The meaning of the infinitely great

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Abstract

The infinitely small is defined as finite length quantity of one dimension without the sizes of space ,while the infinitely great is reached by the superpositions or accumulations of infinitely many of the finite quantity by the way of the change of direction. The change of direction indicates that there is an leap from a finite quantity to finite quantities of infinitely many(infinitely great) and the form of manifestation of infinitely great is one quantitative continuum that can not be carried out by any algorithms and all parts of space (including circumferential length) we see is this one quantitative continuum. The any value is this one quantitative continuum implied the infinitely great that compresses any quantities outside of it to nothing.

Iintroduction

The biggest mystery of the universe is infinitely great(infinity). The idea of infinity comes from the idea that the universe is boundless. This infinity can be understood as the infinite accumulation of the finite quantities forever, never stopping, but gradually approaching infinity. In this sense, the infinity is the overcome of the finity. However,The concept above about infinity needs to be clarified. In axiom 1 (1), a finite length (such as 1 metre) is a finite quantity of a non-continuum, and from this finite quantity it can be now shown how we came to have the idea of infinity.The superpositions for extending from infinitely small to infinitely great is executed in an unit of 0 in axiom1.Starting from the first 0,the continue superpositions is gradually close to an given length quantities.Further we can say that the superpositions to be carried on forever will approach an infinitely great if it exists.Consequently, the character of extending from infinitely small to infinitely great in axiom1 can be described that for any a given length quantity there is already a more larger quantity than it. In this sense,it is said that the infinite quantities is the overcoming of the finite quantities and there is no boundaries (boundless) for universe. Assuming an infinitely great, quantity in the front of this infinitely great is not infinitely great due to it is smaller than that. Thus it is illogical that shifting from finite to infinite only need add an 0 .In addition, It is aslo illogical for us to say that the maximum quantity (infinitely great)is non-existence due to the fact that for any a given length quantity there is already a more larger quantity than it.So it is no true for us to say that infinite quantities is the overcoming of the finite quantities,Further,in this sense, it is wrong for us to say that the universe has no boundaries.Consequencely, axiom1 needs to be revised.

II Preliminaries

Definition 1 Now the infinitely great is defined renewly as the term that the infinitely great indicated the accumulations of infinitely many quantities must be existence and it is quantities that you can not reach it by extending forever of finite quantities and you can't talk about anything outside of it and compressing any quantities outside of it to nothing (in this sense,it is equvialent to the idea indicates that that the universe has boundaries). Here the concept of the accumulations of infinitely many quantities is equal to the concept that

you can not reach it by extending forever of finite quantities . Compared with the sequential superpositions is gradually close to an given length quantities and this superpositions to be carried on forever will reach an infinitely great that is the overcoming of the finite quantities in axiom 1,this new infinitely great defined is that the sequential superpositions of infinitely small to be carried on forever can aslo not reach this infinitely great (we called this revised axiom 1 as axiom 3).

Definition 2 The superpositions of infinitely small is not close to the infinitely great owing to extending forever of infinitely small can aslo not reach the infinitely great.That is to say that quantities of continue superpositions of infinitely small only remain in the finite range and size can not be compared between infinitely small and its quantities of superpositions(infinitely small is the same size as its quantities of superpositions).Further speaking,there is not the minimum and maximum quantity in the finite range,and the front (decrease)one and the behind (increase)one of infinitely small can be randomly extended without bounds in the finite range.Therefore, it is meaningless that infinitely small is 0 point,Instead of, the infinitely small is defined as finite length quantity of one dimension without the sizes of space and time. In brief, we call it as the finite quantity in the following discussion.Seeing figure 1.

Figure1 There is not the minimum and maximum quantity in the finite range,and the front (decrease)one and the behind (increase)one of infinitely small can be randomly extended without bounds in the finite range .So infinitely small is define as finite length quantity of one dimension without the sizes of space and time .

In our usual calculus calculation, the extension from infinitesimal to infinitely great is defined as being infinitely close but not unreachable, and vice versa, the lessen from infinitely great to infinitesimal is also defined as being infinitely close and not unreachable. From the definition of axiom 3 above we know that this concept needs to be corrected. That is, If the superpositions of infinitesimal is gradually close to a certain quantity, then it can reach that quantity, and if the superpositions of infinitesimal can not reach a certain quantity ,then it is not close to that quantity.

