France: Mass Higher Education Produces Diplomas but Not Jobs

Four years ago the students of Paris took to the streets in a month-long *manifestation* that shook the De Gaulle government. The French habitually refer to the outbreak in the oblique phrase, "the events of May," which reflects lingering ambiguities about how it happened and what it meant. The standard theory is that violence never reached revolutionary levels because the workers, who briefly joined the students in the streets, decided to settle for such things as wage hikes and better vacations. And the students were isolated when a majority of Frenchmen in Paris and elsewhere reacted strongly against the threat to public order.

If there was no revolution, neither was there—despite continuing government readiness to use its tough riot police and court action as a deterrent—a counterrevolution. The summer and autumn of 1968 produced a *Loi d'orientation* for education and a series of administrative actions that, at least on paper, redressed many of the students' more serious grievances. Within a year after the troubles, President De Gaulle had resigned to be succeeded by Georges Pompidou, practitioner of a pragmatic gaullism without De Gaulle.

On the political left there have been marked changes in alignment in 4 years. Many of the student leaders of '68 have left the university and dropped out of politics. Others are seeking to achieve the elusive alliance of workers and students through membership in the Communist Party. Still others have moved beyond the traditional left to form small militant groups, which are ideologically differentiated as Maoist, Trotskyite, and anarchist, but also aim to win influence among unionized workers. These *gauchistes*, as they are called, can be roughly compared to the American New Left at its most militant, and perhaps the most significant recent political development has been the breach between France's Old Left and New Left. The regular French Communist Party is seeking power through electoral politics and is anxious to avoid incidents that would jeopardize its chances at the polls, particularly since there will be national elections within a year. Conflict between the Communist Party and the *gauchistes* flared openly in a series of incidents that came to be looked upon as a contest for the loyalty of young workers.

In late winter, *gauchistes* organized a mass march on the Renault auto plant in a Paris industrial suburb, and a young Maoist was fatally shot by a plant guard. A protest march of more than 60,000 ensued, raising visions of another '68. But then a Renault executive was kidnapped by *gauchistes* and there was talk of other sorts of urban guerrilla action, and, although the executive was released uninjured, public opinion stiffened against the *gauchistes*. The Communist Party officially criticized the *gauchistes* for the whole series of actions, and the *gauchistes*, in turn, took a harder line, lumping the Communist Party with the government as part of the establishment structure.

The difficulty of gauging the influence of the *gauchistes* among students and young workers, as well as recollections of '68, when almost everyone was taken by surprise, have produced an uncertainty and uneasiness about possibilities of another blowup. Government policy is not to let anything get started. In the Latin Quarter, for example, almost any sort of assembly in the streets brings out the police rapidly and in force. If there is an incident, bystanders, innocent or otherwise, can expect to be roughly handled. The tactics have earned the nearly universal resentment of the students, but the government seems to count on the public's passion for order to justify the policy. Nevertheless, student strikes and demonstrations, usually confined to the premises of university buildings, continue to be a feature of university life, at the level of a chronic, low-grade infection.

The specter of '68 and the lurking expectation of a reprise cause many French and foreign observers to see the problems of the university in oversimplified, riots-or-no-riots terms. Like other Western countries, France is undergoing profound social and economic changes, and French society has not altered rapidly enough to accommodate those changes. Turmoil in the educational system can be seen as the result of a contest over access to that system for groups that have hitherto been excluded. The two hottest issues for the universities this year in France have centered on the problem of selection, one affecting the *formation des maîtres* (the training of secondary school teachers) and the second involving the question of a numerus clausus for medical students. May 1968 was a symptom, albeit a spectacular symptom, of a conflict that has been in progress in an acute form for at least a decade and that will continue in the foreseeable future.

While France has achieved mass higher education in terms of numbers, the system retains many of the characteristics of the traditional structure, which served an intellectual and social elite and prepared them for jobs of which they were virtually assured.

