

Joseph Traub and Carnegie Mellon

BK: How did you contact Joe Traub?

HW: In 1969, when I worked as an assistant, I attended a summer school in Gdańsk, where I had a short presentation. I said that I was interested in nonlinear equations. That was when Stefan Paszkowski referred me to J.F. Traub's book from 1964 about solving nonlinear equations.

BK: Thanks to Paszkowski, Joe Traub's name appears for the first time. . .

HW: Yes. After I returned to Warsaw, I hastened to the library on Śniadeckich Street and that is where I read Traub's book. It was the best mathematical library in the whole Eastern bloc – there you could find all of the books published in the West. People from East Germany, Czechoslovakia, Bulgaria came to this library. It was difficult to check anything out there, because there was usually only one copy of any book, so a visitor had to read the books on the spot. There I saw that I was able to prove several Traub's conjectures. The natural consequence of this was my letter that I sent to Traub. I wrote that I knew the answers to some of the questions that he posed in his book from 1964, and the answers are this and this, etc. At the time, letters from Poland to the United States took about four weeks to arrive, and indeed – after more or less two months I received a response. Traub wrote that this is indeed fascinating, and he would like to receive my paper. If I would like to submit it for publication, he

is on the Editorial Board of *SIAM Journal of Numerical Analysis*, and he would love to handle the article. I sent the article to him after writing an English version. Independently, I received a letter from him with the information that in May of 1973 he would be organizing a conference at Carnegie-Mellon University in Pittsburgh and he was inviting me to participate and offering to cover the costs of the journey and the stay.

I received this letter in March, maybe. It was completely impossible, even with the best of efforts and intentions, to get a passport in two months – at the time nobody kept passports in desk drawers. American visas were also difficult to come by. I wrote back that it is unrealistic for me to make it in May. So then Traub wrote me back – again, two months later – that I should show up whenever I could. He sent me an official invitation without specifying the time period, with a declaration that all costs would be covered. This invitation made Professor Turski very happy, because it went along with his plan to build in Warsaw a world-class center for applied mathematics. He assured me that he would get me a passport. From what I remember my visa was organized by Carnegie-Mellon, by contacting the consulate in Warsaw. And so on September 16, 1973, I came to the United States for the first time. I remember the date, because on September 17, 1973, Poland was playing the decisive soccer match against England in the 1974 World Cup qualifications. That was the famous match at Wembley Stadium.

By the way, I had no idea that I would have trouble finding out the results of the match. I tried for several days – the American newspapers said nothing, the television was only covering baseball – nothing about soccer! Finally, in the main library of the university, where they brought newspapers from Europe, after a few days, I saw that the result was 1:1. Until this day, I don't understand why soccer has not become popular in the United States. Many fans of soccer, who came to the United States from Europe and South America, could not inspire enthusiasm for the game. I saw at least two serious attempts to popularize soccer in the States. Pelé was responsible for the first attempt, and the second was led by David Beckham. Both attempts failed.

BK: How long was your first visit to Carnegie Mellon University?

HW: The invitation didn't specify a length of time, and when I arrived, the university offered me a year-long stay. I refused, first, because I came without my wife Grażyna, and second, because I didn't want to create an awkward situation for Professor Turski. So I offered to stay until Christmas (this was in 1973), and maybe to return the following year with Grażyna. Sometime later – after I returned to Poland with an invitation for the 1974–75 academic year, I spoke with Professor Turski. He thought that a trip with my wife would be difficult to arrange and tried to convince me to go even without Grażyna. I did not agree, and luckily Professor Turski was able to organize passports for both of us. We wanted to take advantage of Grażyna's stay in the United States in order to consult some gynecologists.

Let's digress for a bit and talk about the Traub marriage: in 1974, before we left for the United States, Joe Traub with his wife Pamela were attending an IFIP Congress in Sweden. On their way back, they came to visit Poland for a week. You met them at the time as well. I wanted to show them Cracow and Zakopane. We took a train to Cracow, and from there we hired a taxi for a whole day to go to Zakopane. The taxi driver charged us what he thought was a lot of money, but the dollar was worth so much at the time that it amounted to less than twenty dollars. The driver drove like a madman along 'Zakopianka,' which is the main road to Zakopane, with each cigarette he lit, he tilted his head and the car veered off the road to the left, and Joe cried: "He's going to kill us!" "I've been driving like this for thirty years, man, why would we have an accident today?" the driver responded. I showed our guests the famous mountain lake called Morskie Oko (The Eye of the Sea). We tried to go to see the legendary Black Lake, but there it was Pamela who was crying – she was afraid of heights. Pamela fell in love with sheepskin coats in the town of Nowy Targ and she bought one for a comical price for her of some twenty or so dollars after converting from zlotys. Due to the duty fee, the sheepskin stayed in Poland. We brought it to Pamela when Grażyna and I came to the States. The pictures we took at the

Hala Gąsienicowa in the Tatra Mountains during the Traubs' visit to Poland hung for years in Joe's office in New York.

