

An Interview with  
JEAN-LOUIS GRANGÉ  
OH 419

Conducted by Andrew L. Russell

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## Jean-Louis Grangé Interview

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### Abstract

Jean-Louis Grangé explains how he began working with computers in the 1960s and 1970s, and how he worked with Louis Pouzin on projects in the French weather bureau, automobile industry, and the Cyclades project at the Institut de Recherche en Informatique et Automatique. With Cyclades, Grangé was in charge of the “Cigale” datagram packet-switching network. He reflects upon his interactions with engineers within Cyclades, engineers in the French Ministry of Telecommunication, as well as with engineers in the United States working on the Arpanet.

This set of nine interviews conducted with Tilly Bayard-Richard, Najah Naffah, Louis Pouzin, Marc E. Levilion, Michel Gien, Jean-Louis Grangé, Gérard Le Lann, Rémi Després, and André Danthine was funded by the ACM History Committee with a fellowship on “European Contributions to Computer Networks: An Oral History Project.”

**Russell:** I'm here with Jean-Louis Grangé, and I want to start by asking you about your education and your first involvement with computers.

**Grangé:** I started my studying computers right after high school, and at that time – it was in the early 60s – were using punched cards. Simply, I've been doing all my career in computers. So basically I studied in the University of Paris in the very first courses that were available in computer science in the 60s. I got two diplomas that were available at that time from the university. And then I started to work. My first job was with Louis Pouzin in 1970 in the weather bureau, in weather forecasting services in France. I've always been involved in computer systems. And after the, the weather services, I joined Louis again at Simca – it was a Chrysler company at that time. And then we started in 1970. I joined, again, Louis at INRIA to start the Cyclades project.

**Russell:** Did he hire you in all three of these places?

**Grangé:** Yes. In the first place, the weather bureau, I was just hired because I was a student – still a student – and they were picking students to do some work. I met Louis at that time. But after that, he called me. He changed his job and told me to join him afterwards. So, I worked at INRIA until 1986, working for Cyclades until 1979. And then we started a new pilot project, which was called Nadir. It was about computer communication using satellite systems. The purpose was to conduct some experimental research to understand and design protocols that were especially adapted to characteristics of satellite communication, that means high throughput. At that time it was very high throughput and broadcasting facility and also long propagation delay. After that, I joined various computer service companies in the private sector. That was rather common and not very particularly interesting. That's about it. <laughter> And now, I'm retired. But I founded a company with my brother-in-law, a computer company of course. He is working in this field as well. So I'm still working in this framework and doing lots of things. But officially I'm retired.

**Russell:** None of you [the Cyclades team] seem to be very good at retirement. <laughter>  
That's interesting.

**Grangé:** No. <laughter> We love to have fun with computers, yes.

**Russell:** Yes, you can't stop. With Cyclades then, can you say a little bit more about your role?

**Grangé:** As I mentioned, I joined Louis at the very beginning of the project. I think I was the first one who joined him in the end of 1970.

**Russell:** And what was the goal of the project at the time? How did you understand it when you joined?

**Grangé:** I suppose everybody told you the same thing, but the purpose of the project was to develop in France an experimental computer network. We called it at the time a heterogeneous computer network because it was considered as important that the computers connected to the network should be from different manufacturers using different processors and so on. And one of the issues was to demonstrate that it was possible to make these computers communicate together, which was new at that time. So that was an important aspect. And almost immediately when I joined the project, Hubert [Zimmerman] came practically at the same time as I did. He was assigned the protocol part of it and [unintelligible] communication problems and systems. And I was in charge of the inner part of the network, which was the CIGALE project network. In other words, the packet-switching network based very rapidly the concept of datagram was designed, and the whole thing was built on that concept. And I was responsible for that particular team of the CIGALE design and development. And of course from the very beginning, we established close relationships with American teams that were working at that time on this subject in the ARPANET. And we even had a cooperation agreement with BBN, and I had a number of meetings with Dave Walden. I went to Boston and to Cambridge very often, and he came to France. So we had a very close cooperation on this subject. And I

met also [Alex] McKenzie several times, especially in routing problems. And in terms of cooperation, we also developed a very intensive cooperation program with the University of Waterloo in Canada, Ontario. That was specifically oriented towards simulation and modelization of the packet-switching system and components, including routing mechanisms and traffic control, which was called by the ARPANET people congestion control, I think. So that was about it. I stayed with the Cyclades project until the end of the project. I think it was '76 or seven, I don't remember that well. After the formal end of the Cyclades project, actually the Cyclades network, I was still operating for some years. And then I became responsible especially for the operation of the network at INRIA, and also we developed a measurement center to better understand how the network was behaving and all sort of things.

