Oral History of Herman Beke

Interviewed by:
Doug Fairbairn

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Doug Fairbairn: OK. So we're at the Computer History Museum. It's June 12, 2015. And I'm Doug Fairbairn. And I'm here interviewing Herman Beke – Baker, Beke [pronounced like Baker without an R] – who has a long history in electronic design automation and other areas.

And we're delighted to have you here. Thank you for coming. We're glad to be able to set this up on short notice.

Herman Beke: OK.

Fairbairn: So as I mentioned earlier, Herman, we'd like to go back to your early family life. Just tell me a little bit, sort of a snapshot, of where you grew up, what kind of home, what your father did, what your mother did? Just tell me a little bit about your family life, brothers, sisters, just to sort of set the stage for our later discussion?

Beke: OK. I was born in '49. And actually it's interesting. I can explain exactly where I was born. Even an American might know where it is.

There is one village, a little village between Waterloo, where Napoleon had his war, his final war, and Brussels.

Fairbairn: Oh, OK.

Beke: And I was born in that village. It's called Sint-Genesius-Rode. It's just everybody can locate it.

Fairbairn: Everybody can find out, OK.

Beke: So my father was a teacher in the primary school. And my mother was just not working.

Fairbairn: Homemaker, working hard.

Beke: Yeah, working. But not making money.

Fairbairn: Do you have brothers and sisters?

Beke: Yes. I have three brothers and three sisters. So I was-- first, we had four brothers, four of us. And then three sisters at the end.

Fairbairn: Wow, big family.

Beke: Yeah. And actually my father was actually teaching the first year of primary school. So I went to school and had to sit in the class with my father. And my brother and myself went together.

Actually, I started early I was only five when I went to first year. So that's kind of interesting.

Fairbairn: Was that difficult?

Beke: We had to say daddy at home. And we were not allowed to say daddy in the school.

Fairbairn: You had to call him Mr. Beke, yeah?

Beke: Yeah. It was meester, which is the teacher, but in Flemish, meester. And if we made a mistake, he was very mad. That's the way it goes.

Fairbairn: So your native language is Flemish? [Dutch and Flemish are the same language. The spelling is identical, but the pronunciation of words is a little different, once in a while]

Beke: Yes. Yes. And since we were so close to Brussels, there's a lot of French in Belgium also. So the second year, we already got French classes, teaching us French. So I have not a lot of practice. But I'm good in French too from my early days.

Fairbairn: Not to jump ahead, but when did you learn English?

Beke: Well, that was in the secondary school. Only in the last two years, we had one year of English and one year of German. Because German is the third official language in Belgium, aside from French and Dutch, Flemish.

So it was not so good [in English]. I know in the early days my German was much better than my English. Because when we were like 15, every year we were making bike tours in Germany.

Fairbairn: Oh, interesting.

Beke: And so I had this principle. I have kept it alive for a long time, [but] was forced to give it up [eventually]. When I went somewhere, I always first studied the language. So when we were 18, in the last year of secondary school, we went on a tour to Italy. So I studied Italian.

Fairbairn: All right. Well, we gotten a little bit ahead. So you made it through the first year with your father as the teacher.

Beke: Yeah. Well, I stayed in that school for six years. That's the way it worked. And this was the very local school, close to where we lived.

I was a good student. Too good a student for my father because. [at that time] he was very young. and his principal at the school was an older person and very conservative. And my father, yeah, for instance he thought it was important once in a while to go and walk with the kids in the woods. And he [the principal] warned him, no, you have to teach them.

So my father was a little bit aware of all these problems with this principal. And so he only told me 20 years later that in the first year, actually I was the first of the class. Because you still had to do exams and you got points. These days, it's different. But we got real points, nine points on a scale of 10 and so on.

And so I was the first of the class. And my father basically was afraid that the principal was going to be upset that he had favored me. So he basically miscalculated so that I was not the first one. And he showed me that 30 years later.

[LAUGHTER]

Unbelievable. So that's all I remember.

Fairbairn: So then you went on to secondary school? Is that the--

Beke: Yeah.

Fairbairn: Did you have an interest in math or technical studies at all at that time?

Beke: Yeah. Well, see my father, he thought I was very good in languages and not so good in math.

Fairbairn: That's what he told you?

Beke: That's what he told me. And that's what he thought he had seen.

And so secondary school, I had to go to Brussels. That was what we selected, where we were going at. And so you could either go into a more language oriented [direction], studying Latin, and so on. Yeah, those were the times. And so there was also math and Latin. That was actually the thing that was necessary to go into engineering later. That was the best [preparation for later engineering studies even though] you could do otherwise.

And for some reason, and the fact that my father said that I wasn't good in math, stimulated me at proving that he was wrong.

[LAUGHTER]

And so I wanted to go into Latin and math. And he wanted me to go in Latin and Greek, which is perfect then to continue in language [studies]. And so I had to do all kinds of tests. And so I was [proven] right. I was good at math. So my father said, OK, you can do what you want.

So I went into this Latin and math. And doing so I already got the right preparation[for engineering studies later]. And I must say we had very good teachers there. This was-- yeah, what was it, in the '60s.

