
Reverberations of a Stroke

Karl Gustafson

Reverberations of a Stroke

A Memoir

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The physicist Leo Szilard once announced to his friend Hans Bethe that he was thinking of keeping a diary. 'I don't intend to publish. I am merely going to record the facts for the information of God.'

'Don't you think God knows the facts?' Bethe asked.

'Yes,' said Szilard. 'He knows the facts, but He does not know this version of the facts.'
Hans Christian van Baeyer, *Taming the Atom*
(Random House, 1992)

Foreword by Simo Puntanen: *Eight Months Before a Second Life...*

It was a dark and stormy night.

Subject: China, Southern provinces: Maintain flexible itineraries due to potential for disruption to flights, overland travel during rainy season—Disruption to travel and essential services should be expected in the southern provinces during the rainy season. Hundreds of flights were canceled or delayed on 2 June at Shanghai Pudong International Airport due to poor weather conditions.

I received the above emailed message from Karl Gustafson on Wednesday, June 3, 2015, with the following line: “Maybe we were lucky to get up here from Haikou Sunday night, even if very late! Karl.”

Karl was not joking, and I, being from the largest Nordic city without access to the sea, from a city of the most reserved and introverted people of Finland, never make jokes.

We were in Haikou on May 31, 2015, seven of us from around the world who were headed to *The Second Shanghai Forum of Trade and Financial Statistics* (SFTFS-2015), which would begin the next day. Our original plan was to fly earlier in the day from Haikou to Shanghai Pudong on China Southern Airlines CZ6765. However, already in March, our flight had been rescheduled to leave two hours later than planned, bringing us to our hotels rather late at night. On Sunday, in good time, our team was sitting in two limos, ready to leave Haikou’s Ming Guang International Grand Hotel for the Haikou Airport. But when we arrived at the airport, nothing happened. Nothing except hours of waiting. The weather simply would not cooperate.

Finally sometime after midnight, our Airbus A320 was ready to take off, leading to a three-hour very bumpy flight. Otherwise without incident, we arrived in Shanghai, met by our guides. But then, it turned out that they had forgotten where in the parking garage their bus, coming for us, had been left parked. After some time solving that mystery, we finally headed off for the International Exchange Center Hotel, where we would be staying during the conference. We did arrive at our hotel before sunrise. But it was a close call.

At that point, we had a couple of hours break before the conference breakfast and opening ceremonies were to commence at 8:30 a.m. Then came the very first speaker that Monday morning, delivering the Keynote presentation. I’m so proud to say that it was Karl, who gave an impressive talk on “New financial risk ratios and

portfolio growth angles.” Despite the preceding adventures and lack of sleep, he did so without missing a beat. Meanwhile I, despite often sitting in a coma in the audience, managed to attend the rest of the day’s events.

Almost a year later, on April 11, 2016, Karl wrote to tell me that he had suffered “a deep-brain hemorrhage” in February that he was in the process of recovering from. “After a week of terrible headaches, finally I ‘went down’ but somehow still managed to call the Emergency Ambulance service at 4:48 a.m.... Mentally I am fine, although I am not perfect! Also physically. Very lucky! But not teaching.”

He would not be attending any conferences soon either, he added.

Main point: I was invited speaker in Sweden for a Quantum conference, and was considering on same trip to come to one of your three conferences, probably the one for Jeff (Hunter), but have now decided it is too early and I will not be up to speed so: I will come to NO conferences this summer!

Only recently, Karl reminded me in another email, “Little did we all know that [SFTFS-2015] would be my last conference. If you look at my C.V., on page 35 you will find no more conferences listed!”

But let’s go back a bit. My first communication with Karl took place in 2000 when I was handling his paper for the *Linear Algebra and its Applications* (LAA), which came to print in 2002. This was the Ninth Special Issue of LAA on Linear Algebra and Statistics. So, if you don’t know, I’m a statistician, visiting sometimes as a guest editor in math journal special issues. Karl is mastering one particular topic that I have been interested in for a long time: antieigenvalues. They are related to the efficiency of ordinary least-squares, on which I did my Ph.D. thesis.