Let's go back to my time in the United States in 1973. At first, I had many 'newcomer' adventures. I was sent on this journey without a single dollar in my pocket. I smuggled through ten British pounds which I received from my friend Marcin Majda. I flew on the Warsaw – New York City route with Poles who had emigrated out of Poland. One of them was very surprised that I didn't have any money. He took two dollars out of his pocket, and lo and behold, I was the proud owner of two dollars! In New York I had to change airports from Kennedy to La Guardia. Some woman official realized that I didn't have any money and she gave me a free bus ticket. So not spending a penny I found myself at the La Guardia airport, and from there I flew to Pittsburgh. I sat next to a man whose heritage was Polish. He didn't speak Polish, but he liked Poles. His question gave me chills: "What will you do if nobody is waiting for you at the airport?" The expression on my face must have told him that I am not at all prepared for something like that. "Don't worry," he said, "I'll take you to my home." Luckily, there was somebody waiting for me at the airport – my later friend and colleague H.T. Kung, a Chinese American man from Taiwan who had received his PhD a few months before I came.

BK: Who was his thesis advisor?

HW: Traub. Kung's thesis was formally in pure mathematics. He began his studies at the University of Washington in Seattle, where Traub taught for only a year. Later, Traub was offered the position of head of the Computer Science Department at Carnegie Mellon, and he took Kung with him. Kung finished his PhD in Pittsburgh in the Department of Mathematics.

As I already said, Kung was waiting for me at the airport. He mistook my new friend from the flight for me. I was well dressed by my wife, while my friend from the plane looked miserable. He fit perfectly an American's imagination of what somebody from Eastern Europe would look like. Kung drove me to the hotel quickly and without any problems – from what I remember with a cracked windshield.

I met Traub the next day. That's all very well, but I still only had two dollars and ten pounds. I gently informed Traub. There was some resulting chaos ("how could they let you out without any money?"), there was a collection, and I became the proud owner of fifty dollars. Then there was my first encounter with a bank: I asked the lady at the window "are you free?" instead of "are you open?" She punished me with a glare. The first time I opened a bank account – "saving" or "checking account"? – this was all very new for a first time newcomer from Poland.

The next day I had a seminar, which stretched out through the next two meetings. There were questions and discussions and so forth. I shared a room with Kung, who helped me very much, among other ways – with the language. The first letter came to me at the beginning of my time in the United States – a letter from my mom, sent from Poland before my flight out, wishing me a good stay. I also received an invitation to an annual party organized by Traub, as head, for all of the department employees. That is where I met Traub's (second) wife, Pamela. Because Traub's book from 1964 was dedicated "to Susan," I nearly came out to Pamela with "nice to meet you Susan." Kung with his wife also tried to introduce me to local life in Pittsburgh.

Traub wanted to organize for the three of us – myself, Traub and Kung – writing a paper. Kung, I felt, after receiving his PhD, was not too eager to take on this project. He managed to loosen his bonds with Traub, and in the end only I remained as Traub's 'research mate.' Later, Kung's interests definitively went towards hardware questions. He moved to Harvard and made a career in the field. The other person visiting Carnegie-Mellon was Leslie Valiant. He tried to obtain a position at Carnegie-Mellon when I was there, and he did not receive Traub's support, which Traub later regretted. One of Valiant's weaknesses, according to Joe, was his poor American English. Valiant was British, after all. Later, Valiant went to Harvard and in 1987 received the Nevanlinna Prize in Mathematical Aspects of Information Sciences.

BK: Since we are already on the subject – Kung seemed like a very talented individual who knew exactly as much mathematics as he needed for his work.

HW: He was a product of the American schooling system, which is, in my opinion, very bad. Of course, people who learn on their own and are by nature autodidacts are not hindered by this system – however, the system does not in fact teach anything. I met many famous mathematicians in the United States who did not know fundamental things. One of these, a man who had very good results in approximation theory, I met the following year. He did not know what a Jacobi matrix is – up until this point, he had only worked with one-variable functions.

BK: We only learn what is useful to us at any given moment. A pragmatic, American approach.

HW: That's how it is.

BK: What kinds of impressions did you have of Pittsburgh as a city?

HW: I knew that Pittsburgh was an industrial city, so I anticipated that the stay would be like going to Silesia, for example. In the United States Pittsburgh has the reputation of being dull, dirty, and industrial. And indeed, that's the way it was in the 60s. However, when I arrived it wasn't so bad anymore. At the beginning of the 70s, there were efforts to clean up the city, to depollute the air and the water, and make the whole city more attractive as a whole. These efforts were successful. The campus of Carnegie Mellon University was very green – it was located in Schenley Park.

Moreover, the city turned me over to a 'host family.' My hosts were Poles by ancestry. They were part of an organization that took care of foreigners. They invited me for weekend outings, family gatherings, parties, etc. The city was also very helpful during my second stay at Carnegie Mellon. It would inform me about various cultural events and made buying tickets easier. Do you remember when we went together to watch Jesus Christ Superstar?

