

EDWARD DE LAET

An Interview Conducted by

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IEEE History Center

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Edward De Laet, Electrical Engineer, an oral history conducted in 1995 by Frederik Nebeker, IEEE History Center, Rutgers University, New Brunswick, NJ, USA.

INTERVIEW: Edward De Laet
INTERVIEWER: Frederik Nebeker
DATE: 15 September 1995
PLACE: Dayton, Ohio, USA

Nebeker: This is the 15th of September 1995. I'm talking with Ed De Laet, in Dayton, Ohio, this is Rik Nebeker. Could I ask you to get started, where and when you were born and tell me a little bit about your family?

De Laet: Well, I was born in, in 1917, in Dayton--a native--and, my folks were natives of this area.

Nebeker: Yes

De Laet: I went to Chaminade High School, had one year at the University of Dayton.

Nebeker: Were you interested in science and technology?

De Laet: I was interested in radio, electronics, ham radio, and commercial arts. And at the time, I was working for Srepco.

Nebeker: What is that?

De Laet: The original name was Standard Radio, and then later on they changed the name to Srepco. I forget what it stood for. And as a result of my work there, I became acquainted with Joe Desch's department, and so eventually, I transferred from there, went down, and worked for Joe.

Nebeker: And that was a radio manufacturer here in Dayton?

De Laet: No, they, they sold, radio supplies and dealt with the radio serviceman and also the ham radio operator. They were wholesalers of supplies.

Nebeker: I see. And you got that job because of your own interest in, in ham radio?

De Laet: Yes.

Nebeker: And that put you in contact with the electronics group.

De Laet: Right. Because they came in and they made purchases and so forth, so that's what put me in touch with, with Joe's department.

Nebeker: And how did it happen that you got the job, did you ask for a particular job?

De Laet: Yes

Nebeker: Do you remember your first work with that group?

De Laet: Yes, electronic technician. Assisting the engineers there.

Nebeker: Wiring some of these electronic counting circuits?

De Laet: No, at that particular time we were doing a wide variety of work, as I started there in 1940, which predated, of course, the major project.

Nebeker: Yes.

De Laet: And the technicians were heavily ham radio operators. They had some engineers and had a good many of the technicians, and they liked the technicians because there was no such word in their vocabulary that it "can't" be done.

Nebeker: Yes.

De Laet: Whereas the engineers very often came up with every reason in the world why something couldn't be done.

Nebeker: Yes.

De Laet: To give you one example, they had the Hundred Point Convention that came to N.C.R. once a year.

Nebeker: What is that?

De Laet: That was the salesmen that came in. The top salesmen. So this was held at the N.C.R.-- they called N.C.R.'s school--well anyway, it was their auditorium And they came to us and they wanted us to make a telephone that you could talk from one side of the stage to the other side of the stage without wires. And knowing the

size of the tubes and everything, the complexity of electronics at that particular time, this was a virtual impossibility.

Nebeker: OK.

De Laet: Right--“it can’t be done.” So we took the commercial sized telephone, which was larger--had the push buttons on it--than your home model. We used that as a base because it gave the most room to work with, and by the time the show came off, they did exactly what they were told to do.

Nebeker: They got it within that?

De Laet: They got it within that and they did talk from one side of the stage to the other. Bear in mind that this is 1940.

Nebeker: Yes, I know people were starting to develop miniature tubes.

De Laet: Right. Then, when you talk about the miniature tubes, once we got into the binary counters, which was the forerunner of the computer age. The tubes were the size of, say, two thirds of the size of today’s ketchup bottle, your standard tubes. So we came up then with the small ones, that came in somewhat later, and they were, oh, maybe about an inch and a half tall by half or three quarters of an inch in diameter.

Nebeker: These were the ones that Jack Kern was making in Joe’s group.

De Laet: Right. Jack was making them, and he had the things we were working with. In those days we had to make our own; we had to design and develop our own, because they just weren’t commercially available.

Nebeker: Yes.

De Laet: So we made our own tubes, we made the diodes, and that was in Jack’s department, and I know I designed the base for the tubes so this could be plugged

into, into the equipment.

Nebeker: So you couldn't get a standard base that would work?

De Laet: No, it was miniaturized.

Nebeker: I see.

De Laet: I mean there was nothing available at that particular time that miniature.

Nebeker: I see. Was that a Bakelite base, do you remember?

De Laet: Yes.

Nebeker: There was somebody in town who could make it to your specifications?