The first time I met Karl was at the Tampere Bus Station, on Saturday, June 8, 2002. He had taken a bus from the Helsinki Airport, and so on Sunday, June 9, 2002, my wife Soile and I met Karl around noon in downtown Tampere. We walked along the banks of the rapids of Tammerkoski, a Finnish national landscape. Discussing things to do in Tampere, I mentioned that they were showing *A Beautiful Mind*, a movie about the famous mathematician John Nash. This led to Karl telling us colorful episodes about his communications with John Nash in the 1960s. After a long sunny walk, we drove to our home in Nokia, 20 km away. On the way, we stopped at Kotipizza to fetch a late lunch to be enjoyed on the deck of our sauna.

Since 2002, I have met Karl at conferences in various parts of the world, including in Auckland, New Zealand, in 2005. He always travels with hand luggage only! I easily could go on with my reminiscences about our meetings, but to complete this Foreword to Karl’s book *Reverberations of a Stroke* I must not linger. However, just one more note: When I first learned of Karl’s stroke in 2016, I immediately responded: “Quite something, Karl! Something to put into your Memoirs, Part II!” Little did I know then that Karl had already begun his writing efforts toward what would become this book.

Having now read the completed manuscript, I can’t tell you how pleased and honored I feel to be writing this Foreword. Karl’s story already is a great success in my own view.

Karl's account begins on January 31, 2016: "I was aware that something unusual was happening to me, although I was not sure exactly what." He then describes, deeply, how the stroke and subsequent emergency medical procedures on 1 February, 2016, drastically changed his life: "From the moment I became aware, while still in the hospital, that 'stroke' was the condition I'd endured and death was what I'd narrowly escaped, I became determined to defeat both conditions."

Karl's description of getting a second life (as he puts it) makes for sharp and touching reading. And there is a determination in Karl that creates a sense of great positivity and inspiration for the reader. I would not be surprised to see Karl's book resting on bedside tables in stroke rehab centers around the world.

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Foreword by Jillian Lloyd: *Going to See Karl*

As I walked down the long, echoing hall of the former Boulder Community Hospital, now housing only its rehabilitation program, the building seemed abandoned. Except for a security guard at the front desk, who directed me down the cavernous hall to an elevator, I saw no one and heard only my own footsteps. I felt tense and uncertain of what to expect.

It was February 19, 2016, and Karl had been hospitalized since February 1, when he'd been taken by ambulance to Swedish Medical Center in Denver. I was still fuzzy on details, but I knew he'd suffered a brain hemorrhage, determined to be because of an "arteriovenous malformation" (AVM). I'd never heard of an AVM before, and it meant almost nothing to me; but I knew its implications were dead serious.

I also knew that Karl was recovering well. But no one knew whether he would recover all of his faculties—or if so, when. Karl's friend Kent had emailed to let me know that with Karl now out of Intensive Care, visitors were allowed and encouraged. Kent had also cautioned that Karl might not recognize me and might not be lucid. He had explained that, although conscious and communicative, Karl was still confused and disoriented. Reportedly, Karl kept a notepad by his bedside, which he would refer to when someone entered his room. Kent noticed that Karl had written down a few basic details, including: "My name is Karl Gustafson," "I am a professor of mathematics at the University of Colorado," "I am at Swedish Hospital in Denver."

Without a written note including my name, would Karl recognize me? I worried that he might look blankly at me. I also had no idea of his physical condition. In a sense, would I easily recognize him?

Karl and I have known each other for over a decade, and for as long as I can remember, there has been a wordless understanding between us. We can finish each other's thoughts and sentences and even anticipate them. For this reason, we have always had a wonderful working relationship; but more than that, we are simpatico. As in most situations of connection to others, we assume things will never change. But unwelcome change had come.