[I am now explaining why we had such good teachers in the secondary school.]And so the World War in Europe. Of course, the Germans invaded Belgium. And yet people were teaching at the university. And, of course, they went on. It's not because the Germans all of a sudden took over [that they had to stop teaching at the university].

When the war was finished, these people were basically bumped out [as a professor] because they had cooperated with the enemy, which is ridiculous. They were just [teaching]-- if you teach math [you are not cooperating with the enemy].

Fairbairn: They were just trying to survive.

Beke: Yeah. What else can you do? So according to the official thing, they should have quit their job because the Germans were now taking over. Now, why am I saying this? All these people got bumped out of the university. And the school where I was at that time had a lot of these people, who teached in the last two years. So I had a very good teacher in math, in physics, in chemistry.

Fairbairn: At the university--

Beke: They were all [ex] university professors, teaching to the little boys [in secondary school now].

Fairbairn: Interesting.

Beke: And so that's how I got interested [in engineering]. My main interest was actually in chemistry. So when I was finishing in secondary school, I went to university and started. It was a five year study to become an engineer. Now, the first year is general. But my intention was I'm going to do chemistry.

Fairbairn: So what university did you enter?

Beke: Leuven.

Fairbairn: Leuven. And what year was that?

Beke: '66, I think. Yeah, '66. Because I finished in '71.

So my idea was to become a chemical engineer. Because I enjoyed all these formulas and so on.

Then we got some general courses, including chemistry. And so after one year, I thought, hm, maybe that's not really what I want. So I said, well, I'm going to go into electricity, without making a choice between power or electronics. My inclination at that time was power. And so a year later, no, no. So I went into electronics.

Fairbairn: Good choice.

Beke: Yeah. And it's strange enough.

Then I had to do my graduate thesis. And I wanted to do something with programming because, you see, nowadays that's part of your curriculum learning. We didn't have that at the time. So I was so intrigued by programming that I decided to take a special course learning FORTRAN. So that helped me. Then the year after I could basically, as a graduate thesis, write a program. So again, now I was--

Fairbairn: It was for the fifth year, you needed your--

Beke: That's the last year, this-- yeah, the fifth year. I started in '70. I finished in '71.

And so then my graduate thesis was a program basically to automatically cut rubylith masks on a drum plotter from IBM.

Fairbairn: Yeah. We talked about this earlier. The cutting of rubyliths was necessary to create masks for integrated circuits.

Beke: Yeah. And so first I wrote a program, so all you had to do is to define all the rectangles and polygons. There was a way to define a rectangle. And then you could repeat, and copy, and cut and paste, so to speak. That's what we would call it now.

So that you could, with a minimum amount of actually [punching] cards going to the big IBM machine, you could define the masks. And then it automatically cut. The first version had a cutter that only allowed to cut horizontally or vertically. And for the second one, we had a heated needle. And then you could cut in any direction. And, of course, then it went much faster because otherwise you had to--

And so there was a program of sorting all these lines first. It took all the lines needed.

Fairbairn: Who steered you in this direction? How did you become interested in this particular problem?

Beke: Well, I was interested in programming. That's why I followed that course.

And then Professor Van Overstraeten was running the lab basically. And he kind of said, well, we need this thing to cut the rubyliths. The main reason was that, if you made a mistake peeling the rubylith, you

had to do it manually again. And so if we would be able to do it on a drum plotter and we made a mistake, well, one could just rerun the program and have another layout.

Fairbairn: So in this lab, they must have already been designing some simple integrated circuits?

Beke: Very simple. I remember, when I did my graduate thesis, they had just managed-to produce working silicon- on a 1 inch wafer. And so they were very proud. I remember they were able to make the first diode. Then they made the first transistor.

Fairbairn: Oh, so individual components.

Beke: Yeah, yeah. That was in '70, '71. So that's how I graduated as an electrical engineer. But I already had started writing EDA programs. We called it CAD at the time, and not EDA. And then Van Overstraeten, who was the founder of IMEC afterwards, he asked whether I was interested in a PhD. I said yes. And so then I started working on computer-aided layout as a topic.

In the first two years, I actually tried to develop programs to automate the layout of bipolar circuits, a very difficult problem. It hasn't been solved even today I think, on how to automate analog layout. So I decided after two years to tell Van Overstraeten that this was not working. I had to do something else.

And then there was just another Assistant Professor in the lab, who did a PhD in Stanford, Willy Sansen. Willy had worked as a consultant with GTE Sylvania in the Boston area. And he had used a layout program there for CMOS cell-based layout. I don't remember the name.[the program was written by Roland Mattison] And he suggested, well, maybe that's a good area. If you want to do computer layout, why don't you write a program to automate the layout of standard cell-based CMOS, which I did.

Fairbairn: So this by '73 or something, you were working on this?

Beke: Yeah. I started in end of '71, for two years on the analog stuff. And then by '73, I switched to CMOS, cell-based CMOS.

Fairbairn: Cell-based CMOS, right.

Beke: And so I did my PhD in '77. But I already had finished my work in '76. But then in those years, we still had to do military service. So while they were reading my thesis, I was doing mandatory service.

Fairbairn: So in that timeframe-- so you wrote a program for standard cell-based design. This is still part of the university, right?

