

Here are some biographical notes and personal impressions. What follows is based on information provided by Almir's wife Márcia, my wife Carlinda and Almir's own written recollections. My thanks to Suzanne Geoghegan for her suggestions.

Almir Master's thesis advisor, Ramón Mendoza, from the Federal University of Pernambuco (UFPE), wrote in a recent e-mail that there was an urban legend going around claiming that Almir was working as a sugar cane cutter when Prof. Paulo Figueiredo (UFPE) found him in the vicinity of Moreno, Pernambuco, and brought him to study for a Master's degree in mathematics at the UFPE. Well, not quite, but in a sense there is some truth to this story.

Almir Olímpio Alves was born August 9, 1965, to Olímpio Adelino Alves and Maria do Socorro Costa, in Moreno, in the state of Pernambuco (northeastern Brazil). When he was three years old he and his family went to live in the Engenho Poço D'antas. (An *engenho* is a large sugar plantation with a nearby village consisting of a few small and simple houses where the workers live.) For some time they lived in a house made of sticks and clay, and a roof made of straw. Here is a picture of a house similar to it (Almir used this picture as a screen saver on his laptop). He left Engenho Poço D'antas only after he married Márcia, when he was 27 years old.



Almir grew up helping his parents with the daily chores. In his own words, "I was brought up free in the fields of Poço D'antas, fishing, watching over livestock." There wasn't always food on the table. Carlinda told me that Almir once told her, with tears in his eyes, that one day, when he was very young, he came home with a piece of a cookie somebody had given him and gave it to his mom, who then divided it between both of them; this was all they ate that day.

Almir went to school for the first time when he was ten years old. He already knew how to read and count. His mother had taught him how to read, and his father had taught him basic arithmetic. (His parents were among the few living in the *engenho* who knew how to read and write.) Almir also liked to study by himself. For these reasons he went straight to second grade. After two years he attended fourth grade in a school in Moreno. To get to that school he and his brother had to catch a bus along a highway some distance away. It meant a twelve kilometer walk every day. They would finally arrive home from school in the afternoon very tired and hungry but would get something to eat only at night: half an egg and some cooked corn flour; sometimes not even that. It was very hard and he gave up a few times. For this reason he failed a couple of grades. But Almir persisted with this same routine for many years until he finished school at the age of 21.

After he finished school he wanted to study music. His father, Seu Olímpio, had taught him how to play the guitar. Almir also liked to write verse and compose melodies but he had no formal training in this either. Still, he decided to take the admissions exam to the music program in UFPE. He passed the first part of the exam. In the second part he was asked to play some classical scores from a famous musician, but he had no idea how to do this, and failed. After that he decided to study mathematics.

From 1988 to 1991 he studied in the Fundação de Ensino Superior da Vitória de Santo Antão, obtaining a degree in Mathematics. The year 1992 was an eventful year for Almir. He married Márcia, began working as a school teacher for the city of Jaboatão dos Guararapes, Pernambuco, and left the *engenho* for the first time in his life, to live with his wife close to his new work place. Their son Alan was born the following year.

Also in 1992 he went to UFPE to begin a year and a half specialisation course in mathematics. He wrote a monograph under the direction of Prof. Paulo Figueiredo (UFPE) entitled "Formal Area Calculus versus the Informal Area Calculus of the Sugar Cane Workers of Poço D'antas." In it he compared the way area is calculated in formal mathematics with the way it was done in Poço D'antas, where the total area worked by each person had to be known in order to calculate the wages. Almir used to say that the sugar cane workers were performing integration without knowing it. Prof. Figueiredo suggested to him that he go to UFPE to study for a Master's degree in mathematics, but it was not until three years later that he was able to follow this advice.

Almir entered the Master's program in 1996. My wife, Carlinda, was also a student at UFPE at that time. She met

Almir soon after he arrived and they became good friends. He obtained his Master's degree in mathematics from UFPE in August of 1998. His advisor was Prof. Ramón Mendoza and his thesis was entitled "Statistical Mechanics and Correlation and Partition Functions." Following this he was accepted as a doctoral student in the same math department.

