French Reforming Higher Education—Again

Government seeks to improve teaching in universities, research in grandes écoles, *avoid political pitfalls*

Paris. France's Ministry of Research and Technology has moved into buildings in the heart of the Latin Quarter vacated by the elite Ecole Polytechnique. The move put the ministry at the symbolic center of the system that supplies the technocrats who run France's government and industry. The historic surroundings on the rue Descartes are also reminders of a main obstacle to the government's aspirations to use science and technology to transform the French economy (*Science*, 14 May, p. 712).

As in Britain and the United States, shortcomings in graduate education and research in science and engineering are seen as a cause of lagging industrial innovation and productivity. In France, the problem is attributed primarily to a dual system of higher education created by the division between the universities and highly specialized engineering schools called *grandes écoles*, which the Polytechnique epitomizes.

The Mitterrand government has acknowledged that its ambitious plans to overhaul the research system requires a comparable reform of higher education and will follow up its new research law next fall with a comprehensive law for higher education that will heavily emphasize science and technology.

In the centralized French system, the government has greater leverage over higher education than in the United States. Tradition and vested interests within the French system, however, have made French higher education highly resistant to change, the grandes écoles perhaps most resistant.

The case against the grandes écoles is that they attract students with the greatest potential in science and mathematics, but then provide a rigid and theoretical training and offer them little exposure to research. The country's research system which is centered in the universities and government laboratories is thus deprived of the best and brightest. The universities are seen as having a lesser claim on both talent and resources.

Selectivity in admission is what most clearly distinguishes the grandes écoles from the universities. Aspirants to the former follow a rigorous curriculum emphasizing math and science in secondary school, then undergo a demanding 2-year preparatory course (*classes preparatoires*) before taking the tough national examinations for entrance to the grandes écoles.

The grandes écoles are not all equal in prestige or difficulty of access. Of some 300 institutions classed as grandes écoles, about 150 are engineering schools; the others offer professional training in various branches of commerce or industry. Among the engineering schools the Polytechnique and perhaps a dozen others are at the peak of the pecking order. Also ranked at the top are the Ecole Normale Superieure, the traditional training ground for university teachers, and the Ecole National d'Administration (ENA), a kind of national academy of public administration. Despite the gradations in prestige, diplomas from the grandes écoles are perceived as guaranteeing desirable jobs and careers.

Enrollment in the grandes écoles amounts to less than 90,000—some 37,000 of them in the engineering schools—compared to about 860,000 students in the universities in 1980. But a comparison of the number of graduates makes the significance of the grandes écoles clearer. About 10,000 engineers' diplomas are awarded by the grandes écoles each year; the universities grant some 6000 master's degrees in science, at the roughly equivalent level.

French universities traditionally offer admission freely to lycée graduates with a baccalaureate (bac). In the first 2 years of university study a sort of sink-or-swim selection process operates; students find themselves in very large classes, have little contact with teachers, and face all-or-nothing exams. Attrition varies according to discipline, but probably less than 25 percent of students who start university attain the so-called DEUG (diploma of general university education) after 2 years and pursue the second 2 years of study toward the master's degree or *licence*. In the grandes écoles, all but perhaps 5 percent graduate.

Reform of the dual system is not a new idea. Critics have been urging changes since World War II. But the grandes écoles were so solidly entrenched that they came through the student upheaval of 1968 virtually untouched despite bitter criticism that they were controlled by industry and bastions of bourgeois privilege.

On the other hand, the universities underwent substantial changes as a result of the 1968 protests. A law bearing the name of the centrist politician Edgar Faure was passed in 1968 with the major aims of democratizing university governance, increasing university autonomy, and encouraging interdisciplinary teaching. Little progress toward the last goal was made, but university councils were created with strong representation from students and junior faculty and were given greater power in such matters as election of university presidents. The university system was restructured and individual universities apparently granted more control of teaching decisions and financial affairs. Disciplinary *facultés* were organized into new constellations as universities. The *facultés* of the University of Paris, for example, were regrouped into 13 universities with the science departments becoming Paris VI and Paris VII.

By the middle 1970's, the conservative government was pressing counterreforms. Under a controversial and combative minister of higher education, Alice Saunier-Seité, the government reasserted control of curriculum, revising requirements for degrees so that training accorded with opportunities in the job market. Protests against this "vocationalism" prompted the sharpest outbreak of student militancy since 1968. The government, nevertheless, later imposed tighter control on faculty appointments and increased the percentage of professors on university councils.

After the socialists won office the government took steps to reapply the terms of the Faure reforms to the university councils but deferred broader action, promising to present a new, comprehensive law for higher education this autumn. A major question, of course, was the status of the grandes écoles.

In 1978, the out-of-office socialists had called for "unification" of all higher education institutions. What was proposed was integration of the grandes écoles and the 2-year preparatory classes for them into reorganized universities.

Early this year, reports in the French press predicting that the grandes écoles would be merged into the universities triggered lively debate. Guy Ourisson, a professor of chemistry at Strasbourg and

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a special adviser to education minister Alain Savary says that outright merger was never seriously considered.

