

How Gooch Got Started

I had an epiphany, in New Orleans, during the summer of 1996. While sitting in a darkened auditorium, I experienced a moment of clarity that changed my life. I was a thirty-something, out of work, sometimes mathematician who caught a glimpse of how I might change the world by fitting together all the broken jigsaw pieces of my life with computer science. Looking back, the key pieces of the puzzle were: my undergraduate work in mathematics, my on again off again job as a graphic artist, my wife's decision to go to graduate school and a biography of Henry Ford that I was reading at the time.

I was in New Orleans attending the annual ACM Siggraph conference. I had plenty of time on my hands because I was between jobs. Keeping a steady job as a mathematician was for me a near impossible task. I was usually hired to work on a specific problem. Inevitably, as soon as the problem was solved, management always seemed to decide that with all the engineers and programmers around they did not need a “math guy.” My most recent job had been working as a research consultant for an engineering firm that was developing a probe to identify corrosion defects in gas and oil pipelines. I had designed and extensively tested a system that used artificial neural networks to predict the size of defects from three-dimensional magnetic anomalies that occur when corroded pipe is magnetized.

Between employment opportunities in my field I made financial ends meet working as a freelance graphic artist. I had taken some summer courses in graphic art due to a university requirement that forced students with more than sixty credit hours in their major to take additional credit hours not in their major in order to be well rounded.

While working as a graphic artist, I witnessed first hand the computer revolution. For a year after graduation, I worked in the production department of a local newspaper. When I started, our production department was comprised of a supervisor, four full time artists, two part time artists, a part time typist, and a part time photographic technician. One year later, after heavy computerization, I was the supervisor, photo-tech, and a graphic artist with only one full time employee, and the typist for eight hours per week. In addition, the three of us produced 30% more advertising artwork than the large staff had the year before.

The part of my job that fascinated me most was the way we used computers. Most of the traditional manual skills of the graphic artist were encapsulated in our software. With very

limited artistic skills, I had quickly learned to produce professional quality artwork. I remember wondering at the time just how far this phenomena could go, would I someday be able to start up a computer and produce a Picasso or a Van Gogh?

While I had finished college and started working, my wife had been completing a degree in computer engineering. She then accepted an offer to attend graduate school in computer graphics. It had long been her dream to work in feature animation. My wife started working in a research lab and everyone in the lab was going to the ACM Siggraph computer graphics conference in New Orleans. I invited myself along, thinking all the while that this would be a fun diversion from beating the pavement.

I bought a book from the bargain isle to read on the plane, the book that caught my eye was a biography of Henry Ford. When we touched down in New Orleans I was to a point in my book that described how Henry had almost given up working on the internal combustion engine. He had taken the sink out of his wife's kitchen, without her knowledge, and bolted up his latest attempt. When Henry started the engine the machine ran for a few moments then exploded, destroying the kitchen. Mrs. Ford had come running when she heard the noise. As Henry Ford told the next moment, he looked up at his wife and started to apologize. He had decided that he was done working on these stinking engines, he would sell all of his spare parts and tools, then he and his wife would go back to a normal life. As Henry looked up from the mess, before he could utter a word, Mrs. Ford said, "It's all right Henry, you'll get it next time." He did.

All of these ideas came together in my mind during a lecture on image based rendering at the Siggraph conference. I was sitting next to my wife listening to some one drone on about his research when suddenly he showed his results, an image of the Mona Lisa whose eyes seemed to track me as she moved. The entire audience said "aaahh!" I thought, "How did he do that?" The author then showed us how his research worked and I thought, "I could do that, I should go back to school and do that." I quickly dismissed the idea, I was getting to old for school and I needed to work to support us. I turned to my wife to tell her what a great result this person was getting with a simple mathematical model. Before I could speak, she said, "You could do that, you talk about math and art all the time, you should really think about going back to school and studying computer graphics." I did.

Talking about a thing is not the same as doing a thing. I came home from ACM Siggraph conference and started planning. I was too late to apply for graduate school for the coming year, besides the fact that I had little background in computer science and a poor undergraduate record.

However, I had desire that provided a marching song in my heart and fire in my belly. For a year, I attended the undergraduate graphics courses, the software courses that are prerequisite for the graphics courses, and a computer hardware series. My grades climbed to a level unseen in my undergraduate days, and I applied for graduate status in the computer science department. I was denied entrance.

When I asked why my application had been denied I was told that my undergraduate grades were low and that I had no research experience. I could not change my previous grades, but I was sure that I could get better grades in the future, and perhaps this increase would help. In addition, I needed to start doing research. I turned to my wife's thesis advisor who had also taught the undergraduate graphics course I had taken. He suggested that I look into the new area of non-photorealistic rendering since I was always talking about how artists did things in his class. Non-photorealistic rendering is a new area of computer graphics that attempts to synthesize computer graphics and visual art. The next summer my wife and I wrote a paper on non-photorealistic rendering that was accepted at the ACM Siggraph conference. In addition, I continued with my computer science studies, taking the graduate level graphics courses as well as fundamental computer science courses. With a research paper and an ever-increasing grade point average, I was accepted into the Masters Degree program at the University of Utah Fall quarter 1998. While at Utah I became a National Science foundation Graduate Research Fellow, a University Teaching Fellow, and coauthor (with my wife Amy Gooch) of the first text book on non-photorealistic rendering.