

BELGIAN STATISTICIANS

with Léopold Simar



Can you explain how you became interested in statistics was born during your engineer studies?

This is a complicated and somewhat funny story. There was a course of statistics and probability when I was in second year of civil engineer at the university and I had problems with this course. As a matter of fact, I failed the exam in June because the professor did not let me ask clarifications about his question. I did not really understand the question and I ask: "Please, do you mean that or that?" and he replied: "Usually, it is me who asks the questions not the students, take the door out" and I received a zero. All my other exams were good on average; therefore I had only to pass again this exam in September. Thus, I spent time during my holidays on reading books on statistics and probability. When I went back to the exam in September, the professor asked me several questions but I replied in another way he taught us. Then he told me: "Well, what you are saying is correct but this is different from what I taught you, where did you learn that?" So, I said I red this book and this other book. The professor was fine and honest and I received a good mark. But most importantly, I found much more interesting what I red in probability and statistics during my holidays, than what this professor taught us during the year. Therefore, the next year, I continued to attend some courses in statistics but now taught by José Paris. Of course, José Paris knew something about statistics (which I think was not really the case of the first professor I had) and my passion for statistics continued to increase. My first professor was probably a mathematician regarding probability and statistics as an exercise of mathematics and nothing more. That was my starting point. From this time, I was always fascinated by this idea of trying to learn about complicate phenomena and by observing them. This remained the main theme of my studies in statistics.

You are a leading scientist in research on frontier estimation. Can you explain what is frontier estimation and give some applications?

Well, yes indeed. It is rather easy. In fact, if you think about economy or management, you can regard a production process as follows; a unit uses factors of production called “inputs” that produce goods called “outputs”. There are many inputs and outputs and you want to compare whether some firms produce more efficiently than other ones in the same economic activity. The problem can be represented in a multidimensional space, the space of the inputs and the outputs which in practice may be high dimensional. You want then to determine the upper boundary of what is technically possible (the maximum achievable level of outputs for a given level of inputs). Mathematically, this is a surface and economically this represents the “benchmark” production frontier. Once this surface is determined, you can measure the efficiency of a firm by measuring its distance to the point where it should be for being on the frontier. This distance allows comparing efficiency of firms being on different levels of inputs and outputs. It’s easier in two dimensions of course, with one input and one output. You have a curve describing the frontier and the firms you observe are below this curve. It is different from regression. In regression you estimate an average curve, here you are estimating an upper boundary curve. The difficulty, and so the interest for me, is when you are in a high dimensional space. Of course, the main interest is when you take a nonparametric approach, avoiding some restrictive parametric assumptions both on the shape of the frontier and on the stochastics behind the production process. There are many applications in business and management but also in public services; we have applications for the efficiency analysis of the post offices, for hospitals, for universities (they received money and they produce students, researchers, papers, etc...), banks, trains networks, airlines, air controllers, etc. In fact this can be applied in all fields of human activities where the objective is to reach a maximum level of outputs given some inputs. This is quite interesting.

Can you said a few word about your motivation to create the Institute of Statistics at UCL in 1992 ?

After my PhD, I went for a post-doc at Cornell University in the United States and when I was there, I was asked to start a position as junior lecturer at the Facultés universitaires Saint-Louis (FUSL) in Brussels, but I kept during that period a research position at CORE (Center for Operational Research in Econometrics, UCL), where I prepared my PhD. So, I was doing my teaching at FUSL, my research at CORE, but very quickly I was asked to take some administrative duties at Saint-Louis (I was the dean of the faculty of economy for 12 years). I was very happy during these years to be able to keep my research activities at CORE. After a couple of years, the

