Interview with Božena Mannová

In the world of computer science, she is known as Boba Mann - a recognized expert on computers and programming. Past retirement age she is still working at Czech Technical University in Prague and is newly leading the Prague 6 programming club as well as training new great IT experts, some of whom she can boast of knowing.

"In the 1990s, I led, and actually still lead, a software engineering course at the Faculty of Electrical Engineering, where students present the great things they invent as part of their projects. Back then the student, Ivo Lukačovič, came and said to me: I will show you my project. He showed how to search all the sites on the Internet and look for answers to questions. I would like you to realize that what I am going to show you here now is a great future. And he was right, he demonstrated the idea of the future Seznam search engine in my classes, " recalls Božena Mannová. Now he is famous.

Are today's children in danger because of their use of computers, tablets and mobile phones, or have they simply adapted to the times. How much are we as adults responsible for helping them?

The answer is complex. Of course, it's bad when children are always on mobile phones. I have grandchildren and great-grandchildren and their parents have taken a strong stand. The children don't have a TV at home and their parents don't even let them use a computer. But you often see a mother putting a tablet in her child's hand as well as looking at something on her mobile phone. It is wrong when parents give their children mobile phones in order to avoid talking to them. But on the other hand, we should teach children to use technology so that it will help them in the future.

Is there an advantage in that children no longer have to fiddle with data and information that they can find at any time and therefore have time for other projects...
However, even searching on the Internet has its own rules and you need some skills for that. To find what you want to know, you need to be able to ask a question in a search engine. Maria Theresa established a school that was called trivial, because the so-called trivium, i.e. writing, reading and arithmetic, was taught there. We have abandoned counting, children have calculators and cannot add two to three. I think that one of the biggest mistakes of our Czech education system was the abolition of the high school diploma in mathematics.

But many of us can't do that and we all have calculators in our mobile phones...
It's a shame that the subject is called mathematics. Why is it not counting? Counting can be so interesting to learn! Although calculators will calculate the result accurately, we should still have the basic information in our heads, and not look for everything. It seems to me that the information we find on the Internet is taken out of context. And children will not learn that context from the Internet.

What led you to get into computers and programming?
As a child, I wanted to be an actress, my friends even brought me an application for the Czech Drama School, because I was always acting, reciting and singing somewhere. But I was also good at maths and my father decided that I would go into electrical engineering.

So that is what I did.

I believe that you met your husband at school, you went to Canada with him in 1969...
Yes, and there I studied Computer Science at the Faculty of Mathematics of the University of Waterloo in Ontario. The university was relatively young at the time, it was founded in 1957, and today it is one of the best in the world for computer science.

Was there a big difference between education in Czechoslovakia at the time and in Canada?
Above all, the difference was that we left before the Russian invasion. My husband taught at the university there, and since he believed that a woman should work so she did not get bored, I applied to the university, which I paid for. I graduated with a master's degree. There was a big IBM computer there then, which we knew nothing about in my country. And that wasn't the only difference. In the morning, I sent our child to school and went to the university library to get a coffee, a table and books. Yet, there were none about computers there.

In this context, I could also recall our later SOFSEM seminars in Czechoslovakia after my return, in which the philosopher Jan Sokol and Ivan Havel were also involved. This was so much more than the opportunity to find a book about computers and programming. The two of them would lecture us for six hours and then we would talk about what was new.

Why did you return from Canada in 1971? You couldn't really put your computer science knowledge to good use here.
My daughter wanted to come back and I also have strong roots here. Reciting poetry in English is simply not possible.

Didn't you regret it later?
No. Then in 1989, when the Wall came down, I went to Wencelas Square in Prague to celebrate and I realised how glad I was that we came back. And I'm still happy even now, even though the almost twenty years of normalization were difficult.

What kind of work did you find here?
When I returned, I wanted to work as an assistant at the Faculty of Electrical Engineering, but since I didn't have the personnel requirements for that, I joined the Computer Center. There everyone had been expelled from the party because they had returned from abroad or because they had signed the Charter against Communist rule. As you can imagine it was a great group of people, with many ideas in common forged together by comradeship. Because I was seen as against the regime I was not given the opportunity to study until after the year eighty-nine, when I moved to the university computer department.

However, before coming to the Faculty of Electrical Engineering, you also worked at a secondary schools and taught at the Arabská High School in Prague.
At the school, we collaborated with the Faculty of Education and, for example, in 1986 we helped introduce the subject of Informatics to secondary schools. I wrote a number of textbooks on it. I started teaching at Arabská School in 1973, and those experiences came in handy when writing textbooks. At the time, we lived across the street from Arabská. I was on maternity leave and a friend who taught there came to see me, saying that she was struggling with her nerves and asked whether I would take over part of her work . I only had graduation classes for about three hours a week and I enjoyed it. Programming can be fun and these classes were attended by extremely smart kids.

