



# The Concept of Ein Sof Understood via Cantor's Set Theory

Daniel Shorkend

Reichman University, Israel.

## Abstract

*A brief essay on how Cantor's set theory of infinities can enhance and motivate a sense of the infinite or Ein Sof. I analyze how this may be so and argue for a mode of living congruent with the Ein Sof, should one accept certain axioms just as in mathematical language.*

**Keywords:** Cantor's Set Theory; Axioms; Ein Sof; Infinity, Kabbalah.

## INTRODUCTION

In Kabbalah, the concept of Ein Sof is a description of God as being infinite, that is, without form, corporeality or limitation. Such a God is eternal, having neither beginning nor end in time as well as not bound spatially. It is all-encompassing and eternal. However, while it may appear true to define God as such, the fact is, the human mind cannot actually grasp such a concept. That which has no limit cannot be apprehended; that which has no form cannot be perceived and that which is eternal is beyond understanding or comparison. Thus, Ein Sof would appear to lose its descriptive meaning and leave the seeker as confused as to any understanding or conceptualization of God.

In order to address this difficulty, I would like to suggest that even a rudimentary understanding of Cantor's work on Infinity, curiously denoted mathematically by the Hebrew letter Alef, might help in grasping some sense of the Ein Sof. I will explore basic themes in his set theory – a mathematics not initially well received but now part of the tradition and discipline of mathematics – and suggest a correlation with kabbalistic notions. It is interesting that Cantor himself maintained that God is the absolute infinite, his pioneering theory is a bridge to mystical concepts and understanding the perennial elusiveness of the concept of the Ein Sof.

## INFINITE SETS

A set is a collection of elements that share the same property or properties. Numbers can form many different kinds of sets. Cantor wondered whether there were infinite sets of numbers in the same way as one has finite sets. Natural numbers constitute one kind of infinite sets do rational numbers and real numbers. He was able to prove that the cardinality, the size of these sets differs. This might sound

counter intuitive. How can one infinity be bigger than another – surely infinity is infinity, and one cannot speak of limitations and differences in such sets?

Cantor showed that the natural numbers and rational numbers for instance are of the same size through a simple one-to-one correspondence between each element in their respective sets. However, irrational numbers are a larger set and in his “diagonalization argument” he showed that this is the case. The former came to be known as countable infinities symbolized by alef null and the latter, uncountable infinity, denoted as alef one.

Now, if one takes the power set of a particular infinite set, then one gets higher and higher cardinalities – measures of infinity. Yet still this appears odd – surely once infinity is “reached” there can be nothing beyond –perhaps this points to the impossibility that the human mind can really understand infinity and by definition limits its object whether physical or mental.

## BETWEEN COUNTABLE AND UNCOUNTABLE INFINITY

An unsolved problem in mathematics is the question as to whether there exists an infinite set between alef null and alef one. This is the Continuum Hypothesis. Standard math (ZFC) cannot settle it — it's undecidable there. One must choose extra axioms if one wants an answer. Now, the problem of axioms means that the foundation itself is an assumption from which all follows. This is akin to Torah where a set of axioms persist – Rambam's 13 principles of faith for example – from which a certain view of the cosmos follows, but of course axioms cannot be proven. Yet they appear self-evident.

This is a useful concept, since the belief in God or the disbelief in God as a self-evident truth will influence how

**Citation:** Daniel Shorkend, “The Concept of Ein Sof Understood via Cantor's Set Theory”, Universal Library of Multidisciplinary, 2025; 2(1): 17-19. DOI: <https://doi.org/10.70315/uloap.ulmdi.2025.0201003>.

one sees the universe and self – everything follows from the axioms – and the solvability or solution will depend on one's starting point or reference point, yet the axiom itself cannot be proven! Thus, mathematics both includes faith – accepting the first principles – and knowledge – the building of the whole corpus of mathematics and its applications once such first principles are in place. Hence, assuming Ein Sof to be the guiding “hand” in all things, a basic tenant of Judaism, so it follows that providence pervades all of existence and even every detail of one's own personal life. On the contrary, rejecting such a claim, means explanation is ceded to “blind nature”, “fluke”, “mechanical clockwork with no telos”, “meaninglessness”, “brute, coarse nature with no sense of purpose”. Hence, a person has to at least be conscious of the axioms he begins with, else he is blind to the very mechanism of his own narrative. A person could also change “belief-structure” or “experiment” – in any event one cannot solve the conundrum in itself – first one embraces the system and then answers follow.

