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# International Education in French Engineering Schools Reporter on the CEFI Survey

**Claude Maury**

Background

D U R I N G T H E M Y T H I C A L period of the Middle Ages, education and mobility were closely associated. Just before World War I, Western Europe was very attractive to foreign students, many of whom enrolled in French, German, and English institutions to get a technical education widely considered to be superior. After World War II, the situation was quite different: engineering students from all over the world considered North American universities as the best place in which to further their studies.

Some lessons have to be drawn from these observations:

• First, the main motivation for mobility in the past was always to get something more than what one gets in one's own country.

• Second, at any given moment some places have greater power to attract students. If you want to study electrical engineering, you might consider going to MIT, but if your goal is to improve your piano-playing, the best choice might be to go to Moscow.

One needs to consider the reality of Europe. Americans tend to think of Europe as a whole when considering it as a destination for a trip. But when they come, they observe that Europe remains a set of nations separated by linguistic and cultural barriers, and they feel a bit confused about the reality of a move toward an actual community. Some comments may enlighten this point. The present "pan-European" project was first carried out by a small group of people—indeed technocrats— who thought something had to be done to prevent a new conflict on the continent. The choice was made to first address economic issues through new forms of cooperation and eventually through setting up a free-trade area. At this stage (forty years later!), the European project is associated with a real political ambition. There is a consensus in Old European nations to go forward, although an obvious fear of this common future remains. For most educated citizens, and especially for young graduates, Europe appears more and more as a "new Frontier," as an outlook for new opportunities. In this context, mobility of students throughout Europe becomes a necessary step toward building a better future.

Although the basic principle has been to keep education at the regional level, European authorities have decided to sponsor important programs to foster student mobility. The ambitious objective of 10 percent of European students studying abroad has been given. For a variety of reasons, only 5 percent has been reached, and that level will probably remain stable. Nevertheless, these figures represent a significant change for all European institutions, although everybody now has the idea that mobility is closely tied to external support (which may be

surprising in the United States, where students do not hesitate to study several thousands miles away from their home).

Higher education has three main purposes: to integrate students into their own society and culture; to select talent; and to give students knowledge (and know-how). It is clear that in the case of France, much emphasis is put on the second objective; consequently France is a country where education is seen as a major way of advancing one's social position (as in Japan). In this context, where emphasis is put on "meritocracy," engineering education occupies a favorable position. For French families, the best choices for a young boy gifted in sciences is to choose engineering, with the dream of reaching first a high position in the civil service.

This has two consequences that give French engineering schools (Grandes Ecoles) great flexibility in the management of their international initiatives. Since their students have gone through a very competitive selection process, French Grandes Ecoles feel rather free to make changes in the curriculum and integrate periods of study abroad, and students are not paralyzed by a predefined program. On the other hand, our engineering institutions benefit from a high level of autonomy. Managed by an appointed director, they are quite flexible in comparison with large universities where decision schemes are never very simple and where academic power often counterbalances authority at the executive level.

Output of the field study

At the end of 1995, the Center for Studies in Engineering Education (CEFI) was asked to make a wide survey of the international activities of French engineering schools. There was indeed a general feeling that the time had come to get a clearer view of what was going on.

Increasing the international dimension of the school is a first order priority (76 percent agree). Three main reasons are given: it is a sign of prestige; it makes it possible to differentiate between schools; and it confirms a level of quality through adequate partnership (tell me with whom you cooperate and I will tell you who you are). Interestingly, the satisfaction of the corporate world is not clearly mentioned.

Motivation of the initiative is mostly internal. The impetus is clearly borne by the heads of schools, and to a smaller extent by the students themselves. Boards of trustees are encouraging the move, but they are generally followers. The teaching staff is clearly the least motivated group, sometimes with recurrent objections about interferences between mobility and solid studies.