Beke: Yes.

Fairbairn: Did they use that for actually designing integrated circuits or laying out integrated circuits?

Beke: Yes. I still have a picture at home of the first cell-based design they did with my program. And it was mostly a test of their first cell library they had made. You can see between '71 and '77, they went from a diode to cell-based design.

Fairbairn: So were they actually doing the fabrication at the university?

Beke: Yes. Prototyping.

Fairbairn: So that's pretty early work for cell-based design.

Beke: Yeah

Fairbairn: There was not a lot of that kind of work going anywhere else.

Beke: Yeah. I can tell you a story about that.

Fairbairn: Tell the story.

Beke: A little bit later when I started selling the program and I started Silvar-Lisco, , I remember visiting American companies. And so when I told them that I was from Belgium and I had this program to do IC layouts, their reaction was: in Belgium? How do they know how to make chips in Belgium?

[LAUGHTER]

Fairbairn: Yeah. Yeah. I can understand that.

Beke: Yeah. They didn't realize. But Professor Van Overstraeten actually did his PhD also in Stanford. So he knew all of the people.. So he had the links here. So anyway--

Fairbairn: So by '76 then, you had a cell-based design program.

Beke: Yeah. And there was interest already from industry to use it in Europe. And so, while I was doing my military service, I was actually maintaining my program and upgrading it. And also having calls from early users.

Fairbairn: So were you just letting them use it? Were you selling it?

Beke: At that time, we already had decided [to commercialize the program]. The early users tried to hire me first, all these companies, because that was a cheap way to get access to my program. And then, together with Van Overstraeten, we decided to set up a little company. And that company was called Lisco. It stands for Leuven Industrial Software Company.

And so while I was in the army, they were allowed to use it, to benchmark basically. And I helped them. And I learned a lot from that too because there's some difference between a PhD program and something [to be used in industry].

Fairbairn: Technical usage, right?

Beke: Yeah. And so when I finished my PhD, when I came back from the army, I graduated and then started really selling the tool.

Fairbairn: And what year was that?

Beke: '77. September, '77, I did my PhD. And I still know my first client-- I do remember it was Bull, the French computer company.

Fairbairn: Computer, yeah.

Beke: They were my first client. And then my second client was actually six copies sold to all different ITT local affiliates in Europe. And then I sold a few more. And I maintained. And I got my first employee. Because before that I was an integrated company. I did everything myself.

Fairbairn: Vertical integration.

Beke: Yeah. Then, of course, we needed to go to the US because obviously that's where the big market was, not only in Europe.

Fairbairn: Before you get onto that, so you took what you did as a PhD and started a company, which is a very familiar sort of path for people coming out of Silicon Valley or US universities. Was that unusual?

Beke: Very unusual. Some people declared me crazy.

[LAUGHTER]

They asked, "Don't you take the offers from these companies?." And I know what I said. Well, I don't want them to get it [my software] for free. Actually, I have always liked to do what I wanted to do, so to speak. And going to work for a big company at that time was not very interesting to me.

Fairbairn: So entrepreneurship was in your blood.

Beke: Yeah. It must have been. Afterwards, you think, wow, that was brave to do so. But I just did it. I didn't think too much about it.

Fairbairn: When you're young, it doesn't seem such a big risk, right?

Beke: Yes. Well, actually my thing was if it doesn't work out, guess what? I can still go and work for these companies.

Fairbairn: Yeah. Sure. I had the same feelings myself. So I understand completely.

Beke: So that's when we decided to go to the US.

Now, obviously, I immediately had a client. It was Digital Equipment. They were my first client. And actually they used my-- I didn't know that at the time. But afterwards, they told me --they used my program to design some of the chips for the MicroVAX.

Fairbairn: Yeah. And what was the name of your program?

Beke: It was called-- the first one was called CALMOS, C-A-L-M-O-S. And that was having cells with only an output at one side. And then the other one was CALMP. And MP stands for MultiPorts, a very strange name. But that had outputs at two sides. So you could put them in rows and then have routing channels in between. It was channel-based routing.

Fairbairn: And CAL, did that stand for something?

Beke: Computer-aided layout.

Fairbairn: Computer-aided layout, OK.

Beke: And MOS was off MOS chips. And then CAL-MP the difference was with multiple ports. And it was also because the competitive program in US was a military program. It was called MP2D. That's where the MP also came from.

Fairbairn: I see. OK.

Beke: So my first client was Digital Equipment. And by that time, I think I had three people working with me. The problem, of course, was how to support DEC from Belgium. So for a while, I went to Boston every three weeks, for a week. Can't do that.

So we thought, yeah, we have to do something and find somebody eventually to sell it for us. We were naive a little bit maybe. So we were looking for a distributor. And so we contacted Calma, ComputerVision, and Applicon, who were the big three in terms of layout, editing-- manual layout, editing, using a computer at that time.

And I told you before, we met in '79. Because my first trip to the US, I went to see the Applicon guys and the ComputerVision guys. And the Applicon guy[Peter Jennings] had organized a little conference in Cambridge.

Fairbairn: At MIT, right?

