

Does Infinity Exist?

Daniel Shorkend

Shaanan College, Israel

Abstract: *In this essay, I endeavor to answer the question – does Infinity exist? I do so through an analysis of the term as it applies to mathematics and science; to philosophy, art; religion and psychology. My methods are general, brief and focuses on how the term may apply to these disciplines. It was found that the Infinite manifests in all such disciplines. I conclude that since such forms of knowledge are necessarily limited, all that can be known is the finite and yet it is the Infinite as it manifests as the finite, whether as a thing or simply as an item of knowledge that renders it both knowable and existing. I then extend this point to say that the Infinite cancels the finite, so that there is in fact only Infinity, though one cannot perceive (know) it as such. I add ChatGPT response to this question as an experimental part of this essay. The result suggests the necessity for human generated writing, but that is the subject for another essay.*

Keywords: Infinity (“Infinity”), Knowledge, Mathematics, Science, Philosophy, Art, Religion, Psychology, ChatGPT.

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INTRODUCTION

Finite = Perceptible (Physically or Mentally)

The question: does infinity exist? can only be rendered answerable if one defines the terms “infinity” and “exist” where “does” and the “question mark” present no obvious problem. By “infinity” is meant that it has no beginning nor end (or a beginning and no end), nor yet form and finitude of any kind. “Exist” or existence implies that which is real, that is, in reality, reality being defined as what is perceptible either in the empirical world or as ideas of the mind and feelings of the heart.

Thus can “infinity” be detected by the senses or known in the inner life? The methods for answering this question often splinter into different disciplines. Here are a few in which notions of infinity emerge and perhaps we can deduct from these examples an answer to the question – does infinity actually exist?

THE DISCIPLINES

Mathematics and Science: Taming Infinity; Cantor

Mathematics is precisely the taming of the infinite. It is to look upon reality and divide it up into discrete units. In this way things become countable and, in that sense, precisely finite. Numbers allow for measurement, ratios, sizes, and the arithmetic function of deducing new outcomes when such numbers are added, subtracted, multiplied, and divided. Algebra built on this and gave expression to finding quantities of unknown variables or simply writing notation for a certain function or set of relationships as an abstract equation that describes such a function.

Calculus changed the idea that mathematics only deals with the finite. By describing infinitesimals and defining any point on a function as tending to infinity, the rate of change at that instant can be determined with a neat transformation in algebra given by the derivative. Integration is another such example where the accumulated area under the graph function between any two points determined by a conceptually infinite iteration under the graph to fill precisely or thereabout that area and achieved again by a neat algebraic rule.

Then with set theory, one of the foundations of mathematics, Cantor introduced infinite sets and in fact different sizes of infinity. This sounded counter-intuitive, but in fact was eventually accepted. The symbol for infinity in this context is not the horizontal eight but the Hebrew letter Alef in the language of scripture, which now forms the basis for the Hebrew language currently.

Science employs mathematics to solve actual problems that are tested experimentally to understand nature more deeply and develop tools and technology both for the probing of nature and also to control it better in order to make human life easier or, so sciences narrative has us believe. In any event, one cannot minimize the progress of physics, chemistry, biology, medicine, engineering, astronomy and so and so forth in the grasping of reality or at least phenomenal reality – that which can be empirically verified and measured - and it with dint of logic, imagination, mathematics, and sound experiments and the accumulated knowledge in the last four hundred years has been unprecedented.

Yet with each increment of knowledge things are known and therefore finite. Yet we also find tremendous ingenuity in the processes of nature and in manipulating nature which has led to greater power and use of resources as well as spawned modern culture. However, there are also ethical considerations and science and mathematics are more often simply used for its military prowess and thus the rule of government, politics, and other institutions of power. Nevertheless, as opposed to past ages, literacy, education, electricity, housing, medical care, water, food and so on are available to a huge percentage of the human race.

Science and mathematics are the engine of modern civilization beginning with the Ancient Greeks but only really gaining momentum with the Enlightenment and the age of reason and in concord with liberalism, democracy, and capitalism (having gained a victory over communism). In any event, mathematics and science enable the raw materials of nature to be understood and manipulated and in that sense the infinite unknown which our descendants

greatly feared becomes known, finite.

