The Man Who Saw Divinity Everywhere

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Where do great ideas in art, music, architecture or science come from? It is said that at the age of 10, Albert Einstein used to wonder what the world would look like if he was riding a beam of light.

Fifteen years later, in 1905, he was to formulate the Special Theory of Relativity.

Isaac Newton may have received an inspiration about the Theory of Gravitation by watching an apple fall on the ground.

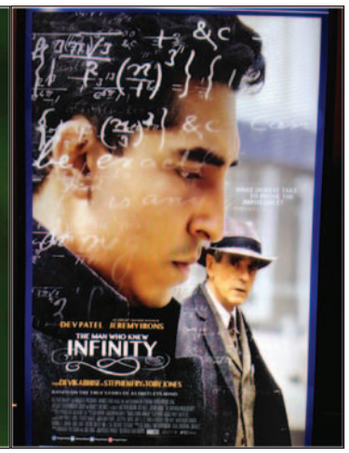
After the initial flash of inspiration, however, there was arduous struggle both by Newton and Einstein to arrive at the equations that have now become the most revolutionary and visionary mathematical formulations expressing the laws of nature.

A recent film by British film director, Mathew Brown,The Man Who Knew Infinity, about the great mathematical genius Srinivasa Ramanujan, explores a certain clash of civilizations about the origin of the extraordinary creative spark in science, in mathematics specifically

A hundred years ago, during the British Raj, a young untutored Brahmin boy working as a clerk in the Accounts Department of the Port Trust of Madras formulated several mathematical equations, not through reasoned mathematical proofs, but as a 'revelation': they 'came to me', he insisted.

Ramanujan saw patterns in everything: geometrical, harmonious, intricate, inter-connected, ever-flowing, streaming through. And he had mathematical equations to express them. But he had no proof how he got the equations. It is as though Einstein was to insist on presenting his equation: E = mc2about the equivalence of mass and energy, but without any of the necessary steps about how he arrived at it.

For Ramanujan it was all a 'revelation'; it came from the 'devi'; it needed no proof. For others it was a shocking affront to reason and mathematical logic.



Such revelations are acceptable in music, in art, in dance and in architecture, but in science they seem to defy all logic.

A taxi with license plate number of 1729 could not possibly be anything special, Hardy is said to have remarked once casually. Ramanujan replied that quite to the contrary it was the smallest number expressible as a sum of two cubes in two distinct ways:

$1,729 = 12^3 + 1^3 = 10^3 + 9^3$

This is known as Ramanujan's taxi-cab number.

It is one of the most remarkable coincidences in the history of science, and in the encounter of civilizations, that this untutored Brahmin 'clerk' in the British colony in 1913, at the age of 26, was invited to Trinity College at Cambridge University by one of the great English mathematicians of the 20th century, G.H. Hardy, to reveal his genius to the high and the mighty in the world of science.

Though separated by impenetrable walls of class and colour, Ramanujan was not a pupil but a collaborator of Hardy, though their collaboration was often fraught with frustration and incomprehension. Ramanujan received 'revelations'. Hardy wanted 'proofs'. Ramanujan heard God speaking to him at every step; Hardy was through and through an atheist. Both, however, were engaged in the pursuit of the abstract, pure mathematics, with no relevance to anything practical.

All this at a time when the First World War had just broken out, and many scientists were engaged in contributing to the war effort. For many English men, as they were dying by the thousands every week fighting the Germans, to see a young Indian, on scholarship, doing 'useless' research, and receiving revelations from some weird Hindu goddess, all at their expense, was an excruciating insult.

Besides, Hardy was a pacifist, vehemently anti-war, as was his colleague Bertrand Russell, later to emerge as one of the most prominent philosophers of the 20th century.

Perhaps not coincidentally, similar sentiments were being expressed about Albert Einstein in 1916 in Germany during the war as he was engaged in his General Theory of Relativity at a time when thousands of Germans were dying of hunger and many more were dying in the war.

In the midst of racial slurs and physical assaults, overwhelmed by his genius but confronted by his obduracy, Ramanujan fell victim to tuberculosis and was driven to attempts at suicide in England. Yet for all this, Ramanujan was the first Indian to be elected the Fellow of Royal Society. A year after he returned triumphant to India, he died at the age of 32 in 1920.

Many years later, Hardy - a life-long bachelor - reflected on his collaboration with Ramanujan. When asked what his greatest contribution to mathematics was, he responded unhesitantly that it was the discovery of Ramanujan, and their collaboration together as "the one romantic incident of my life."

"A mathematician, like a painter or a poet," Hardy wrote, "is a maker of patterns. If his patterns are more permanent than theirs, it is because they are made with ideas."

Surely Hardy had Ramanujan in his mind.

Over the last one hundred years, through two world wars, explosion of atom bombs, end of colonialism in India and in other places, and through a million other tumultuous changes in our world, the 'revelations' of Ramanujan have continued to command more and fascination.

Among his other achievements, Ramanujan identified several efficient and rapidly converging infinite series for the calculation of the value of ?, some of which could compute 8 additional decimal places of ? with each term in the series. These series (and variations on them) have become the basis for the fastest algorithms used by modern computers to compute ? to ever increasing levels of accuracy (currently to about 5 trillion decimal places).

When one can see such grandeur in the universe, and in every grain of sand, and in every petal of a flower, one can only hear the words of Albert Einstein:

"Try and penetrate with our limited means the secrets of nature and you will find that, behind all the discernible concatenations, there remains something subtle, intangible and inexplicable. Veneration for this force beyond anything that we can comprehend is my religion. To that extent I am, in point of fact, religious."