De Laet: No, we designed it; N.C.R. made it. We made everything ourselves.

Nebeker: I see. I just thought that maybe one could get the bases ready made.

De Laet: No, what it was, it was a takeoff--what I did. I found a plug, a Bakelite plug, that had prongs on it, which was about the right size. I modified the design of that to fit this tube. I combined the two.

Nebeker: I see.

De Laet: By using that, there were sockets available that you could plug it into.

Nebeker: You indicated that you had a lot of different assignments. It wasn't that you were always working for one particular engineer. Is that right?

De Laet: Well I was a draftsman, and so I did a lot of drafting, and at that particular time I was working for Ed Carey, who was the chief draftsman. A combination of things.

Nebeker: Yes. And the function of the draftsman is to produce the final drawings that could be used for patent applications?

De Laet: Yes. For the mechanical the chassis, and gearing, and the mechanical accessories.

Nebeker: What was it like coming to work at N.C.R. in 1940? Did it seem like a good job to

you?

De Laet: Oh yes.

Nebeker: Is that what you wanted?

De Laet: N.C.R. at that particular time was listed as *the* model, one of the model factories of the country. It had some shortcomings, but as time went on, I learned.

Nebeker: And working in Joe's group was--

De Laet: Very rewarding, very rewarding.

Nebeker: Was there a good spirit there?

De Laet: Oh, fantastic. And Joe was able to get the most out of everyone?

Nebeker: Yes.

De Laet: He had a knack for doing that.

Nebeker: Were you typically on sort of short-term projects, trying to get something done by a particular date?

De Laet: Hmmm, not *initially*. Initially the work there at the Electrical Research was more or less routine, and, we occasionally--like the Hundred Point conventions and stuff--had deadlines like that. And then once we got into the Navy project, obviously, anything connected to the war, there were deadlines there.

Nebeker: So you came in 1940, what, do you remember exactly when you started work?

De Laet: No.

Nebeker: I know it was the beginning of 1942 that the Navy project started.

De Laet: Right.

Nebeker: I've been told about this device to measure muzzle velocity that was produced for N.D.R.C. before the Navy project.

De Laet: Yes.

Nebeker: Did you have any connection with that?

De Laet: That one doesn't ring any bells. Also there were, I think, other parts of the company were involved with the Norton bombsight too, but that was not in our department. I think that that was already engineered and it was strictly a manufacturing facility for that.

Nebeker: Do you recall any other projects you worked on before the Navy project?

De Laet: Not really. Well, yes, there was one I was working with Louie, Louie de Rosa, who was one of the engineers.

Nebeker: Yes.

De Laet: And I think, as I recall, I think he left before we got into the Navy project. But, again, for the same Convention they--he designed a brand-new P.A. system for the auditorium. It was state-of-the-art. Really, today's technology hasn't caught up with what he had done back at that particular time.

Nebeker: OK.

De Laet: Down in the footlights, he put a series of microphones. You could walk, just as we're speaking now, from the back of the stage, down to the footlights, and coming out of the speakers would be no change in the volume. It was fantastic.

Nebeker: Without somebody constantly changing the volume.

De Laet: Completely automatic. Automatic volume control. It was very touchy, but it worked. Today you look at T.V. and at all the mikes that they've got all over the place. They could use something like that.

Nebeker: Did N.C.R. make any attempt to commercialize that work that you know of?

De Laet: Not really, to the best of my knowledge. This was, this was Lou's design. He was a fantastic engineer. But this was strictly for their own purposes, in-house.

Nebeker: Yes.

De Laet: In fact, then you had a stereo and he had speakers on both sides of the auditorium. And it was so sensitive that if you were sitting in the middle of the auditorium and lean *this* way, or *this* way, the sound predominantly came out of *this* one, or you lean *this* way and it came out of *this* one. So we had to put one in the center to break this up.

Nebeker: That's interesting, that the electronics group took on a project like that.

De Laet: There was another thing he was playing with--which didn't have anything to do with the work we were doing there. In those days when you made your recording of a full orchestra, you couldn't take advantage of that full dynamic range, because your needle would jump, and jump over to the side groove, so they would have to attenuate that down. He had developed a synthetic way of taking your record and putting that dynamic range back in.

Nebeker: OK.

De Laet: Again, remember, this was 1940. And today, even today, they don't have--of course, today with tape recording you don't have to worry about that as much anymore. You get the full range. But all the way up through the period of records nobody ever came up with the synthesizing that he had developed.