BK: Of course I remember! I also remember Jerzy Grotowski's visit at Carnegie Mellon. There were lots of people who came. Grotowski spoke in French with an English translator. He explained how he formed his theatre. An African-American woman came and began to demonstrate his

theories on the spot. She appeared on the stage, interrupting the lecture, and began to perform Grotowski's exercises. . .

HW: Somebody yelled, "who's in charge?" and the woman was asked out. Pittsburgh also hosted our Polish volleyball team.

BK: Yes, at the time they were world champions, even though they had not yet won gold in the 1976 Olympics in Montreal.

Did the Polish authorities contact you during your stay?

HW: At some point, somebody from the Polish Embassy called me and asked to meet. He came to my office and told me straight: "I am from the security division" – as he called it! He asked me if I had not been involved in any research related to military, and I told him, factually, that I had not. It turned out that he was interested in research in the realm of proof theory. This theory was being studied by, for example, Jacek Blikle, professor of informatics and inheritor of the very famous sweets factory. But that has to do with proving theorems, not commanding an army!* I tried to explain this difference to him. He agreed that several people had indeed told him that he had misunderstood the name of the theory. In the end, he gave me a piece of paper with his contact number: "We have a Baltona store in Washington. If you are ever there, please come. Everything is cheaper." Indeed, a few months later I was in Washington, invited there by Stewart and Rheinboldt of the University of Maryland, and I went to this Baltona store. They didn't want to sell me anything, so I gave the woman the piece of paper I had received with this man's telephone number. She called the number and handed the phone to me. The man was pissed off! "What are you doing! You are exposing me! You have no idea what world you live in. . ." After that phone call, however, I was able to buy some things in the store.

I had another adventure with the Polish Security that had to do with Kung. In 1976, Kung was a Taiwanese citizen with an American green card, visiting France every once in a while to

*In Polish, the words for 'proving' and 'commanding' are the same, hence the confusion on the part of the man from the security division (translator's note).

collaborate with French colleagues. I had the idea to invite him to Poland. This was impossible to do unofficially, because Poland had no diplomatic relationship with Taiwan, but I felt that I could cheat the system somehow. At the time, I was the vice-director of the Institute of Informatics at the University of Warsaw and I sent Kung an invitation. It could have been interpreted as an unofficial invitation, but it was signed 'Vice-Director of the Institute of Informatics at the University of Warsaw.' Kung applied for a visa at the embassy in Washington, and the invitation was treated as official. Unfortunately, things did not work out well. The embassy contacted the Ministry of Foreign Affairs asking if they had any such invitation in their records. They did not, so they contacted the Foreign Affairs Section at the University of Warsaw. The official there called me and asked: "Did the Institute apply to invite Professor Kung?" All of this happened within 24 hours. I told the truth – I said this was my own, private, unofficial initiative. Chaos erupted! "What are you doing, sir?! You can't do things like that!" and so on, and so forth. Luckily, the official from Foreign Affairs managed to calm everything down, explaining that there had been a misunderstanding, and that I was an inexperienced young man. Kung was refused a visa, and so it was that he never came to Poland. I, in turn, was informed that if that kind of situation ever happens again, I will face serious consequences.

BK: In Pittsburgh you met Professor Altman's family, who you had known during your time as a student at the University of Warsaw.

HW: I met Professor Mieczysław Altman in 1968, when I signed up for his class on solving nonlinear equations. He never finished this class – I think it only existed for one semester. The events of March 1968 interrupted his classes and the Altman family emigrated to the United States. Any contact with the professor was cut off. Serendipitously, we ran into Professor Altman's wife Wanda during our first longer stay at Carnegie Mellon, in Pittsburgh. Grażynka and I were shopping at the Giant Eagle market, speaking in Polish, and suddenly a woman started talking to us who turned out to be Professor Altman's wife.

BK: It's a small world, after all. . .

HW: Wanda wholeheartedly took up the task of looking after us during our stay. We often met with her in Pittsburgh, and then the whole Altman family visited us in New York. At the time, the Altmans were separated – Mieczysław was working at a university in Louisiana, and Wanda was a medical doctor who had succeeded in getting certified to work in Pennsylvania. You could see that Wanda missed Poland a lot – in her presence we couldn't criticize our country in any way. The Altmans' son, Tomek, was studying at the University of Pennsylvania. He was interested in mathematics and numerical methods. I once conducted a discussion – via Tomek – with a lecturer in numerical methods at his university on applicability of Gaussian elimination for matrices larger than 30. Tomek's lecturer adamantly claimed that Gaussian elimination cannot be applied to these kinds of matrices. In the end, however, he agreed with me that – in fact – it could. . .

We saw the Altmans' daughter, Basia, in New York many times. Tomek completed a PhD in computational mathematics and then worked at the University of Kentucky in Lexington, where there were many Poles, and then in Denver, Colorado. In the 80s, Professor Altman visited Poland – at the Banach Center, the janitor greeted him with the words: "Good morning professor, we haven't seen you in a long time." To this day, I have contact with the Altman family from time to time.