**Russell:** Cyclades continued to live on even after...

**Grangé:** After the formal end of the pilot project Cyclades, the network continued to live until... I think it was '79 or '80. And then it was killed definitely. <laughter>

**Russell:** What marked the end? When different places simply disconnected from it or stopped sending packets?

**Grangé:** It was basically, as Louis probably told you, it was a whole political mess. And actually simply it was decided to cut, to stop the funding of the network. And it stopped naturally by lack of funding. And of course, therefore, everybody got disconnected and did something else.

**Russell:** But, so you stayed on at INRIA for some time.

**Grangé:** Personally I stayed at INRIA, but I started the Nadir project early 1980 until 1986, and then I left INRIA for a private company.

**Russell:** Can you tell me a little bit more about that transition? Did you simply stop working with Cyclades and start another project?

**Grangé:** Oh, yes, it was basically different. It was a project which was a common project between the Ministry of Industry and the Ministry of Telecommunication. Actually the purpose was to study how to use this satellite system because the French launched their first telecommunication satellite – which was called Telecom 1. The purpose of the project was to conduct some applied research to see how we could use that for computer communication. So it was still in the networking aspects and protocols, etc. but still it was a different project from the Cyclades project.

**Russell:** In the context of that project, did you stay in touch with ARPANET people or Internet people? Was there an international component?

**Grangé:** We stayed in touch with international teams but no longer with the ARPANET people. We started to work with, for example, some Canadian teams in Montreal in Quebec, because they were using intensively satellite communication. As you know, they were using long-distance communication with very isolated populations, so they were quite advanced in satellite usage.

**Russell:** I'm interested to learn more about the relationships back and forth with some of the ARPANET people, and particularly the ones who were interested in Cyclades. Their was an exchange of ideas both ways, yes? In part through regular visits with Dave Walden, Alex McKenzie...

**Grangé:** Yes.

**Russell:** Others perhaps?

**Grangé:** We... I don't know exactly. I'm talking about the CIGALE network and the packet-switching aspects, right?

**Russell:** Yes.

**Grangé:** I don't think they took much from us in this particular field. I think we learned a lot from them because they were quite advanced as opposed to us, who had just started at the time. So we learned a lot from them. And I think what we did, it was basically to simplify and, I would say, purify that concept. It was a bit messy. I mean, the IMP was a very, I thought, it was complicated. And I think we made it much simpler. I think we did that. We introduced the datagram concept, which was, I think, extremely powerful because it allowed to really simplify a lot the mechanism of switching packets because it made all packets totally independent from all others. So it makes it extremely simple. You get packet. You process it just to find what is the output route. You forward it to the next hop. And that's it. It's very simple. There are a few aspects that are more complicated like routing and traffic control, but basically you don't have to handle circuits or anything like that, like of course they had to do in our competitor in France, which was RCP – the ancestor of Transpac.

**Russell:** Did you interact with the Transpac or virtual circuit people much?

**Grangé:** <laughter> Yes. It was interesting because I was personally involved in that particular point because, of course, at the same time we started the Cyclades project, the CNET, which was at that time the research center for the Telecommunication Ministry, started another packet-switching system with Rémi Després. He was the head of the project. And they had a completely different approach because what they did was to implement what they called the virtual circuits. And, therefore, the end-to-end communication was materialized. It was physically represented in each node through the network. And we hated that, of course. So anyway, these two teams started the Cyclades project on one side and RCP on the other. And of course we had some discussion between these people because it was considered that it was a bit ridiculous to start in France two different projects on the same subjects. So discussion went on, and it was decided that we should merge, at least the packet-switching part. And, therefore, it was at

the very beginning of the Cyclades project, so it was decided that I should go and work with them. So I went to the CNET and started to work with Rémi Després's team and with him. And I stayed... I don't remember exactly, but I think I stayed for one month. And it became clear... I remember that I went to see Louis, and I said, "I can't do it. It's impossible. We disagree on about everything." <laughter> There was not a single point on which we could say, "Okay, we agree. We're going to do that." And I think it was the basic reason was that I was a computer and system man, right? And they were much more oriented to telephony, reproducing circuits, etc. And I didn't understand that. It was not my philosophy. And it was not *our* philosophy. So I went to see Louis, and I told him, "I can't do it." And he said, "Okay. Come back home." <laughter> And that was the end of it. Or the beginning of it.