Definition 3 By virtue of the sequential (or continue) superpositions of finite quantities only stay in the finite range ,then how to achieve the superpositions of infinitely many quantities? I find that superposing

through the way of the change of direction indicates the accumulations of infinitely many.Seeing figure 2. The infinitely great is reached by the superpositions or accumulations of infinitely many of the finite quantity by the way of the change of direction. The change of direction is equal to the definition of the infinitely great that you can't talk about anything outside of it and it compress es any quantities outside of it to nothing ,and you can not reach it by extending forever of finite quantities.

Corollary 1 Now the definition of this new infinitely great are summarized in the following outline.

you can't talk about anything outside of it and it compresses any quantities outside of it to nothing.

you can not reach it by extending forever of finite quantities (The infinite definite value of all numbers will be given by this definition).

It is reached by the superpositions or accumulations of infinitely many of the finite quantity by the way of the change of direction.

Since continue superpositions of finite quantities only stay in the finite range, Achieving the superpositions(or accumulations) of infinitely many quantities of finite quantities will be a leap from finity to infinity,not continue superpositions.

Corollary 2 To make it easier to understand, this above four concepts of axiom 3 are compared with axiom 1 here.

In axiom 1 the extension from 0 to infinitely great will go on forever and never can be stopped,which is equivalent to the concept of having no boundaries of the universe. Instead, In axiom 3, an infinitely great can never be reached by extending forever of finite quantities ,and this infinitely great has boundaries but cannot be talked about anything outside of it and it can compresses any quantities outside of it to nothing.

A maximum quantity (infinitely great) is non-existence and for any a given length quantity there is already a more larger quantity than it in axiom1. Instead, A maximum quantity (infinitely great) is existence and it is quantity that you can't talk about anything outside of it and it compresses any quantities outside of it to nothing

The concept that any given line (or plane,multidimensional surface,etc.) segment can be divided finitely or infinitely into smaller part in axiom 1 is replaced by the concept of the change of direction representing infinitely many accumulations of finite quantities in axiom 3.

The superpositions for extending from infinitely small to infinitely great is the process of continue superpositions in axiom 1. However, this continue superpositions in axiom1 will turn into superpositions that must have to only stay in the finite range and are not capable of getting rid of of status of finite quantities in axiom 3 due to the concept that an infinitely great can never be reached by extending forever of finite quantities in axiom 3. Thus,Achieving the accumulations of infinitely many quantities of finite quantities must have to be a leap from finity to infinity in axiom 3 .

(5)The definition of infinity is not something we can't find an bondary, but something we can not be talked about any quantities outside it and can be defined as quantitiies that can compress anything outside it into nothing,and something you can not reach it by extending forever of finite quantities . Thus we say that if the superpositions of the infinitesimal constantly extends to close to a certain quantity, so the quantity is finity, andif infinitesimal extensions will not be able to close to a certain quantity, so this quantity is infinity ,and this infinity is the accumulations of infinitely many of this finity, and this infinity is precisely defined as something that goes on forever and never reaches it.

III Main Body

Further ,we see some detailed characters about this infinitely great below.

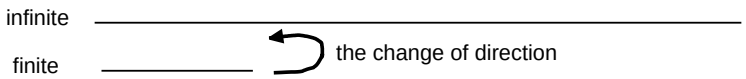

Figure 2 The infinitely great is reached by the superpositions or accumulations of infinitely many of the finite quantity by the way of the change of direction .

Characteristics 1 Since the change of direction suggests that accumulations of the most quantities(infinitely many or infinitely great),so infinitely great can be defined as quantitiies that can compress anything outside it into nothing and can not be talked about any quantities outside it .Containing the whole quantities can be indicated by infinitely many,which means that all quantities can be included by one system where it distincts from axiom1.

Characteristics 2 The infinitely great can be described from character1 as point that is unlimited,open,opposite to L point.Seeing figure 3. From this property of the infinitely great we understand cosmos as open space.

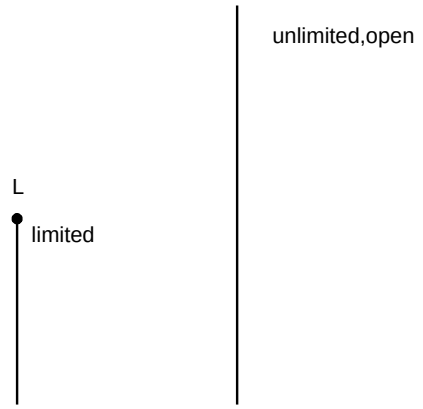

Figure 3 The infinitely great can be described from character1 as point that is unlimited,open,opposite to L point .

