further analyze (2) and sort out the formula.

$$\forall(\cup)\Delta a^{0^-}, \forall(\cup)\left[\Delta a^{0^-} + \int^{\Delta} b^{0^-}\right] \tag{4}$$

$$\forall(\cup)\Delta a^{0^-} \approx \forall(\cup)\left[\Delta a^{0^{--}} + \mathrm{Lim} \int^{\Delta} {}_{0^-}^{\infty} b^{0^-}\right] \tag{5}$$

$$\forall(\cup)\Delta a_i^{0^-} \approx \forall(\cup)\left[\Delta a_j^{0^{i-}} + Lim \int^{\Delta} {}_{0^-}^{\infty} b_j^{0^-}\right] \tag{6}$$

$$\forall(\cup)\Delta a_i^{0^-} \to a^* \to \dot{\sim} 0, \forall(\cup)\left[\Delta a_j^{0^{i-}} + Lim \int^{\Delta} {}_{0^-}^{\infty} b_j^{0^-}\right] \to b^* \to \dot{\sim} 1 \tag{7}$$

$$\forall(\cup)\Delta a_i^{0^-} \subset \forall(\cup)\left[\Delta a_j^{0^{i-}} + Lim \int^{\Delta} {}_{0^-}^{\infty} b_j^{0^-}\right] \tag{8}$$

For (2) and (8), take a set X

$$\forall(\cup)\left[\Delta a_j^{0^{i-}} + Lim \int^{\Delta} {}_{0^-}^{\infty} b_j^{0^-}\right] \to \forall(\cup)\Delta a_j^{0^{i-}} \tag{9}$$

$$\forall(\cup)\Delta a_j^{0^{i-}} = \left\{\forall(\cup)\Delta a_{i+\varepsilon}^{0^{i-}} + \forall(\cup)\Delta a_{i+\varepsilon+1}^{0^{i-}} + \cdots + \forall(\cup)\Delta a_{i+\varepsilon+\eta}^{0^{i-}}\right\} \tag{10}$$

For ε = 0, (10) becomes

$$\forall(\cup)\Delta a_j^{0^{i-}} = \left\{\forall(\cup)\Delta a_i^{0^-} + \forall(\cup)\Delta a_{i+1}^{0^{--}} + \cdots + \forall(\cup)\Delta a_{i+\eta}^{0^{i-}}\right\} \tag{11}$$

(11) Where, $\forall(\cup)\Delta a_i^{0^-}$ is the same as (2) or (5); the potential $\forall(\cup)\Delta a_i^{0^-}$ at the left end is the same, so as to distinguish them (they belong to different set potentials),

So, change the $\forall(\cup)\Delta a_i^{0^-}$ in formula (11) to $\forall(\cup)\Delta^* a_i^{0^-}$

$$\forall(\cup)\Delta a_i^{0^-} \overset{?}{\underset{\sim}{-}} \forall(\cup)\Delta^* a_i^{0^-}$$

The real number set R can be written as

$$\forall(\cup)\left[\Delta a_j^{0^{i-}} + Lim \int^{\Delta} {}_{0^-}^{\infty} b_j^{0^-}\right]$$

from which it can be separated:

$$\forall(\cup)\Delta a_j^{0^{i-}} = \left\{\forall(\cup)\Delta a_i^{0^-} + \forall(\cup)\Delta a_{i+1}^{0^{--}} + \cdots + \forall(\cup)\Delta a_{i+\eta}^{0^{i-}}\right\}, and\ \forall(\cup)\Delta a_i^{0^-} \overset{?}{\underset{\sim}{-}} \forall(\cup)\Delta^* a_i^{0^-}$$

$\Delta^* a_i^{0^-} \not\subset N, \Delta^* a_i^{0^-} \subset R, R\ real\ number$;

$\forall(\cup)\Delta a_i^{0^-} \subset N, N\ Natural\ number$

Because N is a natural number and has continuity, $\forall(\cup)\Delta a_i^{0^-}$ is also continuous; however, $\forall(\cup)\Delta^* a_i^{0^-}$ is continuous.

$$\therefore \Delta^* a_i^{0^-} \not\subset N, \Delta^* a_i^{0^-} \subset R$$

Subset of set of natural numbers, Subset a of potential $\forall(\cup)\Delta a_i^{0^-}$, potential *a*. Subset of set of real numbers, Subsets *b* of potential $\Delta^* a_i^{0^-}$, potential *b*.

