

## A Fifty-Year Career in Mathematical Research: The Good, the Bad and the Ugly

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On March 7, 1986 the famous numerical analyst Richard W. Hamming gave a famous Bell Lab lecture titled “You and Your Research”. His talk centered on his observations on the question: “Why do so few scientists make significant contributions and so many are forgotten in the long run?” During his forty years of experience (thirty at Bell Labs) he made a number of observations and asked his colleagues questions about what, how, and why they did things. He went on to give very specific advice and suggestions to young scientists on how to think about their research careers. Perhaps his most quoted advice was:

*“If you do not work on important problems, it’s unlikely that you’ll do important work. It’s perfectly obvious.”*

As the old saying goes, “I am no Richard Hamming”, but I do have more than fifty years of experience teaching and conducting research on a variety of mathematical problems. Also, I have been fortunate to know, and to work with, some of the world’s leading experts in applied and computational mathematics. In this talk I discuss Hamming’s point of view as it relates to the current state of the art in mathematical research. I will provide some advice and predictions that come from several well-known scientific experts. Finally, I will go out on a limb and make some personal predictions on what I think might be “important research problems” for this generation of young mathematicians to consider.