Initiatives derive mostly from specific opportunities and are seldom linked to a strategic plan. Several examples can be given to illustrate this point. Sometimes cooperation starts from a language ability, sometimes from unplanned meetings.

French institutions are ready to go quite far in their internationalization. On the average, more than 15 percent of French students spend at least six months abroad (1/3 studies, 2/3 internships), and the objective is to reach 30 percent. Sometimes 50 percent or even higher is reached. In comparison, prestigious German institutions do not manage to go beyond the 5 percent level.

Recently mobility has been developed in Europe, although relationships with North America still represent a quarter of the total. Two main reasons may be given: European programs provide marginal support to cover expenses of mobility (not a lot but about $200 to $300 per month); and U.S. institutions seem less attractive, since the former academic gap has closed year after

year.

French institutions raise few formal obstacles to mobility. There is a clear consensus that any arrangement can be made in the curriculum in order to overcome formal obstacles. This flexibility, which has institu tional grounds, as explained above, sometimes goes quite far: one may even find examples of students spending one year and a half out of three abroad.

Nobody is frightened by true internationalization. French engineering schools are open to discussion.

The mastery of foreign languages is recognized as an obligation. English is supposed to be well known (80 percent). A second foreign language is the common rule.

Cooperation is achieved through networks and specific agreements: Networks: 80 percent double degrees: 45 percent ECTS: 22 percent.

Validated studies and/or internships abroad are distributed in the following way: less than six months: 64.6 percent; more than six months 20 1 percent; double degree schemes 9.2 percent; and advanced studies 5.2 percent. In double degree schemes, students manage to get two engineering degrees, but they have to spend some extra time (up to one year) to fulfill study requirementS.

Where do students go? Western Europe 59.3 percent; Eastern Europe 30.2 percent; North America 26 percent; and Asia 5.9 percent;. The increasing mobility is clearly linked to financial support by the ECC.

With regard to international cooperation, the French organizaof studies represents a potential obstacle to the question "Do you wish to remain specific or come closer to an international model?" the awnser is clearly "We want to keep our specificity" (72%).
Additional comments:

Although international mobility initiatives remain quite spontaneous, they may be categorized into three main attitudes, not to say strategies:

In many cases, efforts toward mobility are measured in quantitative terms: more is better.

A small number of institutions consider that emphasis must be given to the development of a true multicultural elite. For that reason, they stress a double-degree scheme for which more money and time are needed.

However, in a third group of increasing importance, emphasis is put on the cultural dimension (mutual understanding is crucial).
Different means are used:

internships (which are considered to bring a much richer experience)

labelization of programs, through a commonly accepted chart

the development of specific programs
Some additional comments have to be made about the students themselves. A recurrent observation has been made by deans or presidents that when the level of mobility went beyond

30A0 percent, motivation declined. This observation shows the existence of two groups: a group of rather mobile students and a group of students having good results.

Cultural cliches remain strong: it appeared in our survey among foreign authorities that the weight of cultural image is very important. In others words, subjective judgment is stronger than objective assessment. France has a strong image in southern Europe where French culture and French education are seen as models. French solutions are clearly less accepted by Northern European countries where flexibility is viewed as a lack of ability to organize, and initiative as a way to contest former agreement. Although France is clearly a major technological country, Dutch people see it as a place for a pleasant vacation and "plaisir de vivre."

In conclusion, three main issues must be addressed:

What are the needs? Nobody has a clear view. It seems, however, that needs linked to professional activities may be overestimated, and personal needs underestimated.

What are degrees? Degrees are a keystone of education, especially higher education; they constitute a framework where faculty builds up its authority, not to say tyranny. They legitimate a formal obligation of residence and attendance to lectures.
Something has to be changed to design true international programs. A distinction could be made between an analytical approach (a degree being the proof of a curriculum) and a synthetic approach (a degree being the proof of global skills measured at the end of a process). In the second case, opportunities could be given to set up institutions without walls and new types of degrees.