Beke: At MIT. And I was in a session, with two speakers: me and you. You were presenting the stuff at Xerox Research Lab.

Fairbairn: With Xerox.

Beke: Yeah. And so I was presenting at the time, probably still CALMOS, not CAL-MP. That I don't remember, when I switched.

And so then I went to see ComputerVision here on Bowers Avenue. Well, that didn't work out because, ComputerVision, they wanted to give me 5% and they would keep 95%. And I told them I have to live with some people. From 5%, that's not going to work.

So I ended up looking up Bill van Cleemput. He's also Belgian. He started doing his PhD with Van Overstraeten when I was with Van Overstraeten. But then he finished his PhD, also in layout,-- but he remained in analog layout, by the way-- at Waterloo University in Canada. And when he graduated, he became an assistant professor in Stanford University.

And so I had worked with Bill in Leuven. And so I just looked him up in the phone book and called him while I was here. And we met.

And it happened that Bill, at that time, had started his own little company, called Silvar. And Silvar stands for Silicon Valley Research. He had two PhD students basically commercializing a PCB program, to do a PCB layout. But they were in the process of moving that into a gate array layout program.

Bill basically told me, well, the only solution to your approach is to create your own company here. And so, with his help [we started Lisco Inc], because he was then the CEO of the American Lisco, Inc. in Palo Alto. So we had then Lisco in Belgium, Lisco, Inc. in Palo Alto. And then he had his own Silvar, Inc.

So we were doing cell-based layout. Silvar was doing gate array layout. And the first year we sent many bills to each other and very few to outsiders. So then pretty soon we said, yeah, well we should merge. And this how Silvar-Lisco was started. I think the merger happened in '81. And then it went very fast. I don't remember, but--

Fairbairn: Were you still living in Belgium at the time?

Beke: Yes.

Fairbairn: Making trips here.

Beke: Initially, it was simple. By that time, I think we had like 15 people in Belgium and a similar amount in the US. And yeah, I came-- I've been a traveling salesman for a while.

Fairbairn: So were you responsible for selling in Europe and he was responsible for selling in the United States? Is that how it worked?

Beke: In the very early days. But then soon we basically started hiring a sales force. Because we went public in '84 on NASDAQ. And I think, when we went public, our revenue was like $19 million worldwide.

So we had an office in the US. We had an office in Europe. We had a sales force in Europe from the Leuven office. A sales force from the US from the Palo Alto office. And then we had a distributor in Japan. And we were doing extremely well.

Fairbairn: What was your major competition at that time?

Beke: In the very early days, there was one company-- it was not even an American company. It was called COMPEDA.

Fairbairn: I remember the name. But I don't know anything about it.

Beke: COMPEDA. And they had what we would now call a silicon compiler. It was called GAELIC.

Fairbairn: GAELIC.

Beke: Yeah, GAELIC. And they were from Edinburgh. And so that was actually our only competitor in the early days. And then in the gate array business, there was VR Systems from Rob Smith.

Fairbairn: Yeah.

Beke: I think he worked from Austin.

Fairbairn: Un-huh. Austin, that's right.

Beke: And then pretty soon there was CAE Systems. They were more in the front-end. And that's actually when I think-- when was Mentor founded, '81 or '82, yeah. So Daisy, Mentor, Valid, were founded.

Fairbairn: Right.

Beke: And actually we had, of course, a need for a schematic editor. Because everybody had to at least--

Fairbairn: Create the design.

Beke: Create a flow, huh.

Fairbairn: Yes.

Beke: And so I remember us buying a schematic editor from a Norwegian university and turning that into, what was the name of the program, SDS, I think, whatever that stands for. I don't remember.

And so I remember in '80-- I think in '81 or '82, DEC, for the first time, had an exhibit.

Fairbairn: Yes, as a first--

Beke: I've been discussing it with Kevin here. But we don't know whether it was '81 or '82.

Fairbairn: Yeah. I'm trying to remember.

Beke: So there were six vendors, Daisy, Mentor, Valid, Silvar-Lisco, CAE Systems, and VR Systems, And that was the first DEC.

So what happens is that we were doing well. I think we went public in '84. And our total revenue was $28 million. At that time, we had like 250 people, employees. And then after we went public, IBM [became our partner]-- that was when Apollo and Sun basically came in with workstations and then DEC, Digital Equipment, with it's VAXstation, which was never a success.

Fairbairn: Right.

Beke: And somehow we were VAX guys for our customers,. even though we were doing internal programming on Apollos-- we had the number four Apollo. The first one that came out of production was installed at Silvar-Lisco in the US.--

Then IBM was going to make it's own workstation, the RT-PC. And they wanted to go into the EDA business. And, of course, IBM has a lot of internal EDA. But they thought that this was too good to put on a workstation.

So they wanted to go with third parties. And so everybody is bidding, Daisy, Mentor, Valid, everybody, Silvar-Lisco. And the short list was Mentor and us. And then in the end, they [IBM] made a deal with us.

And so for two years, we adapted our tools to run on the IBM workstation. Actually, everybody thought this was a superb deal because I remember our stock was at $5. Then the IBM deal was announced, and the next morning our stock was at $9.