Let$a^* \to \dot{\sim} 0, b^* \to \dot{\sim} 1$ The potential of *a* and *b* are respectively:

$$a \subset \forall(\cup)\Delta a_i^{0^-}, a \not\subset \Delta^* a_i^{0^-}$$

$$b \not\subset \forall(\cup)\Delta a_i^{0^-}, b \subset \Delta^* a_i^{0^-}$$

$\therefore b$ continuous or not

Assume $\forall x \subset X$, then $\forall X \subset \forall(\cup)\Delta a_i^{0^-}, \forall x \subset \forall(\cup)\Delta^* a_i^{0^-}$

$\forall(\cup)\Delta a_i^{0^-} \sim \forall(\cup)\Delta^* a_i^{0^-}$ equivalent or not, and

$\forall(\cup)\Delta a_i^{0^-}, \forall(\cup)\Delta^* a_i^{0^-} \subset N,$

Whether it is established, and Whether $\dot{\sim} 0 < x < \dot{\sim} 1$

is established

For formula (7), detailed analysis

$$\forall(\cup)\left[\Delta a_j^{0^{i-}} + Lim \int^{\Delta} {}_{0^-}^{\infty} b_j^{0^-}\right] \to \forall(\cup)\Delta a_j^{0^{i-}} \tag{12}$$

$$\forall(\cup)\Delta a_j^{0^{i-}} = \left\{\forall(\cup)\Delta a_{i+\varepsilon}^{0^{--}} + \forall(\cup)\Delta a_{i+\varepsilon+1}^{0^{--}} + \cdots + \forall(\cup)\Delta a_{i+\varepsilon+\eta}^{0^{i-}}\right\} \tag{13}$$

Because the value of ε, η is continuous, that is, $\varepsilon = 1,2,\ldots,n;\ \eta = 1,2,\ldots,m$

$$\forall(\cup\quad)\Delta a_i^{0^-} \approx \forall(\cup)\left[\Delta a_j^{0^{i-}} + Lim\int^{\Delta}{}_{0^-}^{\infty} b_j^{0^-}\right], and i, j, \varepsilon = 1,2,\ldots \tag{14}$$

$$\forall(\cup)\left[\Delta a_j^{0^{i-}} + Lim\int^{\Delta}{}_{0^-}^{\infty} b_j^{0^-}\right]$$

$$= \left\{\forall(\cup)\Delta a_{i+1}^{0^{--}} + Lim\int^{\Delta}{}_{0^-}^{\infty} b_\varepsilon^{0^{i-}} + \forall(\cup)\Delta a_i^{0^{---}} + Lim\int^{\Delta}{}_{0^-}^{\infty} b_{\varepsilon+1}^{0^{(i+1)-}}, \ldots, \forall(\cup)\Delta a_i^{0^{i-}} + Lim\int^{\Delta}{}_{0^-}^{\infty} b_{\varepsilon+\eta}^{0^{(i+\eta)-}}, \ldots\right\} \tag{15}$$

$$\forall(\cup)\Delta a_{i+1}^{0^-} \approx \left\{\forall(\cup)\Delta a_{i+1}^{0^{--}} + \forall(\cup)\Delta a_i^{0^{---}} + \cdots + \forall(\cup)\Delta a_i^{0^{i-}}\right\}$$

$$Lim\int^{\Delta}{}_{0^-}^{\infty} b_{j+\varepsilon}^{0^-} \approx Lim\int^{\Delta}{}_{0^-}^{\infty} b_\varepsilon^{0^{i-}} + Lim\int^{\Delta}{}_{0^-}^{\infty} b_{\varepsilon+1}^{0^{(i+1)-}} + \cdots + Lim\int^{\Delta}{}_{0^-}^{\infty} b_{\varepsilon+\eta}^{0^{(i+\eta)-}} \tag{16}$$

$$\forall(\cup)\Delta a_{i-1}^{0^-} \approx \left\{\forall(\cup)\Delta a_{i-1}^{0^{--}} + \forall(\cup)\Delta a_i^{0^{---}} + \cdots + \forall(\cup)\Delta a_{i-1}^{0^{(i-1)^-}}\right\}$$

$$\forall(\cup)\Delta a_i^{0^-} \approx \left\{\forall(\cup)\Delta a_i^{0^{--}} + \forall(\cup)\Delta a_i^{0^{---}} + \cdots + \forall(\cup)\Delta a_i^{0^{i^-}}\right\} \tag{17}$$