Students now complain that the reformed system gives them diplomas but not jobs. In 1968 and subsequently, a nonnegotiable student demand was that there be no restriction on the number of students admitted to the universities. The government acquiesced to this politically charged demand, and

Table 1. Enrollment in French universities, by discipline.

Discipline	Students					
	1965–66		1970–71		Variations from 1965–66 to 1970–71	
	(No.)	(%)	(No.)	(%)	(No.)	(%)
Law and economic sciences	86,733	21.0	147,694	22.7	60,961	70.3
Sciences	112,872	27.3	117,425	18.0	4,553	4.0
Letters and human sciences	137,008	33.1	225,736	34.7	88,728	64.7
Medicine and dentistry	63,317	15.3	113,887	17.5	50,570	79.8
Pharmacy	13,826	3.3	22,246	3.4	8,420	61.0
University institutes of technology			24,380	3.7		
Total	413,756	100.0	651,368	100.0	237,612	57.4

the result has been an "open" university that, in some disciplines, has been overwhelmed by numbers of students.

As one scientist in a Paris research institute observed, "The professors have only one way to control numbers—flunk students at the end of the first year, as used to be done."

Since the reforms, he says, "they have not used their only weapon. They are incapable of separating the good and the bad, and the quality of teaching has gone down the drain." The students are against "criteria," he says, and they accuse the professors of creating conditions that will favor the "class" student.

According to one Paris journalist knowledgeable about developments inside the university, in respect to members "conditions are no worse than before 1968." For students, things are probably somewhat better, in the sense that there are now more seminars and an increase in small-group teaching of various kinds. Teachers, however, are obliged to take part in administration and are very busy. He agrees that hardly anybody wants to speak about selection—"the pressures are too strong."

The outlines of the problem are indicated in the enrollment figures, which rose from 413,000 in the 1965–66 academic year to nearly 700,000 in the current year. The De Gaulle government put especially heavy emphasis on science in the expansion of the university system in the early 1960's, but from 1965–66 to 1970–71 (see Table 1), the percentage of students enrolled in the sciences declined steadily; the total number of science students actually dropped by 4264 between 1969–70 and 1971. The decline in interest in science may, in fact, have been partly accounted for by a shift of students into medicine and dentistry and by a flow of students into the new IUT's (university institutes of technology), which train high-level technicians. In addition, well-informed government officials and university professors note a stronger tendency for students talented in science to seek entrance into the *grandes écoles*, the highly selective professional schools that have trained generations of influential French technocrats and administrators. In part, the *grandes écoles* may be more popular with the scientifically able because they offer greater opportunities for research than they did in the past, but the real attraction would seem to be that a diploma from the *grandes écoles* is still a guarantee of a flying start on a career in government or industry.

For university graduates in science, prospects have dimmed decidedly in recent years. New jobs on university faculties are drying up as the great university expansion of the 1960's tails off. University research funds have plateaued, limiting chances for students seeking places for graduate study.

At the same time, government support of research in such fields as defense, atomic energy, and space are be-

Photocopying Habit in Jeopardy

Photocopying journal articles, a practice that has become part of the life-style of scientists in the United States, may become a very expensive habit. If a recent decision on the question of copyrights stands, photocopiers will have to start paying journal publishers for the right to reproduce scientific papers.

Four years ago, the Williams & Wilkins Co., Baltimore publishers of more than 30 prominent scientific and medical journals, sued the National Institutes of Health and the National Library of Medicine (NLM), alleging that their photocopying activities constitute an infringement of copyright. In September 1970, the case came before the U.S. Court of Claims and now, after reviewing masses of data, James Davis, a commissioner of the court, has rendered a decision in favor of the publisher. Commenting that the resolution of the case required "the judgment of Solomon" if not also the "dexterity of Houdini," Davis ruled that Williams & Wilkins clearly has grounds for complaint, that photocopying diminishes its potential market, and that the company is entitled to compensation.

