

# Knowledge and Wisdom

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## Abstract

Jim Gray was my mentor and friend for almost 25 years. Even before we met, he was changing my life through his writings. Jim continually and patiently nudged me to strive for more, accomplish more, and to pass these gifts on to others. He embodied those attributes that I most want to emulate.

Jim influenced those around him both by sharing in his immense knowledge and by listening and guiding. Even more, he created a community that fostered growth and sharing across competitive boundaries with a clear ethical compass. This paper summarizes my experiences with Jim's approach to nurturing and mentoring.

## 1. My First Encounters

In 1978, I was working with a friend at a small company in Sunnyvale, CA trying to figure out how to build a database management system. We were in our early 20's and had no idea what we were doing. So, we started reading the literature.

Soon, we discovered a number of papers, especially [Gray 1978], that opened whole new worlds to us and acted as an entrée into an understanding of data that we never expected. We read LOTS of papers but the ones that mattered were written by this fellow named Jim Gray who worked at IBM. Not only did they cover an astonishingly broad scope of knowledge, they were easy and fun to read! We set out designing and coding.

Sometime around 1981, we heard that Jim was doing a presentation a short distance away in Sunnyvale and we had to go and attend. My friend and I sat enthralled at Jim's clear and concise explanations. After the presentation, we waited our turn to talk to Jim about our excitement with our scheme to use shadow pages for crash recovery. Jim listened patiently and told us that it wouldn't perform as well as write ahead logging and steered us to the references to move up to the next level of understanding. We were simultaneously gently crushed that our brilliant scheme wasn't the solution to world hunger and exuberantly challenged to climb even higher.

Soon, the small company was going the way of most small companies. At my friend's going away party, another colleague who had recently moved on to work at Tandem Computers arrived late. He apologized and said: "I'm sorry I'm late but I was in a meeting with Jim Gray." I looked around the room and realized I, too, could work with Jim Gray and resolved to make a change. I started at Tandem three weeks later.

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*Jim Gray Tribute*, May 31, 2008, Berkeley, CA, USA.

## 2. The Prolific Writer

Some of my first memories of Jim at Tandem were of the design documents for his project. While I was VERY busy with a different project, it was easy to get a handle on Jim's project because there were well written documents describing it. It seemed like Jim was always at his terminal writing another paper.

Jim always wrote down what he learned. Frequently, these were his ideas and other times they were the ideas of others who simply didn't want to do the hard work of writing. He told me his two rules for authorship:

- 1) The person who types puts their name first, and
- 2) It's easier to add a name to the list of authors than deal with someone's hurt feelings.

In approaching authorship in this way, Jim was always quick to pass the credit to others; sometimes they deserved it and sometimes when it was too much modesty on his part. In this way, people were never afraid to collaborate with Jim or ask his advice. Why would you be afraid? It was all upside! Jim would help you reason about the answer, share what he knew, and ensure you got credit for what you may have contributed. I coauthored [Gray 1996] while I wasn't looking. It's true that some of the ideas were mine but Jim did the hard work of writing it down. I got more credit than I deserved...

Jim's website [Gray] lists a staggering 175 public papers he has written alone or with others. Of course, there is the masterpiece book [Gray 1993] coauthored with Andreas Reuter that has over 1000 pages inside and quite rightfully has a picture of the Rosetta Stone on its cover. That book truly helps crack the code!

The one piece of advice that Jim has given me for over 20 years is that I need to write, write, and write more. It is my single strongest desire for both my career and for my spirit. Jim sensed that in me and never wavered in his encouragement.

## 3. The Masterful Presenter

In addition to writing, Jim encouraged presentations. In the 1980s at Tandem, we listened to a technical talk hosted by Jim each Tuesday. He kept an agenda, convinced others to sign up, signed up himself, and ensured the weekly rhythm of the "Tuesday Lunch Talks" survived. I had started at Tandem when I was 26 years old and had no significant experience presenting and Jim encouraged me and helped me prepare the transparencies (yes... no PowerPoints existed -- we used clear plastic and marking pens). Soon, I was presenting regularly. Then, I was the backup host for the series. A few times, I showed up at 9AM on a Tuesday to find out there was a cancellation and I was speaking at noon by reading the public announcement! All this caused me to grow in ways I could never have imagined.

Listening to a talk by Jim was always a joy. He would explain and motivate complex ideas in such a clear and concise way. Perhaps it was a "Smoking Hairy Golf Ball" to explain what

future chips would look like as heat and connectivity dominated. Maybe, it was the shrinking straw to disk as storage capacity grows faster than I/O capacity. What about the latency accessing a file folder across your office (analogous to DRAM) versus the latency to go to Pluto (analogous to disk)? Of course, there were those 12 great challenges he listed in his Turing Award lecture.

Whenever Jim presented, everyone made sure to come inside and listen. You would listen even if you've heard that talk before because each time you would hear more and understand more. Besides, they were ALWAYS fun.