Nebeker: It's surprising to hear that N.C.R.'s electronics group would be doing things like that that you'd expect, of course, R.C.A. and other companies to be working on.

De Laet: Well, unfortunately, now what happened was that General Motors built radios, but they disbanded the radio business in 1938. N.C.R. took Joe from that and brought him over to start up the electronics group.

Nebeker: Did de Rosa come from there?

De Laet: De Rosa came from the East Coast. He was from New York or New Jersey or somewhere around there.

Nebeker: But I was wondering if he was hired originally for the radio work at G.M.

De Laet: He probably was hired for his knowledge of electronics.

Nebeker: What do you remember about starting the Navy project? Was it, suddenly one day you were all told?

De Laet: Don't really remember too much about the history.

Nebeker: Do you remember getting the security clearance?

De Laet: Oh yes, I remember getting the security clearance. This was top secret. We had tougher security clearance than anybody at Wright-Patt¹. Nobody out there had anything to compare with ours. Even top secret.

Nebeker: Presumably there was some announcement to your group.

De Laet: We learned we were going to be working on something hot, yes.

Nebeker: Were you told something like "If you want to do this, you've got to get a security clearance"?

De Laet: That's right.

Nebeker: You had no problems with the security clearance?

De Laet: No.

Nebeker: What can you remember of the projects you were involved with?

De Laet: This was a phase in my life that, you know, you kind of shove in the background and completely forgot about. The things that I've already told you about working with Lou de Rosa and some of the advanced electronics that were in the area at

¹ Wright-Patterson Air Force Base, then Wright Field, located north-east of Dayton

that particular time just sort of come back to me.

Nebeker: Yes.

De Laet: I've been trying to wrack my brain as to just what *did* I do at Bldg. 26! I can't remember.

Nebeker: Some people told me that they were on different projects and that they didn't know what the device was that they were building.

De Laet: Well, I knew or suspected what the project was. And I suppose I must have been sort of a troubleshooter, because two things that I do remember that I did. One was, we were having trouble, we would take about three shifts. Yes, we did have three shifts.

Nebeker: You worked around the clock?

De Laet: Yes. And the third shift, the midnight shift, were getting a high amount of rejects and poor production. So I went in all shifts and analyzed what was going on in each of the shifts, and I found out that they, this third shift, it was the pits. So I came back and recommended to Joe or whoever were the powers-that-be that we eliminate the third shift. And that we consolidate those people from that third shift on the other two shifts. This also resulted in getting rid of some excess that we couldn't use in the other two shifts.

Nebeker: Yes.

De Laet: So I suppose that you might say what I was doing then was the downsizing that some of your modern-day CEO's are working on today. At any rate, within thirty days after we did that, production went up instead of down, and the quality also went up.

Nebeker: So Joe took your recommendation?

De Laet: Yes. Another time, I hadn't any experience at all working with trades unions in factories. You've got a project and you're going to need millwrights, you're going to need plumbers, and maybe you're going to need carpenters. They're all told to report at eight o'clock in the morning. Well, in order for the carpenter or the electrician to work, the millwright maybe has to move something. So they're sitting around waiting for the millwright to do his job. So I anticipated that and I purposely scheduled these things. I figured, "Well, right now, it's going to take maybe about two hours for the millwrights to move this stuff off the shelves. By that time we'll be able to use the carpenters. Well, then the carpenter's going to be moving some stuff around, then we'll be able to use" So I staggered them and figured that they would show up on the job when we were ready for them.

Nebeker: I see.

De Laet: They hated my guts. *Nobody* ever did that before. They expected to come and boondoggle around and wait. They were fit to be tied. So these two items that I can recall were troubleshooting things.

Nebeker: The operation expanded so enormously there, and you were in the original group, so it sounds like Joe trusted you to be a manager.

De Laet: Apparently. Another thing, too. That Meader: one time we had a shipment to go to Washington, and he wanted some pencils and some paper and some routine, you know, day-to-day stationary supplies². So we asked him, "Well, now, why in the world do you want us to throw this on the car with this equipment?" He says, "There you've got to get through the bid process, all that red tape," and he says,

² to Meader's office in Washington?

“By the time you get it, it costs five times what it’s worth, and it takes five times as long as it should,” he says. “This way,” he says, “it’s cheaper and quicker.”

De Laet: So today some of this stuff’s coming out of the woodwork.

Nebeker: I understand that everything went on in Bldg. 26?

De Laet: Yes.

Nebeker: All the design, and the planning, and the manufacture and assembly.

De Laet: Yes.