Fairbairn: Yeah. Everybody associated IBM with success, blessing and so forth.

Beke: And so what happened is that for these two years, we spent quite some effort. IBM paid for all that development cost, with a profit to us. But then, when IBM finally launched this machine, the problem was not the software. The problem was that the RT PC was such a dog compared to Sun and Apollo. I think they must have given away a thousand and sold 50. And they wrote off the complete program, took a write-off of $300 million and said ''thank you guys'' [to us].

Fairbairn: You had lost all that time, in terms--

Beke: We lost all that time. And the reason I'm telling this is that two years later, as I said, our top was $28 at that time. And then we went down as fast as we went up.

Fairbairn: Was that mainly due to all this effort going to the RT? Or were other--

Beke: No. It was mainly due-- while we were doing all this effort with IBM, we had, of course, hoped it would be successful. And so did the market because the price of our stock went up initially. So when they took the write-off, what happened there was a little start-up, who, while we were doing all this, had developed a competitive offering-- we were number one in cell-based layout anyway. And in gate arrays, we were competing with Tangent.

Fairbairn: Oh, yes.

Beke: So, yeah, let's say-- I'm not going to say that we were better or worse.

Fairbairn: Right. But you were competitive.

Beke: We were very competitive, doing well. But while we were doing all these things for IBM, of course, you don't spend all the effort on furthering your main products. So there was this little start-up called SDA, who managed to make a competitive cell-based layout program. And they basically took our market.

Fairbairn: Because they were on the right workstations. They were on Sun.

Beke: Well, they were on the right workstations. We were on IBM and on VAX mainly. And then, of course, we also went into Apollo. But on Apollo, we were a "me too" because Mentor was on Apollo.

And then SDA became Cadence. And what happened is that our revenues went down-- I don't remember [exactly], but we went from $28M to $21M to $15M to $9M. And then, of course, we were running out of cash.

So I taught, yeah, we have to do something. We still had a big development group in Leuven and a bigger development group at that time in the US.

Fairbairn: Now, somewhere along here had you moved to the US?

Beke: Yes. I think when the IBM deal was signed, I was brought over. I was running engineering in Leuven. And then I came to the US to do engineering, or engineering worldwide, so to speak. And then a year later, I became VP of Marketing, trying to improve on things while we were going downhill. But that didn't work out. Now what happened, meanwhile IMEC had developed something, a high level synthesis tool called Cathedral, Cathedral-I, Cathedral-II, Cathedral-III.

Fairbairn: That's a group within IMEC, not related to your group.

Beke: No, no, totally different [organization]. We were in layout.

And this [Cathedral technology] had been taken up by Philips Semiconductor, which is now NXP. And they had developed their own version, an improved version, called Pyramid.

Then Philips, they had a bad history of using the tools that were developed in Philips NatLab, the research lab [of Philips in Eindhoven]. Because the problem with Philips NatLab was: yeah, they made a beautiful tool. And then they kind of threw it over the wall. And then the engineers had to use it. And every time there was a problem, the research guys said ''oh, don't bother us because we're working on the next great thing"--

Fairbairn: They're researchers working on the next thing.

Beke: We're working on the next great thing. So Philips --[decided to make a deal with Silvar-Lisco]. Of course, we helped them make a decision because we needed something. So the decision was made:

We [Silvar-Lisco] signed a $20 million contract with Philips Semiconductor to take their Pyramid-- and also we signed an agreement with IMEC that we could use their technology-- to develop [and support] a commercial product that Philips could use. But we also would have the right to commercialize the tools to the outside world afterwards.

And so when Silvar-Lisco needed cash, well, then what happened is that the company was split in two pieces. And the Leuven piece took the $20 million deal from Phillips. And stopped working on layout and started working on high-level synthesis.

And Silvar-Lisco [in the US] went on for a while. But I was not involved with that any more. So I was now running this project for Phillips.

Fairbairn: And you went back to Belgium.

Beke: Yes. I got back into Belgium-- was running this Phillips $20 million project.

And since Silvar-Lisco needed cash, the Leuven activity, with the contract, was sold to SCS. Silicon Compiler Systems.

Fairbairn: Oh, I see.

Beke: So I started working with Micha Burich [the VP of engineering of SCS] mainly.

Fairbairn: I worked with Micha for many years.

Beke: Yeah. Six months later, SCS was acquired by Mentor. So all of a sudden, now I was working for Mentor.

Mentor renamed the entity in Leuven, the European Development Center, EDC, of Mentor Graphics. Now, we developed what was called DSP Station for Mentor.

Fairbairn: Oh, yeah.

Beke: And also for Philips, of course. So I must say, yeah, the problem —both us and Mentor saw was that DSP Station was very difficult to sell. Because it was very advanced. And it gives you an increase--

Fairbairn: Was the DSP Station sort of a specialized version of the Pyramid?

Beke: Yes. It was specialized. It was a commercial version of Pyramid, with some additions and so on. I don't remember exactly. But we started with Pyramid, ended up with DSP Station. It was quite well integrated in the Mentor environment.

Now you know that those were not the best years of Mentor either.