So, Subset of set of natural numbers, potential $\forall(\cup)\Delta a_i^{0^-}$, and subset of set of real numbers, potential

$$\forall(\cup)\left[\Delta a_{i-1}^{0^-} + Lim\int^{\Delta}{}_{0^-}^{\infty} b_{j+\varepsilon}^{0^-}\right] \approx \forall(\cup)\Delta^* a_i^{0^-}, \therefore \forall(\cup)\Delta a_i^{0^-} \neq \forall(\cup)\Delta^* a_i^{0^-} \tag{18}$$

If $\forall(\cup)\Delta a_i^{0^-} \equiv \forall(\cup)\Delta^* a_i^{0^-}$, then $\dot{\sim}\, 0 < x < \dot{\sim}\, 1$ established.

If $\forall(\cup)\Delta a_i^{0^-} \neq \forall(\cup)\Delta^* a_i^{0^-}$, then $\dot{\sim}\, 0 < x < \dot{\sim}\, 1$ not established.

$\forall(\cup)\left[\Delta a_{i-1}^{0^-} + Lim\int^{\Delta}{}_{0^-}^{\infty} b_{j+\varepsilon}^{0^-}\right]$ is a discontinuous potential, and $\forall(\cup)\Delta^* a_i^{0^-}$ is a discontinuous potential, that is the potential of R (set of real numbers).

$\forall(\cup)\Delta a_i^{0^-}$ is a continuous potential, that is, the potential of N (set of natural numbers).

$\because$ $\forall(\cup)\Delta a_i^{0^-}$ and $\forall(\cup)\Delta^* a_i^{0^-}$ are the potentials of the minimum set. $\forall x \in \forall(\cup)\Delta a_i^{0^-}$, $\forall x \in \forall(\cup)\Delta^* a_i^{0^-}$

$\because$ $\forall_{Min}(\cup)\Delta a_i^{0^-} \neq \forall_{Min}(\cup)\Delta^* a_i^{0^-}$ changed to $\forall_0^{-\infty}(\cup)\Delta a_i^{0^-} \neq \forall_0^{-\infty}(\cup)\Delta^* a_i^{0^-}$,

$\therefore$ $\dot{\sim}\, 0 < x < \dot{\sim}\, 1$ not established.

$$\forall(\cup)\left[\Delta a_{i-1}^{0^-} + Lim\int^{\Delta}{}_{0^-}^{\infty} b_{j+\varepsilon}^{0^-}\right] \approx \forall(\cup)\Delta^* a_i^{0^-}, \forall_0^{-\infty}(\cup)\Delta a_i^{0^-} \neq \forall_0^{-\infty}(\cup)\Delta^* a_i^{0^-},$$

$$\therefore \dot{\sim}\, 0 < x < \dot{\sim}\, 1 \text{ not established} \tag{19}$$

Explain: $Lim\int^{\Delta}{}_{0^-}^{\infty} b_{j+\varepsilon}^{0^-}$ in $\forall(\cup)\left[\Delta a_{i-1}^{0^-} + Lim\int^{\Delta}{}_{0^-}^{\infty} b_{j+\varepsilon}^{0^-}\right]$ is always with $\forall(\cup)\Delta a_{i-1}^{0^-}$

About $\forall(\cup)\left[\Delta a_{i-1}^{0^-} + Lim\int^{\Delta}{}_{0^-}^{\infty} b_{j+\varepsilon}^{0^-}\right]$

$$\forall(\cup)\Delta a_{i-1}^{0^-} \approx \forall(\cup)\Delta a_{i-1}^{0^{--}} + \forall(\cup)\Delta a_{i-1}^{0^{---}} + \cdots + \forall(\cup)\Delta a_{i-1}^{0^{(i-1)^-}} \tag{20}$$

$$Lim\int^{\Delta}{}_{0^-}^{\infty} b_{j+\varepsilon}^{0^-} = Lim\int^{\Delta}{}_{0^-}^{\infty} b_\varepsilon^{0^-} + Lim\int^{\Delta}{}_{0^-}^{\infty} b_{\varepsilon+1}^{0^{(i-1)^-}} + \cdots + Lim\int^{\Delta}{}_{0^-}^{\infty} b_{\varepsilon+\eta}^{0^{(i+\eta)^-}} \tag{21}$$