The rumors of merger, says Ourisson wryly, "may have had a positive effect." The conference of directors of the grandes écoles moved to examine problems and devise remedies, he says. Plans are still being formulated, but Ourisson suggests that measures such as introduction of some sort of research experience in preparatory classes and creation of closer ties between grandes écoles and university departments where research is performed are feasible. Other sources say an effort will be made to move the preparatory classes—some private—into the universities, in part to show aspirants to the grandes écoles that universities are not beyond the pale.

The government's apparent decision not to humble the grandes écoles is understandable in pragmatic terms. Alumni of the grandes écoles form a powerful lobby in and out of government. Of ten top subordinates of research minister Jean Pierre Chevènement, four are "enarchs" (graduates of ENA) as is Chevènement himself, one is a polytechnicien, and three others have grandes écoles backgrounds. Politically, attempting to merge or dismantle the grandes écoles would require a bruising battle. (A plan to broaden access to ENA is being warmly contested.) And the government, which has followed reformist rather than radical methods in seeking social change, will have to pick its fights judiciously.

Expectations are that the government will sidestep the question of grandes écoles elitism but seek ways to improve teaching in the universities and research in the grandes écoles. The problems confronting the government were set out last fall in a free-swinging report on the research system by Laurent Schwartz, a mathematician and professor at the Polytechnique and prominent in French academic life. Schwartz in the report emphasized that funding cutbacks in the 1970's had damaged research, particularly by limiting recruitment of young scientists. Although many of his recommendations are conventional in urging reflation for science, he added some suggestions that are heretical in the French academic context, urging selectivity for university admissions and substantial tuition charges.

A likely target of reform is what Ourisson calls France's "multiplicity of doctorates." At the summit is the so-called state doctorate that requires a second thesis as a passport to a professorial career. The most numerous of French doctorates is the research degree known as the third-cycle degree, usually awarded after 2 years of postgraduate study and said to be somewhat less demanding than the American Ph.D. About 2000 of these are awarded in science each year. The French also award a doctor-engineer degree. This was modeled on the German degree of the same name, says Ourisson, but "lost something in translation," notably an orientation to applied science. The current array of French doctoral degrees is regarded as poorly articulated with the present requirements of research in science and technology. Ourisson says that the government is trying to work toward a "consolidation" of the degrees.

Another perspective on the situation is that of Maurice Levy, professor of physics at Paris VI, who was an adviser to previous governments and has been critical of trends stemming from the Faure reforms. Levy agrees that money has been tight all over the research system for at least 4 or 5 years. "There was probably some fat, but now it's hit the bone," says Levy. In his own bailiwick he says no new assistant posts have been created in the last 5 years, and all promotions have been made from within the staff.

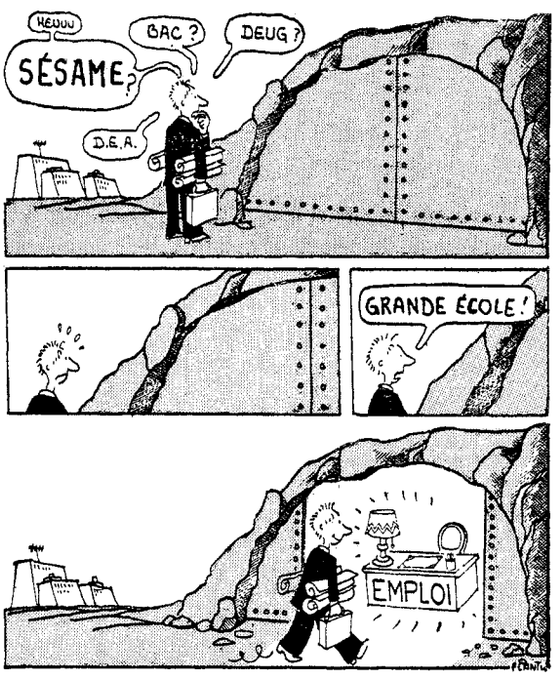
In respect to university governance, Levy says the Faure reforms were too complicated and opened the way to politicization of the universities. The countermeasures taken by conservative governments in the mid 1970's were "a mistake," however, he says. As student militancy waned in the early 1970's a working compromise on governance had been worked out; the government's actions in the mid 1970's were seen as unfair and inspired a "tendency of revenge" that upset the modus vivendi, says Levy.

The universities, nevertheless "survived" the 1970's, says Levy. The total number of students declined somewhat, reducing overcrowding, and students became "more serious and less interested in political battles." The teaching is better now, he says, with "students who work well not being left to themselves" and periodic exams providing them a better chance to keep up.

Although only about 15 percent of first year students make it through to the third year of physics at Paris VI, there has been a change in the composition of third and fourth year enrollments. About half the students in the "second cycle"—the third and fourth years—come from the grandes écoles, while half hold the DEUG from the university. The move of the Polytechnique to new quarters was made in part to permit better research facilities and also to make it possible for Polytechnique students to work in university research labs nearby.

By such gradual adjustments the division between universities and grandes écoles is, in fact, becoming less profound than it was. But to carry out its ideas of creating more places in the research system and making that system more flexible the government will have to hasten the pace of the process. The new higher education law, when it appears, will indicate how far the government is willing to go in expending resources and political capital to carry out its ideas.

—JOHN WALSH



This cartoon from the daily, Le Monde, *reflects the French popular view that training in one of the specialized engineering schools called* grandes écoles *is an open sesame to desirable employment.*