Fairbairn: Yeah. So what year was this? I mean when did you--

Beke: We were acquired by SCS in '89. And then SCS was acquired by Mentor in the beginning of '90. And I forgot what the name of the framework was called: 8 dot 0 ??.

Fairbairn: 8 dot 0, right.

Beke: 8 dot 0, yeah. So that was not a big success. So Mentor was not doing very well. And so we were trying to sell this new DSP Station. And the Mentor sales force, of course, was not really focused on selling this high-level stuff.

Fairbairn: Oh, I know. I'm very familiar with that problem.

Beke: Yeah. So what happened is that by 97, Mentor wanted to close the operations in Europe because they-- well, they had to save money because they were not doing very well.

And that was already with Wally. Wally joined [Mentor] in '93, I think. So we were there before him. He was, of course, Mr. DSP [Wally started the DSP processor group at Texas Instruments, before joining Mentor]. So he was really behind us.

Fairbairn: This is Wally Rhines.

Beke: Yeah. Wally Rhines, yeah.

And [in 97] they wanted to close the business [in Belgium]. I thought there was still a future but instead of selling the tool we had to do something different. Here is my view on what was wrong: You get an enormous productivity increase if you use such a tool. That's what we sell. And it's true. We can prove it.

But when you sell it to a customer, what happens is he doesn't have a productivity increase initially. He has a big dip in the first year because he has to learn, learn, learn [how to efficiently use the tool]. And that's why you can't sell the EDA tool. Because you sell management on a productivity increase. And a year later, they see a dip in productivity.

So my idea was instead of selling the tool, you don't sell the tool. You just use it yourself, create components, and sell the components. So you go into the IP business then. It wasn't called like that in those years.

So that's what I wanted. But Mentor didn't want to go in IP with the DSP Station. So I ended up doing a buyout of the Leuven entity, helped by Philips. Because they [Philips] still were using the stuff. So they wanted further support. Otherwise [if Mentor really was going to close the Leuven operation] they were going to ask money from Mentor.

A buyout was the best solution [for Mentor, Philips and the EDC of Mentor in Leuven] . And they didn't have to lay off the complete group. So basically there was a management buyout. And I renamed the company Frontier Design. It's a quite complicated history.

Fairbairn: I know all these names. But I didn't know how they were all connected.

Beke: Yeah. It's kind of strange. So Frontier started. And instead of selling the tool, we created DSP components. And we got contracts.

Fairbairn: And related components.

Beke: Oh, yes, yes. Our first big contract was with a Swiss company called Phonak.

Fairbairn: Oh, yeah.

Beke: They were in hearing aids. That's where DSP--

Fairbairn: My son has a Phonak hearing aid.

Beke: Yeah, yeah. OK. And they were one of first to use DSP technology to kind of filter noise out and all that stuff. And also their biggest problem was low power.

Now, our high-level synthesis tool was basically a VLIW-based architecture. And so I remember for these guys, we had a 128-bit wide CPU. By doing so, you can do a lot of things in parallel. And so the power consumption was extremely low, which is exactly what you need. Because even with all these power savings, you still needed to replace the battery every two weeks. But in the early days, they needed to replace it every day. So for them, this was a great improvement.

So I think we were doing quite well, but as an IP company, you don't have these big numbers. I think we were doing $7 million a year for two or three years. And then, of course, the bubble came.

Fairbairn: 2000.

Beke: In 2000 to 2001. And so everybody gets nervous. So did we. Because we saw, yeah, if our customers are not spending money, as an IP company it's very tough to survive.

So at that time, I sold Frontier to Philips Semiconductor. They brought in their DSP division. Because Philips was in the business of developing DSP processors, reprogrammable DSP processors. Oh, I forgot the name of that process-- REAL, R-E-A-L, the REAL DSP processors.

And we [at Frontier] were able to make special processors. And then the nice thing about our tool, it's like Tensilica these days, not only do you produce the processor, but you also generate the compiler with it. Because that was one of the old problems of all these DSP processors. They were very well built architecturally. But you had to write a compiler for them before you could use them.

The new company was called Adelante.

Fairbairn: A-D-A-L-A.

Beke: Yeah. Adelante, like in Spanish [let's move forward in Spanish]. It's like Avanti in Italian.

So we started in 2001. And Philips had big plans. It was driven by Theo Claasen. You might have heard his name.

Fairbairn: I know Theo, yes.

Beke: And they were going to invest $17 million in the startup. The problem was that we got going in August, 2001. Well, that's right before September 11. As I remember, we were on a plane flying around the Twin Towers a week before, visiting IBM.

Philips, at that moment, was trying to get IBM as a co-investor in Adelante. And we negotiated it with a lady. She's well-known now, Lisa Su. She was running the DSP group there. And Lisathen became the CEO of Motorola I think. And then now, I forgot where she is now.

Fairbairn: Is she at AMD?

Beke: Yes. Yes. So she was the one that we negotiated with.

Now, frankly speaking, the problem was that the plans were great but the execution never happened. Why? Because Philips, in September, you announce the results of Q3. And like Siemens and like everybody else, Philips announced a $500 million loss, a quarterly loss!. And the next quarter, they announced even more.