Looking at the presentations listed in [Gray], Jim presented over 200 times just since 1995 (and most were unique content). Of course, he's been talking since his college days but those plastic transparencies aren't as easy to archive as the PowerPoint slides. How many did he do in the previous 25 years? The last talk I saw him give [Gray 2007] lasted only 5 minutes but had a very strong impact on my perception of the direction of the industry.

#### 4. The Sense of Community

In 1985, Jim and a number of other senior leaders in the field of transaction processing started the HPTS (High Performance Transaction Systems) Workshop [HPTS]. This is a biennial gathering of folks interested in transaction systems (and things related to scalable systems). It includes people from competing companies in industry and also from academia. Over the last 22 years, it has evolved to include many different topics as high-end computing morphed from the mainframe to the Internet.

The amazing thing about HPTS is that it is a collegial and supportive community in spite of the fact that many of us are competitors. We gather as old friends and catch up on life's changes in family, friends, and work. We share almost all of the latest technology trends while holding back only the truly critical trade secrets. When someone needs a new job, there is a supportive network with common passions. This culture was based on Jim's natural supportive, caring, and HUMAN approach to technology and persists today.

Even more than this, Jim devoted LOTS of time to organizations, advisory boards, and societies as listed in the Public Service section of [Gray]. If it promoted learning and growth of young people and our industries knowledge, he was supportive. Without taking credit, Jim and his wife, Donna, had endowments at UC Berkeley, University of Washington, and University of Wisconsin. Jim was passionate about publicly supported schools that allow talented students (who may not have money) to excel.

#### 5. The Patient Listener

I can't count the number of times I would sit down next to Jim and he would look me directly in the eye and say: "So, Pat Helland, how the heck are you?" In this way, he would immediately connect and work to pull out of me what is going well and what is not going well. The ensuing conversation would inevitably dive into MY challenges and concerns as Jim tried to do what he could be my friend and supporter. I also can't count the number of people I know who were privileged to receive the same treatment by Jim. It seemed he knew almost everyone and cared about them, too.

When strangers approached Jim, he had an uncanny ability to assess what they could understand and the level at which to explain the problem. I've seen him take the most complex issues and dissect them into a framing that allowed a lay person to understand the gist of the problem and then, separately, dig into

the deepest and subtlest nuances with another more versed in the topic. It was always fascinating to watch the initial back-and-forth that allowed Jim to sense both what information was desired and how they could best be helped. But it wasn't just Jim's talent in assessing them, it was his patient and caring desire to help in any way he could that left the deepest impression on me.

Being one of Jim's countless friends meant receiving long-term and patient advice. It might have been months or years since you'd seen Jim but he would remember what you were struggling with last time and he would ask for an update. Based on what he'd seen of you in the previous encounters, he would patiently work to reinforce your weaknesses and help guide you forward. Being at a conference like HPTS was very entertaining as I could look from across the room and see Jim march methodically through all the attendees, many he'd known for years and some he was just meeting. I would smile because it was obvious they were getting the same kindness and curiosity that I so enjoyed. I knew they would benefit from that attention.

#### 6. The Enduring Legacy

The famous rock guitarist Jimi Hendrix once said:

*"Knowledge speaks, but wisdom listens."*

This simple and profound statement captures Jim's approach to mentorship. He spoke and wrote a LOT... He listened even more.

More profoundly, Jim set an example for others. Many colleagues in the database and transaction processing field (both academic and industrial) have developed a culture of nurturing and sharing which balances the needs of competitiveness and trade secrets with education, uplifting, and sharing to help individuals grow even if they are currently in competition with you. This culture is based on sharing knowledge, listening and questioning, and especially on human caring.

Jim's legacy leaves a large and lasting wake.

#### 7. Acknowledgement

I would simply like to thank Jim Gray for all the teaching, mentoring, encouraging, and friendship for more than half my life.

#### 8. References

[Gray] <http://research.microsoft.com/~Gray/>

[Gray 1978] Jim Gray, *Notes on Data Base Operating Systems, Lecture Notes in Computer Science(60)*: 393-481 Springer-Verlag (1978).

[Gray 1993] Jim Gray and Andreas Reuter, *Transaction Processing: Concepts and Techniques*, Morgan Kaufmann, San Mateo, CA (1993).

[Gray 1996] Jim Gray, Pat Helland, Patrick E. O'Neil, Dennis Shasha, *The Dangers of Replication and a Solution* SIGMOD Conf. 1996: pp.173-182 MSR-TR-96-17

[Gray 2007] *Tape Is Dead, Disk Is Tape, Flash Is Disk, RAM Locality Is King*, [http://research.microsoft.com/~gray/talks/Flash\\_is\\_Good.ppt](http://research.microsoft.com/~gray/talks/Flash_is_Good.ppt)

[HPTS] High Performance Transaction Systems Workshop [www.hpts.ws](http://www.hpts.ws)