Commentary

Embracing Infinity

Jeffrey Collins*

Department of Digital Health, Med Star Institute for Innovation, Washington, USA

DESCRIPTION

In the Stanza signatura in the Vatican, Raphael painted a vision of what humans do best when debating the mysteries of science and spirit. What is often not noticed in determining who is who in this cerebral celebration of ideas is the paradoxical architecture itself. Raphael borrows Bramante's coffered vaults, reworks them, extends them, and reticulates their form, back, and further back, and further still, until you see only cloudscapes.

How should we think of infinity? How could we think of it at all, with finite minds, minds evolved through millions of years of reptilian urges and emerging only recently with a perplexed neocortex? Nothing in evolution dictates we should ever come to contemplate an abstraction so profound as infinity.

Children are sometimes teased by elementary teachers to think of any number and then add one more, then go one more: infinity. No end to anything and it certainly mystifies, and later, at least for pascal, in reference to eternal silence in infinite space, it terrifies.

Democritus of Abdera and Epicurus both argued for an infinite universe without boundary, edge, or border. Zeno and Eudoxus wrote of the paradoxes of infinity and infinite sets; ancient hindu yogins and Indian astronomical texts declared the universe infinite and always so.

But some philosophers and the catholic church did not handle infinity well. A Bishop Barnes, a mathematician as well, in the 1930s, declared that the notion of infinity was a scandal! I guess he could not figure where to place god.

At present, we simply do not know whether the universe is finite or infinite. Finite, the universe in 2D geometry is, as Joseph Silk describes it, a torus, and light can travel different paths to arrive at the same point. However, the WMAP satellite measuring the cosmic microwave background has not provided any evidence that the universe is shaped like a torus at all.

So, for now, it's the Big Bang (a fun misnomer) with space expanding in an inflationary conflagration one trillionth of a second after, matter collides and fights with antimatter, with 1 billionth of 1% of more matter winning the battle. Subatomic particles form leptons, quarks, bosons and just three minutes later, lithium, hydrogen, and helium arises.

The universe cools 300,000 years later, and now the nuclei pull electrons into orbits. A million years later, gravity as matter gets larger, attracts, and dark energy repels.

Supernovas then spread the corpse-atoms of stars across the cosmos, where they accumulated in gas fields, and the whole, apparently infinite, process begins again-the ultimate recycling of all things.

Such is our creation story, a cosmic narrative almost unimaginable. But we have measured the background radiation, we have made our hyper-extended hypotheses. There is no definitive proof for cosmic inflation yet. Still, most scientists argue for an infinite universe.

The universe is 93 billion light years in diameter, but in saying that we give it measure, we give it a kind of circular form. We know too that the universe is both expanding and accelerating. But it was Planck who stated that "science cannot solve the ultimate mystery of nature because we ourselves are part of nature, and therefore part of the mystery we are trying to solve."

Mirror into mirror, reflections reflecting reflections. In an infinite universe, spread out as it is, and expanding, we cannot hope to discover our true origins or understand our place in a placeless universe until we acknowledge, and embrace, the Apeiron. Upon my back, once, on Apeiron beach, face-up to a star, I was taken by waves slowly outward toward nowhere, losing sight of the shoals. Suddenly, I felt there was no skin-line between my cells and the ocean, that the water was me, and I the water, and that we went on and outward forever.

Einstein believed the imagination far more important that the intellect, and to not have this kind of experience, even once in a lifetime, makes for a shallow existence. Science can demonstrate that all material objects are infinite the further down you go into the molecular architecture, past the electrons, finding in our excited probes infinite space, the invisible nothingness some philosophers fear. We are comfortable with fences, lines, geometry that makes sense. We need, we think, clear boundaries. No lines in space, no up or down, no left or right, extending in all directions (there are no directions), without endings.

Raphael suggests the mind through its endless equations and philosophies, discovers again and again the Mystery. All of our instruments we will use and carry with us going into the infinite will only reveal to us that we too are infinite, the very mystery we are trying to solve, the infinite looking at the infinite.

Correspondence to: Jeffrey Collins, Department of Digital Health, Med Star Institute for Innovation, Washington, USA, E-mail: collinsjef@yahoo.com Received: February 02, 2021, Accepted: February 17, 2021, Published: February 24, 2021

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