IV. God's Math

The Mathematics of Symmetry Order

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Abstract

Ordinarily we see the world as if all physical form is greater than nothing and tend not to envision the world as if it is less than an infinite whole. Yet it is possible to conceptualize the observed world in either way, as more than nothing, or less than everything. Mathematics however cannot make that switch because there is no number that can represent the whole of all numbers. Fundamentally, the reason is because all ordinary mathematical values are defined relative to the nothing of zero. What follows is a way of seeing the mathematical universe as less than an everything, rather than more than a nothing. In our ordinary mathematical system, nothing is a foundational axiom. In this newly discovered mathematical system the idea of nothing has no place or meaning.

I. Introduction

How many numbers in mathematics symbolize an *everything* in the number world? Is there some place on the real number plane which symbolizes the sum or the whole of all numbers? Of course the answer is that there isn't an answer to this question, although perhaps we should ask, if it is possible to refer to the universe as a whole, why is there not a number to represent the whole of all numbers? There are words such as *Universe*, *existence*, or *being,* which can refer to, or be meant to symbolize the whole of all that exists, even should the Universe be infinite without limits. Yet no place on the real number plane symbolizes the sum and whole of all numbers. There is just something different about the nature of the system of mathematics which makes it impossible for it to represent itself as a whole.

Most of us expect there to be some direct relationship between mathematics and reality, but perhaps the mathematical plane represents a sub-system of a greater description of reality. In the same way that the physical process of time could quite easily be secondary to a greater physical reality of timelessness, like a story in a book compared to the book itself, it is also possible that our representations of the structure of reality so far developed are derived from a reality within a reality.

There is one case where all numbers seem to sum to a single number. Initially it seems that if we sum all positive numbers with all negative numbers, then the total combination of all in question would sum to zero, as shown below.

$$(1 + (-1)) + (2 + (-2)) + (3 + (-3)) + \ldots = 0 + 0 + 0 + \ldots = 0$$

If the sum of all numbers did indeed equal zero, zero would represents the everything of math, but then we would be faced with a logical contradiction, since zero would simultaneously represent nothing. Fortunately, several equations sum all real numbers yet each yields a different product:

0 + 1 + (2 + (-1)) + (3 + (-2)) + (4 + (-3)) + ... = 1+ 1 + 1 + ...

next:

0 + (- 1) + ((-2) + 1) + ((-3) + 2) + ((-4) + 3) + ... = (-1) + (-1) + (-1) + ...

The three equations are not identical, however, since they sum all integers and result in different solutions, we must conclude that *the sum of all real numbers is undefined*. Which really makes sense, otherwise, zero would be a mathematical *nothing* and an *everything* simultaneously. Instead zero represents nothing and there is no ultimate number that represents all numbers. However when we analyze zero we shouldn't wish to merely preserve an existing mathematical paradigm and thus fail to consider the alternative way of interpreting numerical values, what is actually an alternative paradigm, where positive and negative values combine into a whole rather than cancel to a nothing.

Zero cannot represent both nothing and everything in the same mathematical system of values, so the ideas that follow have no influence on the logical consistency of ordinary mathematics, and as long as we remember that the ideas that follow aren't threatening. The mathematical system developed since the dawn of human reasoning functions in relation to the definitive world of things that we observe each day. It is a valid system evidenced by its application to the physical universe. And yet it is noteworthy, even important, that we notice how that system cannot describe the universe as a whole.

II. Zero as the Whole of All Numbers

It is said that the sum of all real numbers is undefined but logicians and mathematicians made a mistake in formulating the rules concerning zero. We tested the hypothesis that all numbers might sum to zero, against a mathematical system where the value of zero is pre-set to be nothing. In ordinary math, all values are relative to zero as nothing, so of course we would discover that all real numbers do not sum to zero. If it were not so, the logical consistency of mathematics would be destroyed.