Nebeker: Was it chaotic for a while? Can you recall the setting up period?

De Laet: No, I don’t remember anything chaotic. Everything was, I think, very orderly.

Nebeker: Do you recall any particular problems with the rotors, or the brushes, or anything else?

De Laet: Yes, we had, we had technical problems that we had to overcome. It was a complex piece of equipment. It’s like I was telling you about the thing that Lou developed about the microphone. Anything that’s highly complex is touchy.

Nebeker: Yes.

De Laet: And it was touchy.

Nebeker: Yes, I know there was this electronic device to identify the hit. Then, the rotors would have to be turned back, if you can’t brake, stop them immediately.

De Laet: Right.

Nebeker: That was quite an advance.

De Laet: Right. I do remember that these rotors. Because the state-of-the-art technology then, they couldn’t be stopped immediately.

Nebeker: I know there was tight security in the building.

De Laet: Oh yes.

Nebeker: What was the feeling of most of the people in Bldg. 26? Did most of them suspect what this device was, do you think?

De Laet: I would say that *most* of them did not.

Nebeker: OK.

De Laet: Because the different groups, like the WAVES, were assigned over here, in one room to do one thing, one phase of it. Another group over here. So they didn't have the total picture.

Nebeker: I'm thinking that working with rotors that have 26 contacts ...

De Laet: A few suspected it. Yes, the ones that dealt with the rotors. But here's a gal wiring up a harness.

Nebeker: And you were all very careful not to talk about your work with others.

De Laet: Yes. Here is somebody in *this* department, you didn't even tell *that* person in *that* department about what you were doing over in *this* department.

Nebeker: You were told not to do that?

De Laet: Oh, absolutely. You didn't tell your buddies in other departments what you're working on.

Nebeker: This must have given you some feeling, though, that this must be quite important.

De Laet: That's right.

Nebeker: Was there a good spirit among the workers?

De Laet: I think so. It was part of the war effort and everybody was geared to that.

Nebeker: Nobody likes to do night shifts, but people accepted it?

De Laet: Yes. They did what had to be done.

Nebeker: You told me before that you were not able to get a deferment or avoid the draft.

De Laet: I happened to have a change in jurisdiction. I think the Air Force picked it up. I

think there was a little bit of jealousy because they didn't know what was going on. I think they were just out there to try and throw their weight around, because everybody who was working on the project was pretty much automatically deferred. Up to that point.

Nebeker: Yes.

De Laet: I think I'm probably the only one who didn't slip through the cracks.

Nebeker: Was it the case that you were surprised by the draft board's ruling? And then it was too late?

De Laet: No, they kept working, and Meader kept working trying to get me deferred. They exhausted every possible effort.

Nebeker: I know that the draft boards were pretty independent.

De Laet: Yes, that's right. Again, I think there was maybe a little jealousy; they didn't know what was going on. You couldn't impress the draft board with the importance, because you couldn't tell them what it was all about.

Nebeker: Was that a real blow to you, to be pulled out of the project?

De Laet: Oh yes, actually. But they said, "Well, as long as you're going to go anyway, we'll give you a letter so that you can get into the Navy." It was a Navy project.

Nebeker: Do you remember when it was that you entered the Navy?

De Laet: Oh, early part of 1945. But in eighteen months I got off; the last part was August of '46.

Nebeker: And then you returned to N.C.R.?

De Laet: Yes. Back to Joe's group again.

Nebeker: What were you doing then?

De Laet: It was more drafting, I think, at that time. Design work. Later on I transferred

from there over to the styling department, where I could design the cash register cases. Color coordinated keyboards, and research on the contrast of different colors. Black and white you normally think of as being the best. But there are other colors that are sometimes better, that is, more easily discernible.

Nebeker: How long did you stay with N.C.R.?

De Laet: I was there until 1950.

Nebeker: Do you think that your work with Joe's group was that valuable to you in your later career?

De Laet: Oh yes.

Nebeker: Anything incidents you recall about Desch?

De Laet: One particular anecdote about Joe. When we first came up with the Navy project and then in a subsequent case, he would come back from a trip to Washington and call a staff meeting. He would start, "Well, they've asked me to do something, do the impossible again. And this is what they want to do." And I told him that with the staff I thought we could do it. It was that was kind of a positive attitude. It was challenging you constantly to do be doing the impossible.

Nebeker: Yes.

De Laet: And he had a knack for doing that, for getting the best out of people.

Nebeker: Yes. Well, thank you very much.