For (20), take the limit

$$Lim[\forall(\cup)\Delta a_{i-1}^{0^-}] \approx Lim\left[\forall(\cup)\Delta a_{i-1}^{0^{--}} + \forall(\cup)\Delta a_{i-1}^{0^{---}} + \cdots + \forall(\cup)\Delta a_{i-1}^{0^{(i-1)^-}}\right] \tag{22}$$

Discuss the relationship between $\forall(\cup)\Delta a_i^{0^-}$ and $\forall(\cup)\Delta^* a_i^{0^-}$

$\forall(\cup)\left[\Delta^* a_{i-1}^{0^-} + Lim\int^{\Delta}{}_{0^-}^{\infty} b_{j+\varepsilon}^{0^-}\right] \leftrightarrow \forall(\cup)\Delta a_i^{0^-}, \because Lim\int^{\Delta}{}_{0^-}^{\infty} b_{j+\varepsilon}^{0^-}$ is not potential ofset of natural numbers.

$Lim\int^{\Delta}{}_{0^-}^{\infty} b_{j+\varepsilon}^{0^-}\ in\ \forall(\cup)\left[\Delta^* a_{i-1}^{0^-} + Lim\int^{\Delta}{}_{0^-}^{\infty} b_{j+\varepsilon}^{0^-}\right]$ is always with $\Delta^* a_{i-1}^{0^-}$

$Lim\int^{\Delta}{}_{0^-}^{\infty} b_{j+\varepsilon}^{0^-}$ is the infinitesimal of infinitesimal; it is the category of hyperfinity.

$$\forall(\cup)\Delta a_i^{0^-} \neq \forall(\cup)\left[\Delta^* a_{i-1}^{0^-} + Lim\int^{\Delta}{}_{0^-}^{\infty} b_{j+\varepsilon}^{0^-}\right], and \text{ In infinitesimal, infinitesimal set potential, It is always accompanied by } Lim\int^{\Delta}{}_{0^-}^{\infty} b_{j+\varepsilon}^{0^-} \tag{23}$$

$\therefore \dot{\sim} 0 < x < \dot{\sim} 1$ not established

That is, the potential element of the set of 2, $\dot{\sim} 0 \in N$ natural numbers set in $\dot{\sim} 0$; and the unit of the potential of 2, $\dot{\sim} 1 \in R$ real number set in $\dot{\sim} 1$.

$\dot{\sim} 0 \to 2 \neq \dot{\sim} 1 \to 2$, that is $2 \neq 2^*$. It shows that the set potential has a great influence on the meaning of numbers.

2. This Paper Discusses the Further Understanding of $\forall(\cup)\Delta \boldsymbol{a_i^{0^-}}$ and $\forall(\cup)\Delta^* \boldsymbol{a_i^{0^-}}$ to the from the Meaning of Infinite Classification of Sets

2.1. The Meaning of Infinite Classification, the Smallest Element is 2, i.e. 2 {1 → 1}, One-to-One Correspondence

$$\forall\{1 \to 1\} \in 2\{1 \to 1\};\ \forall(1), \forall_{\to}(1) \in 2\{1 \to 1\}$$

$$\begin{cases} \forall(1), \forall(\cup)\Delta a_i^{0^-} \because \forall(1), \forall_{\to}(1) \in 2\{1 \to 1\} \\ \forall_{\to}(1), \forall(\cup)\Delta^* a_i^{0^-} \therefore 2\{\forall(1), \forall_{\to}(1)\} = 2\{1 \to 1\} \end{cases}$$

From $2\{\forall(1), \forall_{\to}(1)\} = 2\{1 \to 1\}$, it can be deduced.

$$2\{\forall(\cup)\Delta a_i^{0^-}, \forall(\cup)\Delta^* a_i^{0^-}\} = 2\{\forall(\cup)\Delta a_i^{0^-} \to \forall(\cup)\Delta^* a_i^{0^-}\} \tag{24}$$

Further analysis of $\dot{\sim} 0$ and $\dot{\sim} 1$

If there is $\dot{\sim} 0$ potential a, $\forall 2 \in a$; there is $\dot{\sim} 1$ potential b, $\forall_{\to} 2 \in b$. We can find $\forall 2 \to \forall_{\to} 2$, that is, $2 \neq 2^*$, which is changed as $2 \to 2^*$.