Yet we can as an alternative allow zero to transform into the sum and whole of all numbers, it just can't be done half way. As the saying goes, it's all or nothing. In fact the proper test of zero as the sum of all numbers involves a genuine reconsideration of the value of zero. Which means the value of zero is considered to have a value greater than all other numbers. At first this seems to be nonsensical. If zero is the greatest value; the sum of all numbers, what then is the value of number one, or two? Which is greater, one or two, *if zero is greater than both*?

If as we sum positive and negative numbers they combine to create zero rather than cancel to create zero, we alter the entire mathematical value system, but we still have a logically consistent system of values.

As we count a world of things we count upward into an endless abyss of numbers. If we wish to understand and describe the universe with a mathematical system that is able to represent the universe as a whole, then we must consider a switch to values where we see the world in an entirely different way.

(1 + (-1)) + (2 + (-2)) + (3 + (-3)) +... = 0 + 0 + 0 + ... = 0

We begin by looking at the simplest most straightforward way of summing all numbers shown above. For a moment we will imagine that the correct sum of all numbers equals zero. This means that we switch the value of zero away from nothing and make zero the largest value in the mathematical system. What I mean is that zero has become a number that contains all other numbers. Every positive and every negative number on the real number plane is summing or combining together to form an ultimate number of absolute value. Obviously this is not math as we know it.

What effect then does changing the value of zero have on the value of other numbers? In fact the value of other numbers are now different, transformed in the same shift that we have taken with zero. If zero is seen to contain all other numbers, then logically all other numbers must have a lesser value than that of zero. If zero is the largest value, the only way there can be lesser values is if we remove some measure of value from the whole of zero. For example, suppose that we take away a (-1) from zero. What remains? Zero is now no longer an absolute value containing all other numbers. Something has been removed from it. But what value does zero transform into to show that loss?

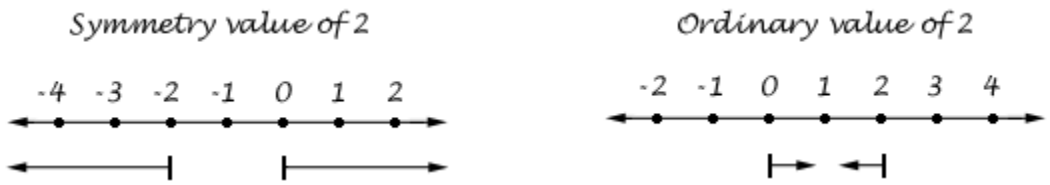
The answer is simply that it becomes the value 1. If zero contains all numbers within it, and we take away a value, zero then contains all numbers except the removed value. If we remove a negative one from zero the value of zero records that loss by becoming a positive one. So if we treat this as the logical rule we can now discover the values of other numbers in this system. For example, one is the sum of all numbers, so it contains within it all numbers, except (-1) is removed. So in this system the value or content of the number one is less than but near to the value of zero. The number two is the sum of all numbers except (-2), so it is also near zero but its content is less than zero and less than one, and so on, and so on. The transformation to numbers, or their content, is not completely an inverse reversal, however, we do see that the actual content of numbers decreases as we count toward greater numbers.

Just for the sake of clarity, switching to the negative, the number (-1) is a combination of all numbers except that a positive 1 is removed, which would otherwise create the balance of zero. And in removing a positive two the whole shows that loss by becoming the number (-2). The numbers (-1) and (-2) are very large values in this system, in fact

the content of (-1) is equal but inverse to the content of (+1). This is notably identical to the physics of matter and anti-matter, which are equally substantive, yet inverse in form and structure.

Of course this feels odd to anyone at first exposure, and to a mathematician who is learned and naturally entrenched in the extensive field of mathematics, all this likely seems absurd and perhaps useless. Hopefully everyone is interested in and fascinated by logical consistency, and maybe wise enough to not expect to immediately see how a logically consistent set of ideas can be applied for some practical purpose. Keep in mind that we are no longer counting finite things, so it is certainly not being meant here that two things are less than one thing. None of this applies in any way similar to how ordinary mathematics is applied to the world in which we live. In what I shall now refer to as *Symmetry Mathematics*, zero is a complete and infinite value. In this system, the infinity of possible values is absolutely definitive, not merely a series or a process. As we remove a part from the whole, we create other number values which are themselves infinite and definitive as well. I can assure the reader that the applications of this system, that are fourth coming, are as interesting as this system is unique.