**Russell:** <laughter> Right, or the beginning of it. Do you remember some of the other people on the CNET team? Rémi Després stayed involved in these topics for many years.

**Grangé:** Oh, yeah. Yeah.

**Russell:** Did any of the other members of the team also stay involved?

**Grangé:** They were named... A guy named Schwartz. No, I don't remember. It was a long time ago. And that was in '71.

**Russell:** Forty years ago.

**Grangé:** <laughter> But we had so much fun.

**Russell:** I'm getting a better sense of the Cyclades team and how you worked together. Of course, as you said, you're still together today, as friends. Were you in the same space together? In the same building? Michel Gien said, for example, that he was traveling and working sometimes on the COST project...

**Grangé:** Oh, yeah, but we were based in the same building at INRIA. That was important because we had much fun being together. Yes, we were in the same place.

**Russell:** Did you have a role in recruiting some of the other people who arrived after you? Different Cyclades team members joined at different stages.

**Grangé:** Oh, of course. I had to recruit the team I had. But probably Louis explained that to you already. It was considered as strategically important that the team was made of a mixture of researchers but also people coming from the industry, including computer service companies. And, therefore, most of the people that were in the team were actually people under private contract with the computer industry. Sometime ago, it was considered that Cyclades has been a failure because it didn't... It's now a big success, but at that time it was considered as a failure because Transpac won the war. But on the other hand, it was also, I think, a big success in terms of propagation of the know-how and knowledge about networking. Altogether it was several hundreds of people that were involved over the time period in the Cyclades project because people were working at INRIA with us, for example, in the Cyclades team or in the protocol team. But we were cooperating with all these people in the research centers – in various universities and research centers – that were involved in the Cyclades project. So altogether it created a real sensitivity of the technical population about the networks and networking, even though the Cyclades project was ended lamentably.

**Russell:** Is there any way it could have lived on, or were these forces beyond your control?

**Grangé:** The forces were beyond our control. Because we were working at INRIA. At that time the INRIA was depending on the Ministry of Industry, which was and still is a very small thing in the cloud of the French government. Right? As compared, especially as compared to the PTT thing, which was a state in the state – very powerful. Right. So actually the war was really uneven. And it's not surprising at all that we couldn't go through. Not surprising.

**Russell:** Were there any other projects, or can you think of any other that had as much impact in the same that you said Cyclades did? Is it unique in this respect?

**Grangé:** No, I suspect that there are many other projects. I don't know other fields. Nothing comes to my mind.

**Russell:** Some of the other Cyclades team members I have interviewed also have said that it provided fertile ground for the training of people in networking and computing.

**Grangé:** Yeah, I do really believe that, and I'm sure of that. Because I know several computer service companies who developed teams and people that were really very good in networking thanks to what they did in Cyclades.

**Russell:** I noticed also on your CV that you were a visiting lecturer for many years...

**Grangé:** Yeah, some, when you are doing research. It was quite common. And especially on Cyclades because it was very advanced. So at that time, many people were interested to hear about that. I gave lectures, as you saw in my CV, but I think all the members of the team did the same thing. We all did that.

**Russell:** It strikes me as another way – a slightly different way – to spread the lessons you learned, so you can tell the students.

**Grangé:** Yeah, I enjoyed it. It was nice.

**Russell:** Are there any highlights from your career after Cyclades that you want to mention?

**Grangé:** The relationship with the Cyclades project was probably that I love particularly today, even today I love particularly to develop network application, websites, and all that kind of stuff. But that's it.

**Russell:** OK, is there anything else you want to add? Or are there things you thought I might ask that I didn't?

**Grangé:** No, I suppose you talked already a lot with Valérie [Schafer] and Louis and others. And so you must know a lot already. <laughter> No, we didn't talk much about, for example, the political contexts and issues that were going on at the time, but I think Louis has given you information about that because that's interesting as well.

**Russell:** He certainly has been the most outspoken on it. <laughter>

**Grangé:** Right. There was much at stake, you know. And what's interesting also is the relation with the industry, the project with the industry, I think this is a very positive point. We already discussed that, but I think it's important. Yeah. It's funny. <laughter> Good old time. How come you are interested in these aspects? It's... antiquity.

**Russell:** I can tell you, but I want to thank you first for answering my questions about your career in networking.