### THE LOGIC OF INFINITY AS EIN SOF

Now with infinity things seem to be rather weird. Alef null plus alef null is still alef null, unlike addition with finite numbers. Such logic recurs arithmetically with infinite sets. In the Sefer Tanya and other books, God or the Ein Sof is explained by saying that whether the number is 1 or 1 billion, in relation to infinity 1 and 1 billion are equal! Thus, all of creation is as naught compared to the Creator, no matter its dimensions or intelligence. Ein Sof is also explained by saying that a part of it, like light condensed into courser and courser levels of reality and materiality, still carries the same properties as the luminary, meaning that the Ein Sof is everywhere equally, however small the bits, however large the expanse.

It gets more curious. Alef null plus alef one equals alef one which is like saying 2 plus 1 equal 2! The larger one always predominates but does not create anything new. This is like saying that in God or the Ein Sof everything is subsumed within it, like a black hole nothing can escape its grasp even if nothing can grasp it! It also means all physical creation is finite in relation to Ein Sof even though at the same time its very essence is infinite, because there can be no finite without the infinite. That is, if the finite must have an end or death, it would appear that is all there is. However, since Ein Sof by definition includes all, then the spark of the Alef includes all of finite creation. And infinity by definition goes on forever just as the infinite sets do even as it approaches alef to the alef. Therefore, this world is an illusion. Or rather, its finite dimensions are an illusion. Unless the axiom is that infinity simply does not exist. Cantor paved the way for thinking that this may not be so.

### ALEF TO THE ALEF – TRANSCENDENCE AND THE ULTIMATE

Infinite sets suggests that even a child's sense that numbers go on indefinitely, like the game “infinity plus one” bested

by “infinity plus infinity” and so on, that humans have an innate intuition though contrary to experience, that there is a concept at the very least, of forever, of never ending and immortality. Now, we do not actually experience this. As we grow older, the realities of physical matter, of death, of limitation becomes ever more evident. However, a spiritual path assists humans in reclaiming this childhood wonder and cultivating belief in there been more to life, even a sense of the persistence of life in an after-life assisted by the notion that there is a soul that pervades physical bodies.

If the axiom of the soul is accepted, then all else follows: humans persist even after death in some form; we can get glimpses of infinity or connection to the source, the Ein Sof, in this life through the mind and heart and body which contains sparks and properties of infinity, and one can improve the limited world and thought-systems through ideas and actions aligned to the Ein Sof (via adherence to His mitzvot, which is the method by which to make infinity or the Ein Sof manifest in this world {again an axiom that Torah and Mitzvot is the direct communication of Ein Sof}). By doing so one is said to elevate the self and “fix” the world.

To achieve this one should access the latent transcendence through imagining in one's mind the ongoing expanse of the universe both within a small speck of space and time and in larger and larger imaginings. One should do the mitzvot with kavanah (or intention), realizing that these actions connect to the highest will, and that they are ropes connecting above, heavenward as it were. Onemight even think of set theory and how numbers go on endlessly or as applied to say physics, chemistry and biology are the patterns that allow life to be in all its multifarious variation and abundance.

### CONCLUSION

In this brief essay I have argued that Cantor's mathematics of infinity allows one to speak of the Ein Sof with some measure of understanding, at least intuitively. The fact that the symbol chosen to denote such sets is the Alef is an uncanny invocation of the connection between kabbalah and mathematics and the bridge between human limitations and yet sparks of transcendence and overcoming material limitations. I argued that depending on one's axioms – akin to the Continuum hypothesis - so one will either be able to forge a connection with the Ein Sof or not. Accenting to notions of infinity, the soul, the Torah and Mitzvot so one has a means to accessing a transcendent wisdom and experience. Cantor's innovative set theory of infinities is at least a catalyst in that direction.

### REFERENCES

1. Cantor, Georg. *Contributions to the Founding of the Theory of Transfinite Numbers*. Translated and with introduction by Philip E. B. Jourdain. New York: Dover Publications, 1955. (Originally published in German as *Beiträge zur Begründung der transfiniten Mengenlehre*, 1895–1897.

2. Shneur Zalman of Liadi. *Tanya: Likutei Amarim*. Edited with commentary by Nissan Mindel. Brooklyn, NY: Kehot Publication Society, 1974. (First published in Slavita, 1797.)
3. Scholem, Gershom. *Major Trends in Jewish Mysticism*. 3rd ed. New York: Schocken Books, 1954.