2|equals the set of all real numbers except (-2), or (-1)+(-1). The symmetry value of 2 can be drawn on a number line as shown below:



It should be noted that we are not merely reversing the general value system of mathematics, we have changed the very nature of the system. This is most evidenced by the fact that there isn't any number in this system that represents nothing. There is no basic duality of something/nothing like that which exists in ordinary mathematics. An empty set in this system is recognized as the ultimate combination of all sets. And naturally, the values on either side of zero are less than the whole set that is zero.

In the same way that there are two distinct forms of order in nature, there also exists two entirely different ways of seeing zero and all other numerical values. It is a whole other type of value system, a system as valid as the one we presently use, one of no use within the abstract world of individual things, yet immeasurably valuable in cosmology where a mathematical value for the universe as a whole is of critical importance in any attempt to understand for example, the implications of the many worlds theory, or how to conceptualize the realm of all possible states.

Our present mathematical system is based upon a perspective derivative of grouping order, or thingness. This unique mathematical system, which we will continue to explore, is derived from symmetry order, its foundational axiom reflecting the innate singleness

and wholeness of existence. As a perspective it doesn't see isolated or separate objects. Although its values are definitive, it does not see finite things. In the same way that its mathematical values are a combination of other numbers, this system represents physical form only as a single unified pattern. In the way that each number contains other numbers, a number is like a possible state, a state being another term for a pattern.

One shouldn't assume this unique value system threatens our normal value system in any way. Each is built upon a perspective. Two apples are still more apples than one. We can still divide up and see the world from a finite perspective, in which case the infinite can be seen only as an indefinite process. What this system does, is allow a radical shift of perspective, so that we can also see the universe as an undivided whole, where all apples are part a single universe. In symmetry math, one of the conclusions we can draw is that for there to be a positive two apples (matter), there must be a negative two apples (anti-matter) removed from the pattern that we observe. All finite form requires that the two positive apples are less than the whole of the four apples combined.

Such ideas are really very simple and increasingly sensible once one is more accustomed to switching from one perspective to the other. In the next section we will consider more of the implications of this system, and work toward relating it to the concept of symmetry order and the cosmology explained at this website.

III. Positive and Negative Halves of a Neutral Whole

Infinity as a real physical thing is still often treated with skepticism. The definite nature of infinity is very much an unresolved mystery in both physics and mathematics, but there are a few tolerated infinities, such as electrons and black holes. And there are infinite series equations which mathematicians say are defined, because they express *Convergence*.

For example, 1.999... is said to equal 2, because the value of the number converges to the number two. Convergence requires that the difference or remainder moves ever nearer toward zero. The difference between the two numbers becomes so small that some mathematicians consider it too minute to be a relevant value. Others accept the leap to a definite sum by saying the infinite series equation would equal the finite value in an infinity of time.

Examples:

The sequence: 1/1, 1/2, 1/3, 1/4 ... is converging toward 0.

The equation: 4 - 2 - 1 - 1/2 - 1/4 - 1/8 - ... is converging to 0 also.

The equation: 1/2 + 1/4 + 1/8 + 1/16 ... is converging toward a limit of one.

And the equation: 1 + 1/2 + 1/4 + 1/8 + 1/16 + ... is converging toward 2.

Converging equations are very different than 1 + 1 + 1 + ..., which has an increasing value, so there is never a completed sum. There is no convergence. In ordinary math we think of the set of positive or negative numbers as continuous and indefinite. If we add

1 + 1 + 1 + ...

…there is always a next greater number for the sum to equal and there is never a last number to the series. The value expands ever larger yet is somehow never nearer to an ultimate end to the series.

The greatest difference between symmetry math and ordinary math is that in this new system there is one ultimate value which contains all other numbers and on either side of zero other values decrease. So here in this new system, as we count into ever larger numerics, the value diminishes, decreasing toward an infinitely small value. In fact the values are converging toward two outer extreme points on this new numeric plane.