The ruling, which will be appealed to the full panel of seven judges on the court and then, in all likelihood, to the U.S. Supreme Court, has touched off a wave of concern among the country's librarians and scientific societies. There is talk that the flow of scientific information will be impeded and that library and laboratory budgets for journal material will be markedly inflated by the necessity of paying any sort of fee for copying. Officials at NLM estimate that fees could cost libraries millions of dollars a year. For the present, however, NLM, which makes hundreds of thousands of copies of articles every year, is proceeding with business as usual although, in its case, business is a service, not a profit-making venture.

The publisher, meanwhile, is trying to reassure its customers that the flow of information is not going to come to a dead halt and that, in the words of company president Charles Reville, "We're still your friends." The company has taken ads in several major library magazines, putting forth what it calls a "statement of fact and faith," which summarizes the legal highlights of Davis's ruling and proposes that when subscribing to a journal, libraries may also be able to purchase a license that would entitle them to unlimited photocopying privileges. "This would avoid unwieldly record-keeping," Reville says to be encouraging. Although there is no official information on what such licenses would cost, there are indications that they might be sold according to a graded scale that takes into account the current price of the journal and the size of the purchasing library. Guesses are that the ultimate cost of a journal might double or triple under this arrangement.

The hooker in all this, one with far-reaching implications that have yet to be fully grasped, let alone resolved, is something called "express license." In essence, this refers to a privilege that the government has had since 1965 that allows it to stipulate that publications about research funded with federal money cannot be copyrighted under any provisions that preclude government's copying or translating them without paying royalties. If the government, which now uses express license on an irregular basis, were to broaden its application of this practice and extend it to nongovernment users of publications of federally supported research, the whole issue of copyright fees might be reduced to an academic matter.—BARBARA J. CULLITON

ing held level or cut back, and this closes off what has been a thriving market for the talents of scientists and engineers. The Centre National de la Recherche Scientifique (CNRS), the principal source of funds for basic research, also has funding problems which have sharply curtailed its rate of growth.

In spite of these strains, it is hardly accurate to suggest that the government has abandoned science. As Hubert Curien, director general of CNRS, noted in an interview, the CNRS budget was increased 18 percent in 1972. Pay increases, however, took about two-thirds of the increase. Not only is the cost of living rising rapidly, but, since CNRS scientists are not finding jobs outside the organization at the rate of previous years, the average age and pay grade of staff members is rising. CNRS, unlike the American National Science Foundation which it resembles, operates its own laboratories. CNRS expanded very rapidly in the middle 1960's and now employs about 20,000 persons, of whom some 6000 to 7000 are professionals. In normal times, about 300 to 400 researchers were expected to leave CNRS each year, mostly those who had completed the demanding state doctorate and took posts in the universities or industry. Now such posts are increasingly more scarce, there is little turnover in CNRS staff.

The heaviest pressures are building, however, in those disciplines in which the greatest numerical increases in students have occurred, in letters and the social and behavioral sciences (which the French call human sciences).

Traditionally, the student in the *faculté des lettres* in France prepared for a career in teaching. To those who completed a "second-cycle" degree, roughly

UNISIST and SIE: Promise and Fulfillment in Informatics

UNISIST is the Intergovernmental Conference for the Establishment of a World Information System. It is UNESCO's plan for exchanging scientific and technical information in all languages between all nations of the world.

SIE stands for the Science Information Exchange, a 20-year-old program run by the Smithsonian Institution in Washington, D.C. The purpose of SIE is to exchange scientific information between the agencies of the U.S. government.

Last October, a UNISIST conference was held in Paris. The U.S. delegation included the head of the National Science Foundation, the foreign secretary of the National Academy of Sciences, and many other important personages.

While the distinguished delegates were meeting in Paris, the clerks of the General Accounting Office were looking over the operations of SIE. Last month they issued a report.*

W. D. McElroy, as chairman of the U.S. delegation, declaimed to the UNISIST conference on 4 October: "It is clear that scientists everywhere have the same outlook about the necessity for the benefits to be derived from the sharing of scientific and technical knowledge. . . . We hope that thoughtful men and women everywhere will dedicate themselves to UNISIST ideals." It had long been U.S. policy to promote the unimpeded flow of information, McElroy said, through channels such as SIE.

