Kathleen M O'Hara

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Website: https://oharas.com/biography/kathleenmohara.html

Dr. Kathleen M. O'Hara served as the Head of Outreach and Education for Virginia Bioinformatics Institute at Virginia Tech until 2015. Dr. O'Hara obtained her Ph.D. in Applied Mathematics from the University at California at Berkeley in 1984, and her advisor was Dr. Richard Karp. Before joining Virginia Tech in 2011, she served as a Professor at many universities, including the University of Iowa, the Massachusetts Institute of Technology, the University of Minnesota, among others.

Dr. O'Hara believed that Srinivasa Ramanujan could be characterized as a self-taught mathematical genius who was "discovered" by a British mathematician, and his work included some amazing equalities in the field of Number Theory. She attended the conference in 1987 to meet other mathematicians who were delving into this work and see what questions they were asking. Her own research, at the time, prompted her to ask questions about algorithmic solutions to *similar* equalities which were *simpler* in form and which had well-known algebraic proofs. However, she had difficulty understanding why the two sides were equal. According to Dr. O'Hara, "Since both sides had convenient interpretations as combinatorial objects inside Partition Theory, the game was to find easily describable algorithms that were bijective maps from one set of partitions to the other." At the conference, she learned more about Ramanujan's life and how he worked, as well as got a chance to see some of his hidden notebooks. She also had the opportunity to listen to lectures from mathematicians who delved into some of his equalities and proof techniques for them.

For a while, Dr. O'Hara took a break from her mathematical research to pursue some of her other passions, including farming. About a decade ago, she began working on another project, a more straightforward algorithmic proof of an equality found independently by Ramanujan and Leonard Rogers. The number of partitions of n such that the adjacent parts differ by at least 2 is the same as the number of partitions of n such that each part is congruent to 1 or 4 modulo 5. She has, since then, been trying to figure out different ways to approach this problem, but has not had luck so far.

Written By: Sarah Catovic