Unlike our present finite system of values which does not treat a positive or negative infinity as a number, in the true value system we plainly discover a final number to an infinite series. In symmetry math, if we add 1 + 1 + 1 + ..., there is still always a next greater number, but the value of the sum is decreasing and also converging toward a point of infinitely small value. The summation is consequently converging toward an identifiable point on the plane and thus the value becomes a definitive number. In symmetry math, there are three extreme definite values, or three ultimate numbers. There is of course zero, the sum of all numbers. But as the sum of adding positive numbers together increases, the value of the sum decreases, because the process is removing more and more value from the whole. Consequently the series 1+1+1+... converges to an infinitely small value which I will refer to as *Proto*, or positive infinity. The ultimate negative number, a point which (-1) + (-1) + (-1) + ... converges toward, I will refer to as *Eleat*.

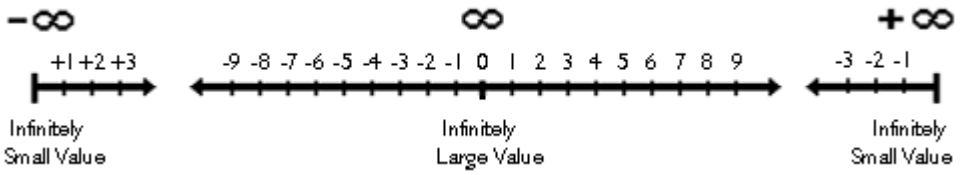
The entire spectrum in symmetry math is definitive. The three infinite extremes, Zero, Proto, and Eleat, are not processes, but rather complete and static values, noticeably identical to the state space model explained in earlier articles. So I will sometimes refer to the zero of symmetry math as omega.

In treating a positive and a negative infinity as numbers, we then can write this simple equation:

$+\infty + (-\infty) = 0$ or ∞

The symmetry math plane is infinite except bordered by positive and negative extremes which are themselves half of the totality. Similar to not being able to count through the infinite decimals between zero and one in regular math, we could not ever count the finite numbers between Proto and omega Zero, although we can count toward or away from these two ultimate numbers, away from Proto or Eleat, toward a Zero

whole. In counting from +∞ toward zero we are adding single negative values to the whole of all positive numbers, which increases our value toward zero.



In symmetry math the whole mathematical number line is a spectrum of infinities extending out from a whole infinity toward two half infinities. In the modern complex plane a nothing zero cannot relate to positive or negative infinity in the way convergence allows the extreme values of this symmetry plane to relate. In symmetry math we can say both sides of the plane are balanced around zero and not balanced around any other number.

One of the elegant features of this system is that although the two smallest numbers, Proto and Eleat, are points of infinitely small value, each number represents half of the whole. The two smallest values of symmetry math still include all of the positive or all of the negative numbers. Where the true value of one includes all numbers except (-1), the true value of Proto equals all numbers except *all the negative numbers*. In order to create Proto all the negative numbers must be made separate, just as grouping order separates or groups together all positives from all negatives. Another correlation is how flat space is a neutral balanced whole, extending infinitely in all directions, and omega Zero is infinitely large and whole. Finally in the same way that a positive or negative alpha are infinitely small points in our past, the values of Proto and Eleat are the smallest values possible in symmetry math. Each is an infinitely small point of value yet each is still half of the whole, since values here are defined not by what they are but rather by what they are not. I shall refer to the positive and negative infinities as *Polar Infinities*.

IV. Three Different Answers

If we return to the problem of three different answers to the sum of all real numbers, or integers as was described in the last page, how do we resolve that issue in symmetry math? With a final number to an infinite series, we again consider the equation:

0 + 1 + (2 + (-1)) + (3 + (-2)) + (4 + (-3)... = 1 + 1 + 1 + ...