When I reached the end of the hall, I found the stairs and mounted to the building's fourth floor. The rehab unit lobby was bright and welcoming, and approaching the nurses' station, the human vibe felt the same. A smiling nurse asked how she could help and if I was there to see someone? She looked

searchingly into my eyes, trying to gauge my emotional state, perhaps. She must do this all day long, I thought, try to read and attend to all manner of inner states of concern, distress, and generally blindsided family members and friends. I replied that I had come to see Karl Gustafson. "Room 440," she replied with a smile, sweeping her arm toward the hall. "You can go right in."

Carrying a vase of brightly colored roses, I walked the few steps to Karl's room and entered the open door trying to steel myself for—anything. Karl's bed was faced away from the door, toward a large window and a majestic mountain view. The moment I stepped into the room, Karl turned around and immediately lit up with an enormous grin, his eyes glittering. I breathed a sigh of relief, inwardly, and setting down the flowers, came over to hug him. He hugged back hard. Other than being in a hospital bed, Karl looked almost exactly as when I'd last seen him, on January 29, at the University of Colorado. His color was good, and there were no tubes or wires, not even an IV line. He was sitting partly upright, the head of his bed inclined 45 degrees, with pillows propped behind him. He was wearing a blue button-down shirt—one of his own—rather than hospital garb. He appeared a bit tired, but who wouldn't in such a circumstance? Most of all, he appeared sharp and alert.

There might have been some wishful thinking on my part. I still didn't know if he knew my name or who I was, despite his apparent pleasure at my visit. He studied the roses and commented on how beautiful they were and thanked me for bringing them. Then, he said, "You should put some more water in that vase. Roses need a lot of water." This is true and it gave me a feeling of further relief—that he noticed such a thing. I went to the bathroom sink and topped up the water in the vase. "That's better," he said, when I set the flowers down again.

Then, Karl launched in with great animation: "Do you know what happened to me?" he asked. "Not exactly," I replied honestly. He pointed to the center of the top of his head: "I have a hole here! There's a hole into my brain!" He was referring to the hole that had been drilled for the blood drain. "I don't understand it at all, I don't know how it happened," he went on. "They say I had a brain injury and I don't remember anything. I just remember calling the ambulance, calling 911, early that morning on February 1. But I don't know what happened to me. It all happened so fast. I almost died! I'm lucky to be alive!" He spoke clearly, but chose his words carefully. I nodded, "Yes, you're very lucky."

"I'd had this terrible headache and then I knew something was happening to me," he continued. "It felt like all the energy was draining out of me, and I then heard a voice in my head, telling me, 'Make the call. You must call 9-1-1.' So I did."

"Do you remember anything else before you called 911?" I asked. "Do you remember what you were doing that day?" I was still trying to piece it all together, this non sequitur of seeing Karl hale and seemingly invincible one day, and then learning soon after that he'd suffered a "catastrophic" brain injury.

"I was working on a problem, I'd been working on it for days, and I just couldn't figure it out!" he replied. "I was at my limit, I couldn't do it anymore and I needed help. So I got on the phone, I put in that call to 911 and told them, 'Look, I'm

working on this problem and I can't do it alone. You need to send someone over to help me!' And it worked: they sent the ambulance right over. And that saved my life!" He seemed to ponder this miracle, while I tried to sort out whether he'd spoken to the 911 operator about mathematics or strictly about physical symptoms. (The 911 recording would reveal later that there was no mention of math!)

Karl then asked if I could get him some water. He complained that the nurses wouldn't let him have liquids and he was extremely thirsty. I said I'd ask the nurse. She explained that they were restricting Karl's fluids because his sodium levels were low. However, she offered Karl a small ice pop to suck on. He accepted with disappointment, complaining that the nurses were so "strident" about their rules. "They refuse to budge!"

I nodded and mentioned how I remember my young son having to settle for an ice pop, grudgingly, after his surgery a few years ago. Karl perked up and said, "I remember when he had that surgery!" I could tell that he did remember. That was encouraging.