University of Louvain asked me also to teach some courses in statistics. Then, after something like 15 years of this “steady state”, the Rector Pierre Macq of the UCL asked me to make an audit of the situation of statistics in the university and to propose solutions to try to improve the situation. The idea was that being outside the university -but partially inside because I was still working at CORE and I was teaching one or two courses at UCL- I had some chance of success... So, I received a mission of two years for preparing something. After one year, I proposed to the rector the project of creating an Institute of Statistics. The rector, supported my project at one condition: to leave Saint-Louis, become a full professor at UCL and accept to chair this new Institute for a couple of years. I did it in fact for twelve years. The motivation behind this project was that there were a lot of good statisticians in the university of Louvain-la-Neuve, but they were spread all over the university. There were researchers in statistics of high quality in medicine, in agronomy, in economy, in mathematics, in sciences, etc... but there was no name and no visible place covering their activities. So, it was not well known by the international scientific community that there was an intense research activity in statistics in Louvain, except of course at the individual level. The idea was thus to create a single entity that would bring together people coming on one side, from the more mathematical and theoretical world of statistics, and on the other side from the more applied world (agronomy, psychology, medicine, economy, social sciences, etc...) The basic project was to try to group all these people together in one single entity with the missions of doing research of high level in statistics, organizing the teaching in statistics throughout the university, advising new PhDs in statistics and providing consulting help in and outside the university. In summary, these are the missions of any department of the university. Of course, for me, it was crucial that this department, this Institute, would not be located inside one single faculty, but should remain “interfaculty” because it would cover fields coming from mathematics to medicine, passing through economy, social science and psychology. It would have been very bad for our image to receive a label of being in one particular faculty. My fear was that having the label of being mathematicians, then the economists, the social scientists, the psychologists or the people from medicine would not join us. On the other hand, having the label of being from psychology, social sciences or economy, then people coming from sciences and mathematics would not be ready to consider us as being “serious”. By the “Organic law” of our university, every department had to depend from one and only one faculty, but the rector agreed to add to this rule the following statement: “except for the Institute of Statistics, which does not depend of any faculty”. We are indeed in Belgium... The Institute was thus directly depending on the rector until today. This year, our university has new projects, reforms and new rules but I hope this will not

change the main reasons of the success we had for almost the past twenty years.

What was the situation at the creation compared to now?

At the start, we were only something like five persons full time, mainly coming from mathematics, economics and one from medicine. Then, the university opened a position for me because I was not full professor here and some other new positions because I was requesting in my project more positions to achieve a critical size. So, we were very quickly 6, 7, 8 and today we are 10 full-time academics here at the Institute. We have now also agreements and contacts with the Institute of actuarial sciences. The organization of the teaching is also important, which means the organization of the exercises linked to the courses of statistics of the university. It was also in my project that we had to organize all of this. Before the Institute, there were some isolated teaching assistants in medicine, in psychology, etc... not speaking the same statistical language and this was not optimal. We were able to convince the deans to put most of them together in our Institute and today I think we have something like 13 or maybe more full-time teaching assistants. We have also about 15 researchers sponsored by research projects (like IAP, ARC, etc...). So today, we are not far from 50 persons, including 3 computer persons (experts in computers and/or in statistical computing). Of course we haven't forgotten the administrative staff. At the start, I was able to get one-half person and today I think there is something like 4 full-time persons, including one director of the administration. So, it was a quite an amazing experience because we started with a very small budget, and with a very small number of persons. I was patient and year after year, with the support of the rector, we were able to increase the number of positions. In the 90's, the universities, like today, were not rich enough to create new positions from nothing, so it was not easy. In fact, all these positions were obtained by transforming positions from the other faculties. The deans agreed because I was able to convince them that this was a good plan for them... So, I have to thank them today for their confidence... But it was a lot of work! It is amazing to see year after year how we started with just one corridor in the building of CORE and now we are a whole building with 50 persons working there.

Do you have time to continue your personal research with all this work?

