

Bruce Berndt

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Wikipedia: https://en.wikipedia.org/wiki/Bruce_C._Berndt

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Essay by Vivian Choong

Bruce Berndt is an American mathematician specializing in analytic number theory and classical analysis. His research interests are classical analysis, particularly Ramanujan's notebooks, theta-functions, q-series, continued fractions, character sums, special functions, asymptotic series, and contour integration. Graduating from Albion College in 1961, Berndt received his master's degree and Ph.D. from the University of Wisconsin- Madison. After Berndt received his Ph.D. in 1966 with his dissertation on *Identities Involving the Coefficients of a Class Dirichlet Series*, he lectured for a year at the University of Glasgow in 1966 and later became an assistant professor at the University of Illinois at Urbana Champaign. Berndt has remained at the University of Urbana Champaign since 2006 and is now a Michio Suzuki Distinguished Research Professor of Mathematics.

In 1974 during his time at the Institute for Advanced Study in Princeton, Berndt read two papers written by Emil Grosswald proving some results from Ramanujan's notebooks. He realized that he would prove the results documented in the notebooks and spent the next couple of years proving said results. Through these papers by Emil Grosswald, Berndt became interested in proving some other results listed in the Notebooks. After years of proving some results, not being able to prove different results, and refereeing proofs by Grosswald from Ramanujan's notebooks, Berndt's curiosity naturally raised for this work. Through his work with Ramanujan's notebooks, Berndt counted and pointed out around 3254 entries that Ramanujan made. Berndt subsequently wrote five different books on Ramanujan's Notebooks in 1985, 1993, 1999, 2004, and 2005. After George Andrews discovered Ramanujan's Lost Notebook, Berndt worked alongside Andrews to write volumes on the "Lost" Notebook analogous to the five volumes he wrote on the original Notebooks written in 2005, 2008, 2012, 2013, and 2018. In just Ramanujan's "lost" Notebook alone, there are around 650 results recorded. 60% of the results recorded were worked out and proven by George Andrews, with the other 40% proven and worked out by Berndt.

Berndt has also spread his interest in Ramanujan to his graduate students within his academic career. Out of the 17 students that completed their Ph.D.s under his direction in 2001, around 10 of his students worked on Ramanujan's mathematics, with 5 current graduate students working on Ramanujan's work. As Berndt mentioned in an interview in a Number Theory Conference (2001), "[Ramanujan] points to us lots of paths we could take. Very fruitful paths with all sorts of beautiful flowers, plants, trees growing along these paths. This is work for us to be discovered... He leaves a lot for us to do. So, even if I complete the 'lost' Notebook, maybe, I will have enough work for me to do for the next few hundred years!"