Philosophy: Concept of God – Arguments for and Against

Philosophy has grappled with the question of infinity, by which is meant the idea of God, with arguments both in favor of the existence of God and its contrary. The arguments that have stood the test of time are the cosmological argument, the ontological argument, and the argument from design and possibly the moral argument.

The first argues that cause implies an infinity regress of chain like systems and thus a non-starter. It is thus postulated that there exists an Uncaused Cause, that which is self-sufficient as a first cause, and this is what is meant by God. The second argument states that since God is defined as perfect and without lack, such a God cannot have the deficiency of not existing or not being finite in addition to the qualities of infinity and non-presence (existence). Thus, God exists. The third argument, the argument from Design is the simple argument that just as one would deduce from say finding a watch on another planet the existence of intelligent life as this watch could only have been in existence as such had there been some designer at some point as it could not have simply evolved and miraculously come to be, so the existence of nature and the intricate and precise design of nature, implies that there is a grand designer as it were and this is what is meant by God. Many have also argued in another way and point to the inner life of man and that the consciousness of moral rightness and wrongness is also a proof of God's existence as such a being with a moral compass has a soul and a soul is a Godly spark and is thus infinite as is the luminary – to use metaphors and anthropomorphisms.

Nevertheless, as is the task of the critical thinking that philosophy affords, there are several counter arguments to each. I will briefly highlight one direction these counter arguments may take in each case:

- The Cosmological argument fails if the universe is simply eternally existing and an appeal to the big bang and a beginning won't work if we factor in the multi verse and the big crunch, so that there are infinite universes or even a finite pattern of possibilities, but with constant creation and destruction and rebirth, so that there is no point and instant of a beginning nor end. In this sense there is no first cause.
- The Ontological argument fails if we consider that existence is not a property of things, but rather its totality expressed through a form, and to say that God has to also express as such if it is truly infinite, is to miss the point that the finite is infinity with a lack and that is precisely what the infinite is not, unless one concedes that God is also imperfect. This is a contradiction.

- The design argument fails with the multiverse problem and evolution. In the former case, this is only one of a vast (possibly infinite) number of universes and simply then the one that happened to spawn life as opposed to the extremely large number that did not produce life or massive number (or possibly infinite) alternative universes with other kinds of life. However, at this point there is no way of verifying such a theory. In the latter case, evolution not by design but by adaptation, survival of the fittest and the transmission of favorable traits over millions and millions of years has generated life as we know it, not an instantaneous creation or an intelligent process of design.
- The moral argument needs no sophistication but a cursory glance at history or simply the daily news would prove quite quickly and convincingly that mankind is not a moral creature.

Psychology: The Unconscious

Psychology is a quasi-scientific discipline that seeks mental health through an understanding of the mind that encompasses the conscious mind and the unconscious realm. Various techniques are used to elicit in the patient a certain level of awareness so as to deal with his/her problem through the mediation of the therapist. Aside from the practical value of psychology, its theoretical substrate is vast, spanning the psychology of particular individuals to that of social groups or systems and even theorizing the very nature of human experience. When psychology enters “abnormal psychology”, then psychiatry, neurology, cognitive sciences, and other alternative treatments may come to the fore.

This is a discipline that, like mathematics, tames the infinite, though not so much in numerical terms, but in terms of patterns of behavior, possible illness, and diagnosis and then treatment and hence psychology is part of medicine. Psychological states and treatment cannot be reduced to physics, chemistry, and biology, but includes nurture – the environment. Even taking the two together - nature and nurture – the individual's coping and thriving is not guaranteed.

At the very least, however, psychology allows the potential infinity of causes to be simplified through a process of psychotherapy so that the patient might self-realize and find a way beyond his/her problems. The process renders things more manageable. By postulating the unconscious realm as much greater than the conscious, cognitive functions, it meant that knowing oneself includes more than simply the executive functions and that will, memory, feeling, sensory stimuli, creativity and physical well-being are in fact foundational and contribute to the individual's health.