Characteristics 3 Considering a finite quantities whose sequential superpositions can only remain within the finite range,and this finite quantities does not distinct from its sequential superpositions (increase or decrease) in sizes.Therefore, there is a finite length quantities without the sizes of space and time whose accumulations of infinitely many are made of infinitely great.So far the accumulations of infinitely many implied by the change of direction indicates an leap from a finite quantity to finite quantities of infinitely many. Supposing this finite quantity as 1,we have a relationship:[?]/1=[?]. [?] suggests infinitely great.The reason for saying leap is that the distance relationship between 1 and [?] is leap.Seeing figure 4, in which relationship between finite quantity and infinite quantities are described.

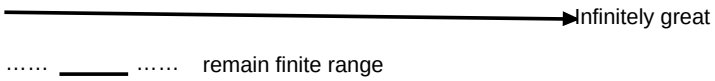

Figure 4 The accumulations of infinitely many implied by the change of direction indicates an jump from a finite quantity to finite quantities of infinitely many .

Characteristics 4 It is known from figure 4 that the change of direction indicates only two quantities existing: finite quantity and infinite quantities. Thus it is said that some quantity is only finite quantities before it does not reach infinite quantities and only remain within finite location.When this finite quantity leap into infinitely great quantity by the change of direction,the nearest infinite quantity to finite quantity is the starting point I in figure 5. The point I is identical to end point E due to propery of the change of direction ,which is different from axiom 1 in which the sequential (or called continual)superpositions can get random length quantities.

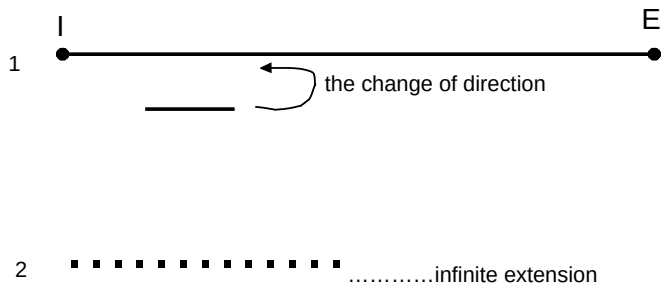

Figure 5 When this finite quantity leap into infinitely great quantity by the change of direction, the nearest infinite quantity to finite quantity is the starting point I in figure 5. The point I is identical to end point E due to propery of the change of direction ,which is different from axiom1 in which the sequential (or called continual)superpositions can get random length quantities.

Characteristics 5 It is known from figure 2 that the change of direction indicates that the second quantity of this infinitely great quantity can only be given on the basis of form of figure 6. It can be seen from figure 6 that the first quantity and the second quantity extend parallelly and do not intersect in infinitely distance (infinitely many).Although the second quantity is meaningless, the property of sizes of infinitely great has been defined here.As a result, I draw an conclusion that infinitely many quantities suggested by the change of direction exists in one quantitative way(there is only one quantity). The continuum is indicated by one quantitaty that can not divided into smaller parts and extends to infinitely distance. Therefore ,the accumulations of infinitely many(infinitely great) is manifested by the continuum. So the non- continuum consisted of by finity and or infinity 0 points is non-existence.Further, In the universe as we see it, there is no infinitesimal to exist,and there is only existence of one quantitative continuum representing the infinitely great. For instance, A finite-length quantities pulled out of this one quantitative continuum is meaningless.

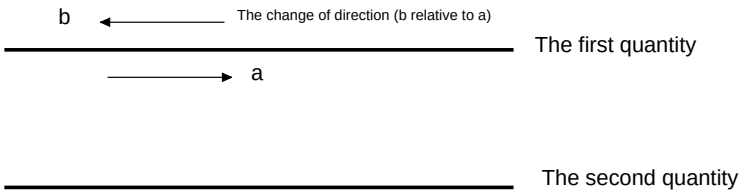

Figure 6 The accurate definition of the change of direction. The change of direction is defined as the second quantity that extend parallelly and doesn't intersect at infinite distance (infinitely many) with the first quantity in order to find this change of direction . This definition is aslo suitable for extension parallelly of two infinite quantities of infinite dimensions.