After having taken all necessary courses in the doctoral program, and passing all the required exams, Almir asked me in 2001 (August maybe) if I could be his thesis advisor. He had been my student in Riemannian Geometry and I remember his tests were the easiest and fastest to grade: he would always give correct simple short solutions. He always got straight to the point. I agreed to be his advisor and he immediately began working on a problem proposed by Prof. Tom Farrell (Binghamton) with whom I had previously collaborated on a few articles. Prof. Farrell asked whether there were three dimensional crystallographic groups whose Whitehead groups were not finitely generated. A year and a half later Almir had not just answered the question (it was yes) but had given a simple beautiful formula to calculate the Whitehead groups of all such groups. It took a few more months to write out the thesis and to fulfill some other university requirements. Finally Almir defended his thesis in August 2003. It was "approved with distinction" and many believed it was one of the best doctoral theses ever written in the department. After defending his thesis he went around saying that he was now a "matuto esclarecido" (this could maybe be approximately translated as "enlightened rustic country guy"). His thesis was later published in "Topology", a prestigious mathematics journal, one of the best in the world.

During the years that we worked together we became very good friends. Almir was a great storyteller, always telling stories from his childhood, about his life in the *engenho* and about the history of Pernambuco. He was liked by everybody in the department. He was a very intelligent person with a rare talent for simplification: he could transform very complicated arguments and ideas into short simple concepts, sometimes using imagery and figures from the *engenho*. But above all he was a fighter (as Márcia describes him). He worked hard all his life and everything he accomplished was due to his perseverance.

Beginning in 2002 Almir worked two jobs. He continued to work as a school teacher in Jaboatão do Guararapes even after accepting a position at the University of Pernambuco (UPE). In 2004, he moved to Carpina, Pernambuco. There he bought a house near his own for his parents. Finally, Seu Olímpio and Dona Socorro left Poço D'antas, bound for Carpina.

In 2005 I moved to Binghamton. When I left I told Almir that I would be very happy to have him visit me at Binghamton University. One year later, August 2006, he sent me an e-mail saying that he had decided to come to Binghamton for a year or so, and that he would be applying for a postdoctoral grant from CAPES, Brazil. If things had gone smoothly, he would have visited Binghamton in 2007 or 2008, but his university didn't want to grant him a leave of absence. Finally, a year and a half later, Almir got permission from UPE and applied for the CAPES grant. (He first needed the approval of UPE in order to apply for the grant). A few months later CAPES awarded him the grant. He arrived in Binghamton in September 2008.

Ana Cristina Salviano and Adriano Veiga, math students from UFPE, both in Binghamton since 2006, had met Almir a few years earlier. They helped him find an apartment two blocks from their own. They also guided him in his first steps here in Binghamton. In his first 3 months Almir divided his time mostly between home and campus, working very hard (as always). We were working on some problems that sprang from his thesis. During that time he would stop working only to visit Cristina and Adriano, or to visit Carlinda and me in our home. The hard work paid off and by December we had essentially solved the main problem stated in his proposal to CAPES. This made him more relaxed and by December we began working on other problems. He spent Christmas and New Year with us.

Even though he could read and write English well, Almir was not as fluent speaking English as he would have liked. At least not sufficiently fluent as to tell his stories in English. So he decided to take some English language classes. He chose the American Civic Association because it was about five blocks from his apartment. From the beginning he liked the place very much. He would always say good things about his teacher. He was amazed at the diversity that he found there for the first time in his life. People from very different backgrounds and cultures were all in one place trying to communicate. This was something new and wonderful for him. By February he was making friends,

and not just at the Civic Association but also in a local Baptist church. He had met Bob Larnerd at a Chinese restaurant where both used to eat. Bob invited him to go to his church. Almir was now beginning to tell his stories in English.

On Friday, April 3, Cristina called Carlinda to tell her that something had happened at the American Civic Association and that Almir was not answering his cell phone. My first thought was to worry because Almir was a very brave person. I was afraid that, if he had heard shots somewhere, he would have gone there to try to stop the shooter. Later Cristina told me that she had had the same worry. But the shooter went straight to the classroom where Almir was. It has been said in the press that Almir threw a chair at him, but missed. And I believe this, because that's who Almir was. That's who he is.

The poor kid from the *engenho* who fought all his life came a long way. He saw hunger, poverty, struggle and violence in his own land but came to die in a peaceful faraway town in an absurd way. Who understands such senselessness?

This has been very sad for all of us. Our prayers go to Márcia, the love of Almir's life, to his son Alan, his mother Dona Socorro, his father Seu Olímpio, his sisters and brothers and the rest of his family.

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