If there is a final number to an infinite series, we can count backward from that number toward zero. Just as we add and subtract from zero, we can subtract from positive infinity, and add to negative infinity. And so we can move from the beginning to the end of the equation. In symmetry math, the equation above ends with the same displaced pattern that it began with. As we observe that ending, we discover there is a remainder of (-∞), which can be combined with the positive infinity of ones (+∞), and thus the sum returns to zero, as written:

...((+oo - 2) + (-oo + 3)) + ((+oo - 1) + (-oo + 2)) + ((+oo) + (-oo + 1)) + (-oo) = 0

Same as:

...((+1)) + ((+1)) + ((+1)) + (-oo) = 0

Or:

(+oo) + (-oo) = 0 or oo *(infinity)*

Since the formula begins with the number plane shifted, the same shift exists at the converging end of the equation producing a remainder of negative infinity to cancel the positive infinity of ones.

Note that Proto can be subtracted from (reduced) but not added to, and Eleat can be added to but not subtracted from, simply because by definition they are each the whole of positives and negatives. Also, in symmetry math the addition of Eleat and Proto is actually a true combination of both sets rather than a cancellation of positive and negative as occurs in ordinary math.

V. Conclusion

In considering the new axioms of this system, we would not expect the numbers of the symmetry plane to be derived from an elementary first thing somehow emerging from nothing or an empty set. There is no axiom of nothing in this system from which we question the existence of the rest. Zero is not a nothing but rather a whole form and not the absence of form. The parts come with the whole. And positive and negative infinity are the two fundamental numbers, the poles, from which all definite values and numbers assume form, like binary numbers that grow into virtual worlds, with form neutralizing as a whole. Without a nothing or a non-existence the values of symmetry math are assumed to exist as we would imagine possibilities to exist, permanently. In a deeper philosophical study the two poles can be related to something and nothing, the simplest of any two meanings, although the meaning of nothing is modified in this philosophy to be merely the negative of form or anti-form, which is itself form, just as anti-matter is matter.

In fact symmetry math relates far more gracefully to the physics and evolution of our space-time universe than do ordinary finite values. In the same way that Proto (alpha state) has an infinitely small value and yet has an area that includes all positive numbers, the infinitely dense point that was our 'first in time', from which the Big Bang arose, can be thought of as spatially infinite, which was indicated by recent measurements of the geometry of space-time. If the large-scale geometry of the universe is presently flat, then it has always been flat. What appears to be an infinitely small point, at the beginning of time, is actually a body that contains half of the infinite universe. This is why I call the first moment a dual singularity. Relative to Proto, or the alpha of the big bang, there is a negative singularity within the primordial particle, with each birthing a direction of time.

When we imagine the Proto number contains all positive numbers, it seems like we should be able to count them. It is possible to count finite numbers without negative numbers, but in symmetry math, without using the negative half to combine with the positive, there is only one fused number; Proto. Without the negative half, Proto is simple and not further defined than itself, much like the word something. So although Proto is an infinity of numbers, and alpha is an infinity of space, we from our intermediary *more than* position can relate to them physically only as singularities.

We can further apply symmetry values to ordinary physics. Again the switch to values is uncomfortable at first, but seeing the world from this perspective, objective things are not more than nothing or empty space, rather they are less than space. Mass and density seems convincingly to be a value that is *more than* the transparent space that surrounds us, when in fact objects cannot exist unless their opposite is removed from that seeming emptiness. As David Bohm suggested, space is an implicate order. The infinite surrounds us disguised as the world we confront everyday.

Again, it is all or nothing. And although form is certainly a reality, the nothing perspective has to be acknowledged as secondary to the primary perspective of the All. Because we presently only see the individual things around us as separate and finite, we see the universe from the nothing perspective of finite math and of grouping order, and the infinite has never been treated as real or fully defined. We have yet to fully make the leap out of our position in time to consider that the ultimate universe may not change in time in the way we observe space-time to change. We have also not yet integrated a somewhat inevitable principle into science, that ultimately there is but one universe of existence. As we continue to study this system, symmetry math becomes ever more related to physics and cosmology, and our fragment of the whole becomes increasingly more meaningful.