

Freeman Dyson (b. 15 December 1923, d. 28 February 2020)

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Essay by Daniel Rogers

Wikipedia: https://en.wikipedia.org/wiki/Freeman_Dyson

Homepage: N/A

Freeman Dyson was an English-American theoretical and mathematical physicist, mathematician, and statistician. Dyson was a fellow at Trinity College, Cambridge, Cornell University, and University of Birmingham before briefly becoming a physics professor at Cornell University, after his professorship at Cornell Dyson was offered a lifetime appointment at the Institute for Advanced Study in Princeton, New Jersey by J. Robert Oppenheimer “for proving (him) wrong.” Earlier in life, Dyson was a scholar at Winchester College, and later at Trinity College where he studied pure mathematics. His studies were interrupted by an assignment to war work, in which he formulated methods to calculate the ideal density for bomber formations to help the Royal Air Force bomb German targets during World War II. Following World War II, Dyson returned to Trinity College and earned a BA in mathematics. Dyson never attempted to earn a doctorate, instead he opted to accept the aforementioned fellowships while working on various papers. His most cited publication, “A Brownian-motion model for the eigenvalues of a random matrix,” deals with quantum theory. His second most cited publication is on number theory, and his first published work is on classical algebra. Dyson’s research interests included quantum field theory, astrophysics, random matrices, mathematical formulation of quantum mechanics, condensed matter physics, nuclear physics, and engineering. Some concepts introduced by Dyson include Dyson’s transform, the Dyson

tree, the Dyson series, the Dyson sphere, and Dyson's eternal intelligence. While much of his work lies in physics, Dyson explored a variety of mathematical topics, including topology, analysis, number theory and random matrices. Dyson's interest in Ramanujan can be attributed to their shared participation in the field of number theory.

I recently was fortunate enough to have the opportunity to meet Dyson's family at their lovely home in Princeton, New Jersey. I met with his wife, Imme, and his children Dorothy, Rebecca, and Mia. Through them I was able to get a glimpse into Freeman's mind and life. Dyson had an active mind and was always thinking, so much to the extent that his family says that he never vacationed. That is to say that he traveled to conferences, ceremonies, and talks, but never stopped calculating. According to Imme, Freeman was a daredevil – he loved to climb on things and hang on low branches on hikes. Throughout his life Freeman was inspired by many things; one early inspiration was the book *Men of Mathematics*. The Dyson family was also close with the Nash family; John Nash was a good friend of Freeman's. Freeman was a big fan of Ramanujan's, and even wrote a piece on him titled "A walk through Ramanujan's garden." Some other influences include his tutor at Trinity College, Abram Besicovitch, his academic advisor at Cornell, Hans Bethe, and his friend and colleague Richard Feynman. Pictured below is the me and the Dyson family (left) and Imme and I in Freeman's home office.