Defining an individual, categorizing an

individual, however is to miss the point. How ever useful that may be for diagnosis and treatment (and perhaps even that template is becoming antiquated in this field), there is an ineffable quality to being human and it is this that defies such categorization and rather ascends to notions of the infinite. Here, perhaps one might find the curious expression in man called the religious impulse.

Religion: God-Human Communication

Religion is precisely facing the concept of the Infinite and seeking connection with that as some kind of Being or beings and in the process explaining the phenomenal world and man's experience therein in terms of such a force or forces. Around the single idea, religious rituals, institutions, traditions, and symbols as well as a myriad of beliefs, behaviors and the like are a consequence, probably beyond all else defining human history, vast spans of time, in terms of the religious powers and beliefs and perhaps (and it is only perhaps) it is only in the modern era, that science and the separation of religion and state has basically occurred, although not entirely.

The main religions: Christianity, Islam, Hinduism, and Buddhism and also Judaism for its influence and continued survival though not through number, all base their beliefs on the idea that God communicated to a select few (in the case of Judaism it is the only time we find the historical claim of mass revelation or national revelation). At any rate, the idea then is that infinity and finite overlapped and that there is a continuous narrative with the infinite Being or beings.

One might argue that Communism was also fueled by a religious impulse even though it held religion in disdain. Capitalism renders the product and profit as a god. Consumer society sells little packets of energy in which Infinity is priced – one buys experiences, things, status. Religious institutions coerce people to kill in the name of their god and have throughout history caused divides between one another. However, one might also argue that the Communist ideal was grand, that Capitalism brings out the best in man and secures happiness and productivity, that consumer society has made almost everything available and accessible to so many, and that religion sets moral boundaries and secures a just society.

Yet religion transcends this world. It says that man has a soul, that there is an after-life; that God will be more revealed, that justice shall be meted out; that goodness, light and peace win and that even suffering will end. On the other hand, unlike science, there is no proof for its assertions; history tells a terrible story of murder, theft, and violence at the hands of religious systems of control where society is under the surveillance of a certain paradigm and the basic ills in society are better remedied through modern methods

and civilization than through mythologies or judgmental institutions of control.

It may well be that prophets existed in which case it appears that there is a link between the finite and infinite. One may be skeptical and consider such experiences the result of insanity of some kind – delusion and trickery. Yet even post modernity, religious beliefs abound, and it seems still carry much influence. However, the transmission of such knowledge is through tradition, faith, and belief, rather than the cogito: I think, therefore I am, for religion tells a man what to think and therefore robs him of free will. On the other hand, a purely secular life and a belief system in which nothing is Infinite, sacred and without measure, may lead to a sterile, purposeless life, in which there is no value, beauty and justice and one's own beliefs are governed by an education of the sort, an upbringing with such beliefs and social environment that confirms as such, in which case the apparent freedom or free-will of the secular domain, may be but an illusion. In either case, Infinity itself is nowhere apprehended.

Visual arts: Visions of infinity

The modern concept of art and that of the artist is only a few hundred years old. Before that what we call art was amalgamated with the religion of the day – in the West Christianity and in the East, Buddhism and Hinduism in the main and a plethora of smaller splinters and of course the tribal-religious art of Africa and South America. In that sense, such art was about confronting the Infinite and giving it a form, whether it is that of a painting, sculpture, architectural structure or the design of a flag, a weapon, an interior...

With the Renaissance and the subsequent secularization of art and the contemporary global arts, the religious strain is no longer dominant. Art is a separate discipline with its own rationality and is largely a commercial and cultural enterprise. Artists still try to say something, perhaps even convey a spiritual message, though that is rare, but the artwork is a product and the artist a sales commodity, though not of the magnitude and popularity as say a Hollywood star or a sports hero or a pop singer.

Nevertheless, the basic power of art is still magical. It gives a visual correlate of a narrative, and an idea and feeling in ways that deeply affect the viewer, for the visual structure is a powerful receptive tool, more so than the auditory and words perhaps, thus it too tames the infinite, the great myriad of inputs and signals and reformulates that through a medium some kind of image that forecloses on the Infinite and allows symbolic processing and a tangibility to the otherwise invisible realms or Being.