So all their big plans of investing didn't come true. And so, yeah, we've been trying for about two years. And then in 2003, the company was dismantled. You had the Leuven part { the old Frontier]. You had the Eindhoven part , the old Philips part.

The Philips part went back to Philips, Philips Semiconductor. The Leuven part was sold to ARM. So, we had to, change the nameplate of the company again. We were now called ARM, Belgium.

[LAUGHTER]

Because ARM was interested in the DSP technology. And so, yeah, we went on for another the six years. But I was not really managing the group because the group basically went on doing DSP technology. I was more in corporate business development. So I was not really running the group anymore. Now,--

Fairbairn: Go ahead.

Beke: --there's one thing that, so many years later now, we can say. What we did for ARM [in Leuven] was that we developed a new processor for Apple. Apple had released the first iPod. But it ate power and could not last more than 10 to 12 hours, or something. And they wanted a new iPod that was running 24 hours.

And so the first one was running on the ARM7. So that's low power, but not low power enough. And so the first thing we did as part of ARM was to develop a special processor for the iPod. And as you know, you're not allowed to say that . Now, so many years later, I presume I can make this public..

Fairbairn: You developed a new processor, the same architecture, but lower power.

Beke: Well, not the same architecture. It was also a very wide VLIW structure. And we consumed much less power. And that was put into the second i-Pod. And so now they had a version that could handle 24 hours without a recharge.

Fairbairn: Hm, interesting.

Beke: And then, of course, this is how things go. And this is Moore's law working. This processor worked very well. I think we did an upgrade for yet another Ipod version. And then they went back to an standard ARM processor. Because meanwhile-- I forgot what technology it was But having a very low power thing on, say, 130 nanometer, five years later, you're on 28.

You have much lower power. So now, it's again an ARM processor. Because that ARM processor is in such a small technology and consumes much less power. And, of course, it has all the advantages of reprogrammability, general reprogrammability.

And so the end of the story is that in 2009, ARM basically,-- they had been acquiring all kind of companies, one in Belgium, two in Germany, Norway, Sweden, France. I probably forget a few. And so the problem was those were are all little groups of 30 people. So they wanted to kind of consolidate things a little bit.-- And so they decided to close the Belgium office, mostly because Belgium is the most expensive country--

Fairbairn: To do business in.

Beke: --to do business, not that we can do a lot about that.

Now, the [Leuven highlevel synthesis] technology still survives because while ARM closed the office, they funded, co-funded, a new startup in Cambridge-- and I forgot the name now [Cognovo]. And then they

brought in a little bit of money and the technology, the DSP technology of Leuven. So while ARM Belgium was closed, the software group,--we still had the software group developing the program further, besides the designers using it.-- That software group then went to that new company. And their idea was to develop the first software-defined modem.

Fairbairn: Hm.

Beke: Now, the big supporter of that thing [software defined radio modem] was Nokia. Now, guess what? They were not so successful in the last few years. So they decided that they were no longer interested.

And so that company [Cognovo] went belly-up. But the technology was acquired by a Swiss company called u-blox. And so the Leuven group is still there. Now, they're working for the Swiss company.

Fairbairn: After all these years, it transforms from one place to another.

Beke: Yeah. Yeah. It's kind of an interesting--

Fairbairn: So let's get back to you. So when you split off from Silvar-Lisco, you didn't have anything further to do with Silvar-Lisco itself, right?

Beke: No. And I don't know exactly-- they were around for a long time, surprisingly.

Fairbairn: Yeah. I thought they were still around today.

Beke: They were supposed to die every minute, as we call it. And every year, they showed up at DAC. They had this huge booth, they were number one to select their booth space because they are--

Fairbairn: They are the oldest one around, right?

Beke: Yeah. Yeah. And DAC works with points, eh. And so they had the first choice. So, I don't know when they exactly disappeared.

Fairbairn: So when did you break ties with this group in Belgium, in its various forms. Go back to where you left--

Beke: With Silvar-Lisco?

Fairbairn: No. With the group-- I mean when you split from Silvar-Lisco, you were then managing the group in Belgium, right?

Beke: Yeah.

Fairbairn: And at some point, you slit from that, right?

Beke: Well, as I said, I was managing the group in Belgium as long as it was from Mentor, and when it was restarted as Frontier and Adelante. When it was sold to ARM in 2003, I basically started working in ARM corporate business development. And I was sitting in Leuven. But I was not working [with the group in Leuven any longer].

Fairbairn: You were not working on that. So let's continue on that. How long did you stay in that position and sort of what was your progression from there?

Beke: Well, I stayed there from 2003 to 2009. I enjoyed my job because I was asked to do interesting things: investigate the strategy, what can we do next?

For instance, I went to meetings with venture capital firms that were investing in health and greentech start-ups. The idea was for me to figure out whether there was a potential market for ARM, for processors. And I did all kinds of different things. And then strategizing how to keep Intel away.

Fairbairn: At bay?

Beke: Yeah. All kinds of things.

Fairbairn: So what happened in 2009 then?

Beke: Well, when ARM closed the Leuven office-- if I wanted to go on, I had to move to Cambridge. And I didn't want to move to Cambridge because meanwhile I already had grandchildren. And I thought I'm too old to move. And so I decided to stop.