Karl then told me about his visitors: Amy, Garth, Kent, and John had come the day before and would return later. He continued listing visitors who had come and taken walks with him, or joined him for lunch or dinner, and I understood that this was probably imagined or dreamed. One of the friends he mentioned was no longer alive, and another lived in Greece! It was a beautiful late-winter Colorado day, sunny and above 60 degrees. I commented on it and the spectacular view from his window. "Yes!" he said enthusiastically. "We could be in Switzerland! Look at those mountains!" Suddenly he added: "Let's go out for a walk!" He meant right now.

"Yes, we should do that Karl," I replied. "When you feel well enough." I was not sure if he was even allowed to get out of bed without a walker (he wasn't), but his enthusiasm was infectious.

Karl mentioned some issues with short-term memory loss and confusion. "Well, you just have to be patient, Karl, you'll get better. But it might take a while," I observed. I wasn't attempting to placate him; I felt deeply that he would recover. He was silent for a moment and then agreed that he needed to let the process unfold. "There's no hurry, there isn't any place else I need to be," he joked.

Although it's difficult to explain, some of the conversation I had with Karl that day was unspoken—exchanged not in words but with something clearer than that, and I won't attempt to translate it. Urging Karl to take a nap, I hugged and kissed him good-bye and promised to return soon.

Within weeks, Karl had recovered sufficiently to return to his Boulder home. Amazing everyone, he returned to workouts at the gym just a couple of weeks later. As anyone who knows Karl can attest, he is a veritable force of nature, and a stroke—even a catastrophic one—is hardly a match for his determination.

That April, when Karl first mentioned his idea of writing a book about his stroke experience, I was surprised by his confident ambition, but I encouraged him. At the very least, I thought a journaling approach to recording his memories and recovery would be good cognitive and emotional therapy. And I know how much he loves to write, so why not? I really had no idea that he would throw himself into the task

with such vigor and enthusiasm; but this is simply how Karl approaches life. As the post-stroke months rolled by, Karl produced chapter after chapter with increasing ease, the steadiness of his cognitive recovery apparent in his written efforts. Now, two years later, he has completed the manuscript of the book before you, a poignant story of one man's struggle to regain his inner balance and life purpose in the aftermath of a near-death health event.

Regardless of the challenges that life throws at Karl, and there have been many, he always seems to land on his feet. What is it that makes some mortals seem so indomitable? I look no further than to Karl and his life for answers. I continue to be inspired by his achievements and have no doubt there will be many more.

Jillian Lloyd
Boulder, CO, USA
April 2018

Acknowledgements

There are far too many acknowledgments that I gratefully feel and wish to share; but in the interests of practicality and efficiency, here are a few.

First, to the 911 operator and all of the emergency and medical staff who saved my life and helped in my recovery: Everyone did the right thing. I offer you my humble thanks and permanent gratitude.

Second, to my son Garth who rushed to the emergency room at 7 a.m. to replace the chaplain at my bedside and who then took the entire week off from work to remain by my side daily in the intensive care unit. And equally to my daughter Amy, who flew in from California and who also had the presence of mind to immediately call my department chairman to inform him that I would not be teaching class that week or any time soon.

Third, to all my good and true friends who visited me during my five weeks of hospitalization: Kent Goodrich and John Tracy, who came to Denver often and took the lead in keeping everyone else informed; Norm Nesbit, Mircea Fotino, Doris Goodrich, Bob Leben, Ed McConkey, Al Lundell, Jillian Lloyd—who brought flowers—and Kathy Weakland.

Fourth, to my granddaughters Ashley (16) and Elizabeth (13) who came to the Boulder rehab hospital to cheer me up. I could not remember Elizabeth's name, and I still remember her surprised expression when I had to ask her and then wrote down her reply on a notepad beside me. And also, to my other grandchildren, Francesca (14), Clarissa (11), Julian (11), who came from California to visit me during my recovery.

Fifth, to Donna, who took charge of the paperwork at the Mathematics Department and whose cheerful disposition has kept the department afloat for these many years.

Sixth, and not least, to Jillian Lloyd, who has held my hand and continually encouraged and helped me write this account, while it is still reasonably within my memory's grasp.

Seventh: to this wonderful Encore: A second and more appreciative life!

Karl Gustafson
Boulder, CO, USA
2018

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