The problem with this pagan view is that the Infinite assumes form which according to some faiths is idolatry. No single form holds all the power and thus

should not be worshiped or deified. On the other hand, it may be the very nature of man to seek understanding through form, which even if not worshipped, still gives him the requisite comfort and satisfaction. And so, one returns to psychology, to the unconscious, to the state of fondling an object or self as a baby, to the religious impulse, to the will for enlightenment, to the will for pleasure and avoidance of pain – and art is often the escape to find these things. On a brute level, it is simply entertainment and yet on higher levels, it is a magical act of creation and communion with higher concepts, even that of the Infinite. Too often though contemporary art is about social structures, gender issues, national and global politics, pop art, or simply concerned with sales, reputation, investment, fame, and money.

Art is often the vision to see what others do not. To see beyond. In this case traditional fine arts with the contemporary additions of photography, new media, performance, conceptual and installation art, are simply arbitrary things we define as art and rather a mindset of art may include everyday living or other kind of expressions in alignment with notions of everyday aesthetics that is continuous with the narrative and evolving definition of art itself.

CONCLUSION

Finite and Infinite = Infinite

The aforementioned disciplines – some of the branches of human knowledge – are ways in which infinity is dealt with and yet are only the tip of the iceberg as time unfolds and the universe is said to expand. But the infinite cannot be known; to be known is to be rendered finite. That is to say, to exist. So, the infinite does not exist and cannot be known which is not to say it does not exist and be known. Indeed, it does as the finite and knowable! In this essay, I have described some ways in which the Infinite can be known and said to exist, yet in all instances it is finite if it is to be knowable, yet to know a ray of light is still to know of the luminary. Of course, this is but a simple metaphor, yet it may direct us to the following assertion: Infinity exists but can only be known in finite terms. Nevertheless, the existence of the infinite cancels the finite, so that everything is in fact infinite, albeit one is in a world of things, of limited abilities and understanding and knowledge.

The Challenger: Chat GPT

As an experiment, I asked ChatGPT the question I posed for myself, and this is what it came up with:

Does Infinity exist?

ChatGPT

Infinity is a concept in mathematics and philosophy that represents an idea of limitless or unboundedness. It doesn't have a physical presence in

the same way that tangible objects do. Instead, it's a theoretical concept used to describe a quantity or value that is greater than any finite value.

In mathematics, infinity is often used in various contexts:

- **Infinity in Calculus:** Calculus, a branch of mathematics dealing with change and motion, uses the concept of infinity when dealing with limits, derivatives, and integrals. For example, the limit of a function as it approaches a certain value can involve infinity.
- **Infinity in Set Theory:** In set theory, a branch of mathematical logic, infinity is used to describe the size of infinite sets, such as the set of all natural numbers or the set of all real numbers. There are different sizes or "levels" of infinity, as shown by Georg Cantor's work on cardinality.
- **Infinity in Geometry:** In geometry, points, lines, and planes can be considered infinitely extendable. For instance, a line can be extended indefinitely in both directions.
- **Infinity in Number Systems:** In some number systems, like the real numbers, there are values that can be approached infinitely closely but never exactly reached, such as the infinite number of decimals between 0 and 1.
- **Infinity in Physics:** Infinity can appear in theoretical physics when dealing with concepts like infinite energy densities in black holes or the theoretical idea of the Big Bang singularity.

However, while infinity is a useful and well-defined concept in mathematics, it's also a concept that can lead to paradoxes and challenges in reasoning. Philosophically, the nature of infinity has been debated for centuries, and different schools of thought have varying opinions on its existence as a real concept or just a mathematical tool.

In summary, infinity exists as a mathematical concept and is used in various fields to describe limitless or unbounded ideas. Whether it exists as a concrete reality beyond mathematical abstraction is a matter of philosophical debate.

Which response is better?

Note I asked ChatGPT after I went through the process of writing this essay. My view is that my analysis reaches deeper and is more creative, though ChatGPT is to the point and is an encouraging beginning for answering such a question and shares some ideas I have dealt with in this essay.

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