Characteristics 6 Here I emphasize that it is not one quantitative continuum but the change of direction that indicates accumulations of infinitely many. The one quantitative continuum is the form of manifestation of the change of direction.The two features are included in this one quantitative continuum. Firstly,the continuum exists as an unity where its any parts is itself that can not segmented into less parts or bigger parts.As an specific example,An circumference of circle can not be selected out as the parts that are different from the other parts .Secondly,the change of direction indicates infinitely great, which means that the any parts of this continuum is this infinitely great.

Characteristics 7 Where is switching point from finite quantities to infinite quantities if both co-exist within a system as the same axiom1.So the rationality of switching from finite quantities to infinite quantities indicated by the change of direction is validated from above point of view. The change of direction suggests finite quantities is not part of infinite quantities. Seeing figure 4.Thus both space and time we see in the common sense is one quantitative continuum representing infinitely many quantities where finite quantities have no place to exist and it is only reference quantities to define infinitely many quantities.As a reslt, it is meaningless trying to look for 0 point suggesting infinitely small in the common sense because of infinitely great being only existence.Therefore, the definite values of each length or scale of space and time have been given in accordance with character 5 and 7 and all of them are one quantitative continuum representing infinitely many quantities.

Characteristics 8 The facts that there is only one quantity to exist and there is no second quantity to select is indicated by the change of direction representing the accumulations of infinitely many quantities,which mean that this one quantitative continuum can not be carried out by the algorithms of 'include'expressed by () and 'equal divide' 'expressed by / as axiom1 do.In other words,the operations of addition,subtraction,multiplication, division can not be established by this one quantitative continuum of

the change of direction representing infinitely many quantities due to uniqueness of this one quantitative continuum.Thus infinitely many quantities indicated by the change of direction ,being equivalent to term that superposing forever of finite quantity can aslo not reach,can only be expressed by using the way of size property described by character 5,not by using the way of gradually increase number ,such as 31415962..... (extending forever) or 45879..... (extending forever) that can not be established by the operations of addition,subtraction,multiplication, division(2). Taking an example, For obtaining the infinite value of [?]2 , it is not the resulting values of 1.414..... (sequentially extending forever and never stopping) , but a value of the change of direction, which represents infinitely great, defined as something never reached by a sequential extension, and implies a leap from the finity to the infinity. The change of direction also implies that this infinite values are unique (indicating that the operations of addition,subtraction,multiplication, division can not be established), where the decimal point aslo loses its meaning. Consequently, this uniqueness of infinitely great is also the final destination of all infinite integers, infinite repeating and infinite non-repeating decimals.

Characteristics 9 It is shown From 8 that the operations of addition,subtraction,multiplication, division can not be established by this one quantitative continuum of the change of direction representing infinitely many quantities due to uniqueness of this one quantitative continuum. As a result ,A conclusion is drawn that the quantitative values and dimensions are the same thing ,it is unity in which its random parts is this infinitely great quantities. Thus we call this unity as infinite quantities of infinite dimensions. All quantities we can find is this one quantitative continuum.For the same reason, any point,line ,or plane,or any outline of having properties of gradually increase dimension draw in space,such as circle,is meaningless(3)(4)(5).In this sense, it is aslo meaningless for us to say that space and time are curved .The concept that space and time is made of countless 0 is replace by the concept of one quantitative continuum indicated by the change of direction expressing the accumulations of infinitely many quantities .Further,A infinitesimal is non-existence ,Instead of , there is only one quantity to exist that it is a continuum indicated the accumulations of infinitely many quantities .

For example,The circumference of a circle can be of course not selected out from this unity of infinite quantities of infinite dimensions and is of course the part of one quantitative continuum,which indicates that the accurate value of circumference of a circle to its diameter(π)is 1 due to there is only one quantity to exist .Further,any given circle circumferential length (the parts of space of the one quantitative continuum)is this infinitely many quantities indicated by the change of direction .

Characteristics 10 From Character 1 and 3 , the any integer solution that has not integer solution in a finite range in axiom 1 can obtains a definite value in a in a infinite range in a change of direction suggesting infinitely many,such as 4/3,7/6,$2^{1/2}$,π, et al,including all quantities we can find .The concept that any length can be randomly and infinitely individed into less parts have been replaced by that of the change of direction in which formula expressed by [?]()1=[?], [?]()[?]=1. Here 1 is finite length quantity of one dimension without the sizes of space, [?]is infinitely mamy quantities that is defined as the concept that the superpositions of 1 to be carried on forever can aslo not reach [?]. All infinite quantities implemented by an change of direction is carried out by the ways [?]()[?]=1. Within this infinitely mamy quantities suggested by the change of direction,there is no diference between an odd number and even number,and aslo no diference between an prime number and an sum number.