W. D. McElroy, then director of the National Science Foundation, wrote on 21 October to the General Accounting Office, explaining that the NSF did not itself use SIE for planning purposes because its information was out of date. (Up until June 1971, SIE was funded by the NSF, which also determined its operating policy.)

The UNISIST delegates, from some 83 nations of UNESCO, concurred that scientific advance depends upon the dissemination of scientific information, emphasized that a world scientific and technical information system is feasible and indeed desirable, and invited the director-general of UNESCO to provide enough money for them all to meet again and discuss the matter further.

The General Accounting Office ascertained that government agencies are not bothering to provide SIE with full information about their research and development programs; that, as a result, the information possessed by SIE is "incomplete and obsolete"; and for this reason government agencies make little use of SIE's services.

At the inaugural session of the UNISIST meeting, the Romanian delegates stated their conviction that the Chinese, South Vietnamese, and Cambodian delegates were not legitimate representatives of the countries concerned. The Soviet delegates opined that it was not possible to discuss a "world" system of information exchange in the absence of representatives from North Korea. The Cuban delegation pointed out that the inadequacy of scientific information exchange in the developing countries was an obvious consequence of their exploitation by "certain powerful countries," a situation that could "only be remedied by structural changes."

The General Accounting Office asked federal agencies how useful they found SIE's services and learned as follows. The Department of Justice stated it had never heard of SIE. The Department of Labor considered SIE useless for its own purposes. The Bureau of Mines said that when requesting information from SIE it frequently received only the information the bureau had itself submitted previously. The Department of Transportation preferred to exchange information directly with other agencies, thus cutting out the SIE, and recommended that everyone else do likewise. The Office of Science and Technology, which is supposed to coordinate federal science information, said it did not have authority to make agencies submit information to the SIE. The Office of Management and Budget, which does have such authority, said it believed the present system was all right. And the Department of Commerce said that SIE should be transferred to Commerce and consolidated with the department's own information exchange service.

The UNISIST delegates focused their minds on "the need to study the integration of thesauri, the relation between standardization in the field of thesauri terminology and classification, and the compatibility of scientific terminologies with information languages."

The General Accounting Office noted that, after SIE had started making a charge for its services, previously given free, there had been a 91 percent decline in its use.—NICHOLAS WADE

* *Effectiveness of Smithsonian Science Information Exchange Hampered by Lack of Complete, Current Research Information* (General Accounting Office, Washington, D.C. 20548).

the equivalent of an American master's, a career as a secondary school teacher was virtually guaranteed. For those who persevered in a long grind of graduate studies culminating in the *doctorat d'état*, the door to a teaching career in the university swung open.

During the 1960's the postwar baby boom and the raising of the age limit for compulsory education kept the number of jobs in secondary education ahead of the number of qualified teacher applicants, and expansion of the universities resulted in a virtual doubling of faculty posts. Since the end of the decade, however, the demand for teachers at both levels has fallen at a time when the supply of aspiring *"professeurs"* is still rising.

For the arts graduate in France it is by and large still true that the only profession open is teaching. Any other job means a step down in status and probably in income. And while the relatively new fields of social and behavioral sciences are highly popular among students, there are very few jobs for these graduates in government, industry, or education.

One professor, who wears a second hat as an official in the Ministry of Education, notes that between a third and a half of university students have earned their secondary school baccalaureates in literature. He estimates that there are perhaps 70,000 candidates now in the universities for the 5000 to 7000 teaching jobs that will be available.