Now you work with even younger children and lead a programming club at the Bílá

Elementary School.
Yes I was approached by the Prague 6 area councillor, Ms Kubíková, to see if I would like to help with a project promoting cooperation between the Czech Technical University and ZŠ Bílá primary school in Prague 6. As I wanted to try teaching programming as part of the project, I offered to lead a group for children from fifth to eighth grade. In order to be a good teacher, a person has to be, I don't want to say, a psychopath, but a driven personality, because you are selling yourself as an expert guide and, at the same time, you can't be perfect all the time. Especially in programming, because there will be children who can do more than you.

Do you have such genius children in your circle?
Above all, these special children think faster. But they also need to be well managed, because only two or three percent of the population can become good programmers. It's similar to music, if you don't have talent, you won't succeed. And just like in music, in programming you have to find and capture these children. I went into teaching programming with the surety that I understand it, that I know what is essential and that I know what to teach. But it was too complicated for the children. I told my grandson and he replied, grandma, teach them SCRATCH. This is a graphical language that you work with visually and you don't need to know much about it. I learned it in three hours, showed it to the children, and in half an hour they programmed a walking cat that meowed. They were better than me.

Using that language, these students who are not computer geniuses could also succeed in the ICPC competition, i.e. the International Collegiate Programming Contest. What kind of competition is this?
It is a world competition in programming, which was established in the year seventy-four in the United States at the University of Texas. The university teachers there then thought that they would start a very unusual event- a programming competition for students. And it turned out, the competition has been going on for almost fifty years and still has the same rules, and currently 75,000 students from 3,500 universities take part in it every year around the world. Student teams of three have one computer, now a laptop, and ten to fifteen tasks. Whoever solves the most tasks first wins. They have five hours to do it. An automatic evaluation system runs above them, which checks the solutions, which can be programmed differently and in different languages, and the system decides whether the solution is correct.

And you are the director of this competition for Europe. And the only woman among men.
It's one of my hobbies. The final will be in November, I'm looking forward to it. The other hobby is the history of computers, we had an exhibition prepared at the National Technical Museum last year, it was beautiful and unfortunately no one saw it, as it did not open due to Covid.

What fascinates you about programming?
Everything, I'm still programming, when there's a competition. I'll take the easiest example, and if I can solve it, I'm happy.

Do Czech competitors also bring prizes from the ICPC?
Unfortunately, the Russians win rather often, because they have been trained since childhood. There are always one to three teams from Europe among the twelve best out of one hundred and fifty finalists. Poles are regularly among them, because I know the Rector from the University of Warsaw, so I know that they have also been working with their

students since elementary school. Programming must be practiced. But in 1998, the team from the MFF University Karlovy Vary from Prague won the world final. They are still among the best in the world.

And why don't we also train children in programming?
Programming is now to be introduced in elementary schools, but I am afraid that it will be a problem to find teachers. There are a lot of people here who know how to program, for example our graduates from the Faculty of Electrical Engineering win competitions with drones and robots. But they lack methodology and pedagogy. They can explain it to the clever, but hardly less gifted girls. And every child – a person who knows how to program, won't work for low wages in school when he can gain so much more in industry. Few women dare to enter this field as well. We do not feel strong enough against men. I've been doing working at this for a long time and I don't mind. But being a woman in IT is still not common. The guys will accept you, but, God forbid, you are better than them. But now even that is possible. Last year, a girl from our department won the IT SPY competition for the best informatics graduate.

Is the Bílá elementary school an exception in the teaching of programming and computers?
There is a good principal there and I think it is very good that we are trying to pick up the children and point them in the right direction. As part of the cooperation project between CTU and ZŠ Bila, we have agreed that each class will go on an excursion to our electrical engineering faculty, where we will introduce them to what the field can offer. So, we don't teach them directly, but we explain to them what biomedicine is, what a robot can do, how a TV studio works, how lightning is created. And it is up to them to then say, Teacher, we are interested, we want to know more.

And is it successful?
I just had a dad email me that his son was on a field trip and would really like to attend my club. But it's for fifth grade and up, and he's only in fourth, so he wondered if I could make an exception. Of course, I will!

- **Dr Bozena Mannová** graduated from the Faculty of Electrical Engineering at the Czech Technical University and later worked at the Faculty of Electrical Engineering. She was the first woman to work working in the Computer Center. After the Wall came down in 1989 she continued to teach at the Department of Computers
  In their early marriage, Bozena lived with her husband in Sudan and Canada, where she also devoted herself to computers. She graduated in Computer Science and received the degree of M. Math. at the University of Waterloo, Canada.
  After 1989 she received her Ph.D. Her achievements include:
- director of ICPC competitions for Europe
  European Union Woman of Achievement for the creation of the British-Czech educational community of teachers with Professor Christina Preston, founder of the MirandaNet Fellowship

holder of a medal from the Ministry of Foreign Affairs of the Czech Republic for representing the Czech Republic abroad
teacher at Arabská Gymnasium, now leads the programming club at ZŠ Bílá