According to the property (24) formula, it can be deduced from the potential of natural number set and real number set.

$$2\{\forall 2 \to \forall_{\to} 2\}, \text{that is } 2\{2 \to 2^*\}; \forall 2 \in \dot{\sim} 0, \forall_{\to} 2 \in \dot{\sim} 1 \tag{25}$$

According to (24) and (25), we can know whether there are two 2 in the potential of natural number set. Whether there are two 2^*, in the potential of real number set. Their relationship: $2\{2 \to 2^*\}$. There are two 2 potentials in a natural set. They are different. They are called:$2^{\to}$; $2^{\leftarrow}$. There are two 2 potentials in the real number set. They are different. They are called: $2^*_{0^-}$; $2^*_{0^+}$

$\{[2^{\to}, 2^{\leftarrow}] \to [2^*_{0^-}, 2^*_{0^+}]\}$ exists, if changed to

$\{[2^{\to}, 2^*_{0^-}] \to [2^{\leftarrow}, 2^*_{0^+}]\}$ From this to general. Simplification of (24)

$$\{[\forall(\cup)\Delta^{\to} a_i^{0^-}, \forall(\cup)\Delta^{\leftarrow} a_i^{0^-}]\} \to \{[\forall(\cup)\Delta^*_{0^-} a_i^{0^-}, \forall(\cup)\Delta^*_{0^+} a_i^{0^-}]\} = \{[\forall(\cup)\Delta^{\to} a_i^{0^-}, \forall(\cup)\Delta^*_{0^+} a_i^{0^-}]\} \to \{[\forall(\cup)\Delta^{\leftarrow} a_i^{0^-}, \forall(\cup)\Delta^*_{0^-} a_i^{0^-}]\} \tag{26}$$

Passing to the limit in (26), we get

$$Lim\{[\forall(\cup)\Delta^{\to} a_i^{0^-} \to \forall(\cup)\Delta^*_{0^+} a_i^{0^-}], [\forall(\cup)\Delta^{\leftarrow} a_i^{0^-}, \forall(\cup)\Delta^*_{0^-} a_i^{0^-}]\} = \forall(\cup)\Delta a_i^{\uparrow} \wedge \forall(\cup)\Delta a_i^{\downarrow} \tag{27}$$

Passing to the limit in the right-hand side of (27), we infer

$$Lim[\forall(\cup)\Delta a_i^{\uparrow} \wedge \forall(\cup)\Delta a_i^{\downarrow}] = \forall\Delta a_i^{\uparrow} \wedge \forall\Delta a_i^{\downarrow} \tag{28}$$

In (28), $a_i^{\uparrow}$ is the limit potential of mixing, $a_i^{\downarrow}$ is the limit potential of mixing. And simplify it.

$$\forall\Delta a_i^{\uparrow} \wedge \forall\Delta a_i^{\downarrow} = \forall(\Delta a_i^{\uparrow} \wedge \Delta a_i^{\downarrow})$$

$$\forall(\Delta a_i^{\uparrow} \wedge \Delta a_i^{\downarrow}) = a_i^{\uparrow\downarrow} + Lim\int^{\Delta}{}_{0^-}^{\infty} a_{i+\Delta\varepsilon}^{\uparrow\downarrow} = a_i + Lim\int^{\Delta}{}_{0^-}^{\infty} a_{i+\Delta\varepsilon}^{\uparrow\downarrow} \tag{29}$$

$\because a_i^{\uparrow}, a_i^{\downarrow}$ is the limit potential of mixing, $\therefore a_i$ is also the potential of mixing; i.e

$Lim \int^{\Delta} {}_{0^-}^{\infty} a_{i+\Delta\varepsilon}^{\uparrow\downarrow} \in \{N, R\}$, *and N is the set of natural numbers, R is the set of real numbers.*

$\because$ $Lim \int^{\Delta} {}_{0^-}^{\infty} a_{i+\Delta\varepsilon}^{\uparrow\downarrow}$ is the infinitesimal infinitesimal; it is the category of the theory of hyperfinity.

$$a_i \ + Lim \int^{\Delta} {}_{0^-}^{\infty} a_{i+\Delta\varepsilon}^{\uparrow\downarrow} \tag{30}$$

On the extension of the meaning of the potential of (30) infinite partition class, it embodies the symmetry relation that the smallest element after infinite partition is 2.