Part of the problem is that the French economy still cannot offer large numbers of middle-level, white-collar jobs to university graduates who lack specialized training in the way, for example, the American economy traditionally has. But the expectations of French students exacerbate the problem. Before the mass university, a degree from the *faculté des arts* was a passport both to a career and to standing as an intellectual. Students today are bitterly disappointed when they realize that success in the university no longer guarantees the old rewards. As the professor with the post in the ministry put it, "The students want revolution for older people, tradition for themselves."

He goes on to say that "students think we want to create a numerus clausus in the university. This is their number one fear. It is not true." And he adds a key factor when he says, "We need 10 years to change the situation."

Agreement on Pedagogy

The conflict over the *formation des maîtres*, which reached a boil this year, underscores the problem. The issues are so complex and the belief on each side that the other is acting in bad faith is so strong that it is impossible for an outsider to give a balanced summary of the dispute. About the only thing that everyone seems agreed on is that, in the education of secondary school teachers, academic rigor has been stressed at the great expense of teaching skills. From there on disagreement reigns. The ministry last year came up with a proposal which would have meant the selection after 2 years of university work of students who would go on to become teachers so that those who were unsuccessful could prepare themselves for other careers. The proposals stirred widespread opposition spearheaded by the Syndicat National de l'Enseignement Supérieur, a union of university teachers, researchers, and graduate students. The critics argued that government proposals represented a backsliding into elitism and put strong emphasis on demands that training of teachers be upgraded and many more teachers be recruited in order that gross inequalities in French secondary education be corrected.

There are some parallels in the current dispute over medical education. The overburdened Paris faculty of medicine was divided into ten separate programs and has been undergoing serious transitional problems (*Science*, 12 September 1969). A buildup in the number of medical students caused authorities to take steps to bring students and resources into closer balance, and the present conflict centers on such things as admissions tests for medical students and a key proposal to cut the number of students after the second year of medical school in proportion to the number of places for clinical experience that would be available 3 years later. The opposition among students has been strong and sustained. Many of them see in the proposal a move from the conservatives of organized medicine to limit competition. The result has been radicalization of many medical students who, as a group, have been relatively inert politically in the past.

The French government faces a serious dilemma reflected in education minister Oliver Guichard's comments in March to a task force charged with restudying the project for the *formation des maîtres*: "We are into mass higher education and there we will stay. The multiplication of diplomas resulting from this has not been matched by an increase in jobs for which these diplomas prepare one. We could have chosen the limitation (*protection*) of diplomas and hence selectivity. We have deliberately chosen the open university."

At the same time, the government is obviously trying to bring the supply into closer congruity with demand. French universities have undergone a massive reorganization, and new types of higher education institutions are being created in an attempt to free the university from the dead hand of the past and to train students for the jobs that are actually available. The attitudes of students and professors have, to some degree, negated the reforms, and the charge is often made that the government has consistently underfinanced the changes. One knowledgeable observer, a product of the system who is now outside it, thinks that basically the government still follows the "De Gaulle ideology of injecting money into the existing system; structural aspects are ignored."

The critics seize on the fact that the *grandes écoles* have been virtually untouched by the reforms, and government officials have made it clear that the nation needs the *grandes écoles'* output of managers and technocrats while higher education is in transition. Ironically, the effect has been, as in the case of the scientifically talented, to make the *grandes écoles* stronger and more elitist and to further weaken the universities.

In France's highly centralized system, the national universities are regarded as directly controlled by the government, and dissatisfaction with the universities can easily convert to disenchantment with the system at large.

Gaullist governments have regarded the reformed universities as avenues for "social advancement," but the political reality in France is that students and many professors are ideologically at odds with any government of the center or right, particularly on how to achieve equality in French society.

Given these conditions, it is not surprising that student riots in France are not regarded simply as rites of spring. Workers and students do not seem yet to be making common cause, but informed observers feel that inflation and unemployment could play an important role "next time." Political instability and the immobilism it caused hastened the decline of the French Fourth Republic; social disaffection, not least among the growing number of disappointed university graduates, could be the major challenge to the Fifth Republic.—JOHN WALSH