Yes, that's a good question. I was indeed able to keep a good level in my research with a reasonable number of publications. This means indeed a lot of work but research is not really working. For me, research is fun and I like fun, as maybe you know. Research is part of this fun so it's probably true

that during those years, I invested a lot of my time in my life trying to keep a good balance between work and family, both including fun. I think I was able to do it but it was not always easy. It was important for me, first because my main motivation for doing the job of professor in a university is doing research. Secondly, if you are not a good researcher with international recognition, people working in the university will not listen to you. And remember, I had to convince a lot of people (deans, etc.) to trust my project. That's maybe a bad thing, but that's the reality in the university, people may have some power if they are good researchers (it is a necessary but not sufficient condition, of course, some diplomacy is also probably useful...).

Can you tell us the best and worst souvenir during your career?

I don't know if I have a worst souvenir. At some moments in my career, there were some fights for such or such idea with some colleagues. It was not always easy because some people wanted to attack me, but it is maybe not a so bad souvenir because finally I won. Maybe the worst part of my job, that I really hated, was the exams. I remember one year, a long time ago, maybe in the 90's, I had for the month of June to enter in the system 1500 marks before the deliberation. I was of course helped for the corrections of the written exams by teaching assistants, but handling these copies and going to all the deliberations was awful. I asked the rector at that time to give me less teaching but my teaching load has always been very intense. My average load was well above 200 hours per year. Today, I have no more teaching here and I will no more teach in this university. I really love to teach but the idea of not having to correct and score exams is the most interesting thing of my life. You ask me what is the best souvenir of my career; well... this is maybe the one that has still to come. Although I have already so many... For instance, when you have a paper that is accepted for publication, that's a real achievement. A good paper accepted in a very high level journal, this is really fun. I am still very happy about that, even today. Otherwise of course, a very good souvenir is the day when the academic council of this university decided to support my project of creating the Institute of Statistics. That was a big moment for me, but there are so many others that I don't remember which was the best one.

Do you have a particular souvenir of meeting with another famous statistician?

Yes of course, I had a lot of contacts with many visitors at our Institute. For instance, a researcher like Peter Hall is really impressive, I had the chance to meet him in LLN and I am very proud of having produced a couple of papers with him. Luc Devroye is an other big person, Luc is even a Belgian guy and he is Honorary Member of the BSS. For those who know him (and

me) you can imagine the fun we had in testing some good Belgian beers at several places over the world... Both received the honors of Doctor Honoris Causa of the University of Louvain. It is impressive to work with people like them. They are of such high level, remain just simple natural persons and they don't consider themselves as being really big stars, although they really are. It is always a pleasure for me to meet them and I am happy to continue to meet people like these two "biggs".

You will now retire. Do you have any particular plan ?

Yes, my plan is very easy. It is to continue as before except that I will not teach anymore and remember, it is not teaching that is a load for me, but the exams. I will certainly continue to make research, writing papers, going to conferences, going for time to time where people invite me to do research, etc . So, freedom now is almost complete for me.

Do you want to say some word to young statisticians ?

Yes, probably for young statisticians willing to start a scientific or academic career. For me, it is the best thing that you could do. First, the discipline is quite interesting, quite fascinating because you can do many different things depending on what you like. You can do more theoretical or more applied work, as you will. You can do applications in medicine, economy, etc... It is very broad. You are not prisoner of a particular field of applications. That's the first thing. The second thing is that academic life is probably the best life over the world because you have the freedom, in a sense. You don't have complete freedom but you have the freedom of choosing the problem you want to work on. Of course it is not easy every day, you have teaching load, administrative meetings, you have to prepare research projects, to find money to make your research but that's interesting, and if you succeed, you have to prepare activities reports... At the end, this game is somewhat exciting... I would be today at the beginning of my professional life, I will not hesitate to do exactly the same things and maybe that is a sign that it is not so terrible to be a professor at the university.

Do you want to add something?

I am very happy... And to add a final word, I should even admit that I was a little bit moved when Paul Janssen announced at the conference we had in May, that the Belgian statistical society would make me the honor, because it is really a honor for me, to be considered as being an Honorary Member.