$$a_i \ + Lim \int^{\Delta} {}_{0^-}^{\infty} a_{i+\Delta\varepsilon}^{\uparrow\downarrow}, and\ a_i \ + Lim \int^{\Delta} {}_{0^-}^{\infty} a_{i+\Delta\varepsilon}^{\uparrow} \text{ and } a_i \ + Lim \int^{\Delta} {}_{0^-}^{\infty} a_{i+\Delta\varepsilon}^{\downarrow} \tag{31}$$

The meaning of this pattern is far-reaching.

$$2\left\{\left[a_i \ + Lim \int^{\Delta} {}_{0^-}^{\infty} a_{i+\Delta\varepsilon}^{\uparrow}\right] \to \left[a_i \ + Lim \int^{\Delta} {}_{0^-}^{\infty} a_{i+\Delta\varepsilon}^{\downarrow}\right]\right\} \tag{32}$$

The meaning of relation (32) is the same as that of $2\{1 \to 1\}$, and the elements with four potentials are simplified from (24) and (25), namely:

$$2\{\forall(\cup)\Delta a_i^{0^-}, \forall(\cup)\Delta^* a_i^{0^-}\} = 2\{\forall(\cup)\Delta a_i^{0^-} \to \forall(\cup)\Delta^* a_i^{0^-}\} \tag{33}$$

The above formulas and (32) are all elements of four potentials. So (32) the derivation is correct, take a pair of relations:

$$\left[a_i \ + Lim \int^{\Delta} {}_{0^-}^{\infty} a_{i+\Delta\varepsilon}^{\uparrow}\right] \to \left[a_i \ + Lim \int^{\Delta} {}_{0^-}^{\infty} a_{i+\Delta\varepsilon}^{\downarrow}\right] \tag{34}$$

From this, we can realize symmetry and order, and understand that disorder is also temporary.

2.2. It Embodies the Dynamic Law of Things and Four Mixed Potentials Belong to the Category of the Theory of Hyperfinity

$$\begin{cases} \left[a_i \ + Lim \int^{\Delta} {}_{0^-}^{\infty} b_{i+\Delta\varepsilon}\right] \to \left[a_i \ + Lim \int^{\Delta} {}_{0^+}^{\infty} b_{i+\Delta\varepsilon}\right] \\ \left[a_i \ + Lim \int^{\Delta} {}_{0^-}^{\infty} b_{i+\Delta\varepsilon}^{\uparrow}\right] \to \left[a_i \ + Lim \int^{\Delta} {}_{0^-}^{\infty} b_{i+\Delta\varepsilon}^{\downarrow}\right] \end{cases} \tag{35}$$

(35) It can be seen that the minimum element after infinite classification is 2, and four mixed potentials are formed, which belongs to the category of the theory of hyperfinity. Because the minimum element of mixed potential is infinitesimal infinitesimal, there is

$a_i \ + Lim \int^{\Delta} {}_{0^-}^{\infty} a_{i+\Delta\varepsilon}^{\uparrow\downarrow}$ is always accompanied by a_i potential So $a_i \ + Lim \int^{\Delta} {}_{0^-}^{\infty} a_{i+\Delta\varepsilon}^{\uparrow\downarrow}$ is a discontinuous potential.

$\therefore \dot{\sim}\ 0 < x < \dot{\sim}\ 1$ not established, Proof completed.

3. Conclusion

3.1. There Is No Continuity Between Potential of the Natural Number Set and the Real Number Set

The smallest element after infinite partition is 2, which forms four mixed potentials. The smallest element is infinitesimal of infinitesimal, which belongs to the category of transfinite theory. Georg Cantor's conjecture about the continuity of set potential is proved.

3.2. The Infinite Partition Class and the Continuity Problem of Set Potential Is Constructed by Differential Incremental Equilibrium Theory

Through the limit potential of differential increment, four mixed potentials with infinitesimal minimum element are formed. That is, $a_i \ + Lim \int^{\Delta} {}_{0^-}^{\infty} a_{i+\Delta\varepsilon}^{\uparrow\downarrow}$ is always accompanied by a_i potential. So $a_i \ + Lim \int^{\Delta} {}_{0^-}^{\infty} a_{i+\Delta\varepsilon}^{\uparrow\downarrow}$ is a discontinuous potential. Cantor's conjecture is proved that the potential of the set of natural numbers and the set of real numbers is discontinuous.

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