Fairbairn: You retired at that time.

Beke: I retired. And I told you up to two months ago I was not active in the field any longer.

Fairbairn: Right. But now you have--

Beke: I have a little startup [where I am on the board of Directors].

Fairbairn: So tell me a little bit about that. How did that come about.

Beke: So I'm retired for six years. What happened is that IMEC asked me to read a business plan of a new spinoff. It was on photonics ICs. So EDA software to create photonics components in standard CMOS, so that you can put them on standard CMOS chips.

I read their business plan and gave comments. And so pretty soon, they asked me to join the board. And now I'm the chairman of the board of that startup [Luceda Photonics].

And I'm back in [the same position as] where I was with DSP Station. Very good technology and a very high level toolset, but small markets, very advanced [and for early adopters].

And also I think, same thing as with DSP Station, if you start using it, your productivity will not increase. It will initially go down. So we'll have to discuss it with the founders. I think we should go more into IP and less into selling the software tools.

Fairbairn: That strategy that worked before.

Beke: Yeah. It worked before. And it's a very similar thing. It's very advanced. But, yeah, it requires training to get used to the methodology and the thinking

Fairbairn: I think design methodology is the hardest thing to do as a business.

Beke: I know. So now I'm doing it for fun. Because, yeah, I think I have some experience in all these fields. So I'm going to try to help them to--

Fairbairn: Chart a successful path.

Beke: Yeah.

Fairbairn: So you said when you sort of spun out your group from the university, that people thought you were crazy. It was a unique thing. Has that become a more common thing?

Beke: Yes. Yes, yes, yes. Oh, yeah.

Fairbairn: Do they have a program to help spinouts and tell me a little bit about that.

Beke: Yeah. I was the first spinout out of Van Overstraeten's lab, which afterwards became IMEC, but there have been many spinouts. I can't remember all these names.

Even in EDA, you have for instance Target Compilers, which was bought by Synopsys recently. You had-- oh, what was it called- Superscape, from Guido ArnoutI forgot the name. It's not Superscape [the correct name is Powerescape. It's technology was acquired by ARM. Another wellknown start-up was Coware, later acquired by Synopsys].

And there were at least five, six, seven other EDA startups. A lot of them in analog, which I don't think survived-- yeah, there's one that is still surviving. But again, they went into IP instead of selling software.[the surviving company is ANSEM]

So nowadays, it's actually the opposite, huh? A lot of people are eager.

Fairbairn: Right.

Beke: And also the financial climate is much better. You see, when we started, people laughed with us. When we started in '79, I needed capital. So I had a meeting with people that were sponsoring all kind of startups. And they laughed with us. Oh, how are you going to compete with Applicon and ComputerVision? You should just join them.

Fairbairn: So is there venture capital available to these companies?

Beke: Yes. You see it is the same thing that happened here probably, oh, 20, 25 years ago. People have been successful, and not all in electronics. But they have sold their companies. So they have a pile of cash. And, yeah, what do you do? You cannot spend the cash. And so they invest it in new startups.

Fairbairn: So some of the previous generation of entrepreneurs are reinvesting.

Beke: Yeah. Yeah.

Fairbairn: That's interesting.

Beke: And it's exactly what happened here.

Fairbairn: Yeah, exactly.

Beke: And so we now see that also in Belgium, which is good.

Fairbairn: So part of the reason I'm asking is the museum here is starting a new center focused on entrepreneurialism and innovation. And really looking at it, not only from a Silicon Valley point of view, but looking at it at worldwide basis. And looking at centers in innovation, and how are they growing, where

are they, what kind of infrastructure ecosystem do they have to support, and that sort of thing? So there's just this tremendous growth in terms of--

At Stanford and all these other universities, Harvard, MIT, and all these other major universities, you are teaching entrepreneurialism as part of the curriculum. And they're the most popular courses. It's like everybody wants to start a company, right? And so I was just curious as to find out to what the state of things was in Belgium.

Beke: Well, it's probably not as--

Fairbairn: Right.

Beke: --expressive ["extensive"] as here. But I think a lot of people want to start their own company. It's not easy. But it's much easier than 20 years ago.

Fairbairn: Right. And you're in the earlier stages, with the previous generation of entrepreneurs mentoring for the next generation

Beke: Yeah. And, of course it's not EDA alone any longer. There's startups in biomedical and pfft [many other areas]. **Fairbairn**: No. EDA is not the--

[INTERPOSING VOICES]

Beke: And then you have the apps guys, special apps for business, special apps for this and that. Some have been quite successful.

Fairbairn: OK. So is there anything significant, or a point you think we might have missed, or you wanted to include in this?

Beke: I gave kind of--

Fairbairn: You gave me the whole thing.

Beke: A description of my life, so to speak, not only my business life.

Fairbairn: I think it was very helpful in terms of connecting a lot of dots in terms of these various companies and plotting the history that it would be otherwise difficult to do that. So I think it's, as with the other oral histories we've done, is good resource for your future people and generations to understand what the evolution of technology was.

So Herman, thank you very much. I appreciate your coming by at the last minute and spending time with us. And very much appreciate it.

Beke: Thank you.

END OF INTERVIEW