The Legacy of Srinivasa Ramanujan

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Srinivasa Ramanujan was an Indian mathematical genius born exactly 125 years ago on 22nd of December in 1887 in a little known place in India named Erode. The story of Ramanujan is well known to every student of mathematics in particular and science in general. He is India's greatest mathematical talent and will continue to be a domineering personality in the fields that he worked on for time immemorial. A lot has been said about Ramanujan in many places since this website started, like here, here and here to name a few so we won't be dealing much with respect to his life. A aspect of Ramanujan's work that is often not known is the legacy that has remained both in India and abroad. Ramanujan belonged to a class of mathematicians that have no parallel in recorded history, be it his eccentricity, his genius or his flair at calculations. People like Gauss, Euler, Jacobi, Galois, etc belonged to this class of higher individuals.

Ramanujan began his mathematical flights much early, when he was a school student and continued his unflinching passion for mathematics till his last breath. The amount of mathematics that he did is evident from the fact that the 'Lost Notebook' of Ramanujan containing some of his works in the last year of his life is now being published by Prof. George Andrews and Prof. Bruce C. Berndt in a series of five volums (tentative) of which three volumes have already been published, the latest being published just this year. It would be worthwhile to mention here that it has been largely due to efforts of mathematicians like Prof. Andrews, Prof. Berndt, Prof. Richard Askey and Prof. Robert Rankin that the world today acknowledges the impact of Ramanujan's works and has placed him at the same highest standards as other great men of science. Infact a few years back, Cambridge University brought out an advertisement for its graduate program with the pictures of its alumni, and Ramanujan was placed along with Sir Issac Newton and Alan M. Turing, two of Britain's most brilliant minds. Interestingly we are also celebrating Turing's birth centenary this year.

Some aspects of his life are still unknown to us, like that he had a very cold farewell when he left for his heavenly abode in 1920. No Hindu priest was willing to do the last rites for his passage into the other world, because he having travelled via the seas to Cambridge had broken the norm of his caste. Such was the mindset of the people, that it brings tears to not only my eyes but probably to every Indian who has ever heard his poignant story. What Ramanujan did was nothing short of magic. A look at his works would instill in one a sense of respect for the man even though one may not understand even a single strand of his work. It has not been apparent even to this day how most of his work fits into the modern mathematical structure, but nonetheless probably in the next 100 years we may have a better view of his mathematics. Infact only recently has his theory of mock theta functions becoming better understood by the works of people like Sander Zwegers, Ken Ono, Amanda Folsom and Rob Rhoades. It appears as though Ramanujan knew beforehand the importance of these functions, which may even be applied now to study things such as black holes and fractal geometry, subjects which no one knew existed in Ramanujan's time.

Such is his stature in the scientific world that the mathematics he did in his last year was enough to grant

him immortality. A mere problem stated in his notebooks can become the course of a long research and may lead to surprising results, not anticipated in any time. Ramanujan is perhaps the only person who has received a degree from the prestigious Cambridge University without having had a formal education or training. He failed his FA exams in Madras but got a BA degree by research from Cambridge. His depth and breadth of mathematical results can be understood when one considers the fact that two very prominent research journals are devoted to the type of work that is inspired by Ramanujan. This is in no terms a small feat!

The most important legacy that Ramanujan has left behind for us is the ability to believe in yourself and to follow one's own passion to the end with a single hearted focus and dedication. Ramanujan is by far the greatest Indian intellectual ever born. It may still take a lot of time to understand his mathematics in its entirety, but the time is ripe to put into perspective this great son of India and give him all the respect and accolades that he deserves. It would be appropriate to mention our heartfelt thanks to certain individuals and organizations without whose support the genius of Ramanujan would not have got the platform it deserves. Prof. Bruce Berndt deserves special credit for his role in bringing much of Ramanujan's mathematics to the wider circle of mathematicians the world over. Madras University deserves much appreciation for providing financial support to Ramanujan, it is perhaps the only university in the world who did such a thing for an alumni who could not even pass his FA exams. Prof. G. H. Hardy of Cambridge is the main reason why Ramanujan came to prominence, people like him are rare who treats a poor Indian clerk with respect and as an equal. For these people and organization the legacy of Ramanujan is still alive.

The government of India had announced last year that December 22nd would be celebrated as National Mathematics Day in his memory, and it is fitting that 2012 had been declared as the National Mathematics Year. We wait eagerly for the next 25 years when there will another celebration, a far bigger one where probably we will know more about this great man. For now just an imprint remains: what he did, how he did?

[The author considers Ramanujan as his personal hero and hopes someday to add some meaning to the work of Ramanujan.]

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