Characteristics 11 In addition, It is emphasized particularly here that one quantitative continuum representing infinitely many quantities means that any operations ,such as the operations of addition,subtraction,multiplication, division ,can not be implemented on it.. As axiom1 mentioned in the first paragraph,Assuming quantities beside,behind and in front of this infinitely great being existence(quantities after the change of direction), it is only determined by propery of the change of direction that there is no difference between this infinitely great and quantities beside,behind and in front of it . Namely, The infinitely great have been reached by quantities beside ,behind and in front of it as well .The distance between finite quantities and infinite quantities is aslo the realtionship in figure 4.

Characteristics 12 It is known above that there is only axiom 1 and axiom 3 (either axiom 1 or axiom 3

exists,)and there is no third axiom. For example, for any given line segment, it is meaningless to say that it can be divided infinitely, and to admit it is equal to admit the existence of a third axiom.

Since axiom 1 is illogical, it is meaningless to say that it consists of a finite number of zeros, and furthermore, since axiom 3 is logical, it is aslo meaningless to say that this given line segment consists of an infinite number of zeros.Consequently, the concept that a given line segment can be divided infinitely into smaller part is replaced by the concept of the change of direction indicating one quantitative continuum in axiom 3 where any given line segment is this one quantitative continuum itself. Of course, this any given line segment is aslo non-existence because If we assume that it exists, then the comparison with other quantities relative to it will be given the meaning of being able to compare the size, which obviously gets into the dilemma of acknowledging the third axiom.

Characteristics 13 Some readers may ask how axiom 3 differs from the usual mathematical operations, such as calculus. We now describe space as a mathematical model that can compare the size, boundless, infinitesimal extension and gradually approach infinity . For example, for a given line segment or high-dimensional surface, we define it as a manifold which can be infinitely and arbitrarily divided into smaller parts. The concept of infinite and arbitrary division is equal to the gradually extension and superpositions from infinitesimal to infinite great . Here, a certain line segment or surface is understood as a set of innumerable infinitesimals and can be calculated like calculus .From the definition of axiom 3, it can be seen that this is not a fact. Space is a continuum extending to infinity. There is only one quantitative continuum , which can't be divided or expanded into smaller or larger parts, and it can't be added, subtracted, multiplied or divided. It is aslo meaningless to divide this one quantitative continuum into a given line segment or surface. For example, for π, in order to obtain its definite value, the approaching extension of the sequential (or continue) form can not reach the infinite definite value, and can only stay in a finite quantity range. It must experience a leap representing the infinite accumulation of finity by the form of the change the direction, and obtain its infinite definite value. In any case, by then, this value has become one quantitative continuum representing the infinitely many accumulation of finite quantities.

Characteristics 14 Some readers may ask aslo, why a decimal of infinite value does not exist, such as π, [?]2, et al. It is illustrated below. If the space is to be able to compare the characteristics of a size, so there must be a singularity (o point) exists, then it is axiom 1 where a given line segment length only have been a finite quantities and the decimal point here does not make sense. If space is characterized by an inability to compare magnitudes, then it is axiom 3, where there is only one quantitative continuum indicated by the change of direction and there is no maximum and minimum quantities, for any given length ,they contains all quantities and there is only infinitely great (an infinite quantity with integer values). There is no the third axiom other than axioms 1 and 3. On the contrary, if we admit the existence of infinitely valued decimals, it means that we must admit that space is characterized by being able to compare sizes, and that any length of space will contain all quantities, which is untruth. It can be inferred that a decimal with an infinite value does not exist; it merely has an infinite number of integer values.

IV Prospects

Consequently, the definite values of each length or scale of space and time (such as the infinite value of π) have been given in this article. In order to define briefly and conveniently the concept of the infinitely great indicated by the change of direction ,the model of one dimension is adopted in figure 1-6 in this article. So some readers may ask, what position the infinite dimensions is within infinitely many quantities indicated by the change of direction? Namely how to understand and define accurately it? For instance,what is

relationship between beginning and end of time? In the next paper,I will focus on illustrating the meanings of dimensions in infinitely many quantities resulting from the change of direction.

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