

# Bell Labs

Life in the Crown Jewel

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# Preface

**W**ANT TO WORK with Nobel Prize winners? Or with the folks who created the UNIX™ system or designed the C and C++ programming languages, or those who played a key role in creating object database technology? Or follow in the footsteps of the inventors of the transistor or the Karmarkar algorithm or those who did pioneering work in movies with sound, radar, and lasers? Or collaborate with world famous scientists?

Bell Labs, the research part of Bell Labs to be precise, offered such an environment with a wealth of fame, expertise, and history. This legendary institution, the greatest research lab of the twentieth century, was the “in place” to work for researchers from not only the USA, but also all around the world. Budding scientists, and even established ones, aspired to join Bell Labs for its academic freedom, its resources, and the opportunity to do world-class research, possibly in collaboration with world famous colleagues.

Bell Labs has provided a great environment for research and advancing science. In this fertile environment, Bell Labs researchers have been extremely prolific in producing fabulous inventions and new ideas. Their contributions have been recognized with numerous prestigious awards such as Nobel Prizes and National Medals of Science.

From 1925 until 1984, Bell Labs was a separate company jointly owned by AT&T and its subsidiary Western Electric. After the AT&T divestiture in 1984, Bell Labs became a division of AT&T. Following the next breakup of AT&T, in 1996, Bell Labs became a

division of Lucent. The 1984 breakup catapulted AT&T into the competitive arena, which put pressure on Bell Labs to steer away from basic research towards industrial research.

I had the privilege and honor of working at this legendary institution for twenty-three years, most of them wonderful and productive. I joined in 1978 as a member of technical staff. Before this, I had been an assistant professor of computer science at the State University of New York at Buffalo, NY. My technical expertise is in software in its various flavors – Web systems, mobility, programming languages, parallel programming, databases, and so forth. I started at Bell Labs by spending my first year in a Bell Labs organization that was developing a UNIX platform known as the Programmer's Workbench. Bell Labs was a huge organization in those days, but only a small part of it was involved in basic research. About a year after joining, I transferred to the research part of Bell Labs. Over the years, I was instrumental in creating several innovative software systems, wrote many technical papers, and filed and was awarded many patents.

In 1985, I was made a distinguished member of technical staff. In 1993, I was appointed to head the newly created Database Systems Research Department. Then in December 2000, I was appointed research vice president, Bell Labs Research Silicon Valley (BLRSV). Despite the Silicon Valley in my job title, I also had organizational responsibility for the Database Systems Research Department in New Jersey. After the closure of the BLRSV, I was asked to take on the additional responsibility of managing the research department in Naperville, IL and my title morphed to research vice president, Communications Software Research. Within Bell Labs, this organization was also known as center 1138.

For about a year during my tenure as the head of the Database Systems Research Department, I was also the president of Maps On Us ([www.mapsonus.com](http://www.mapsonus.com)), a Web service that provides maps, routes, and directions. I retired from Bell Labs in the summer of 2001.

My goal in writing this book is to tell you about Bell Labs, some of its accomplishments and what it was like to work at this fascinating institution, the greatest research lab of the twentieth century. In the case of some anecdotes, to preserve anonymity, I have changed details such as names without affecting the stories. I will also talk about the challenges facing Bell Labs as it moves from basic research to applied research. When I talk about Bell Labs, I mean the research part of Bell Labs, Bell Labs Research, the subject of this book.

Almost from the time I joined Bell Labs in 1978, Bell Labs was in the process of increasing software research and reducing research in other areas such as physical sciences. By the end of 2000, a majority of Bell Labs researchers were working on next generation software and applications.<sup>1</sup> As I was focused on software research, I had very little interaction with researchers in physical sciences. I would therefore like to emphasize that my understanding of Bell Labs and its contributions to its owners, first AT&T and then Lucent, is from the perspective of the non-physical sciences part of Bell Labs.

Narain Gehani.