The R&D Depression in the United States

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To a science-policy-minded visitor from Europe, the current R & D depression is the most fascinating phenomenon on the always lively U.S. scene. One hears of it in practically every contact with the R & D industry—whether in basic or applied research, in the natural, life, or behavioral sciences, or in government, university, or industrial environments. Budgets of numerous such basic or applied research laboratories as Livermore and Lincoln are being slashed, missions are being dropped, facilities dismantled, centers closed, projects ended, new ones rejected, money for consultants and travel tightened, and researchers fired in droves. Officials at state unemployment offices are beginning to interview unusual applicants for insurance: Ph.D.'s in fields from physics to psychology and hardware development.

Relevant Questions

A visitor can ask himself a series of relevant policy questions about this R & D depression. How serious is it? How are the various parts of the R&D industry affected by it? Is there a general R & D depression, or is it just talk by a small community depressed because its budgets were cut? How is the R & D industry reacting to it, from the top policy level to the level of management of research production units? How long will it last, and on what does this depend? How will it affect the health of U.S. science, R & D policy, and society? What will be its effects on the R & D policies of other countries, and on world R & D?

For most of these questions one will have to wait for documented answers. So far there have been no specific studies of this R&D depression. And it is too early to expect studies of the impact of the U.S. economic slowdown on the R&D industry of the kind the Brookings Institution made in the 1930's. So a visitor can only collect impressions, ask questions, project guesses, and wait for pro and con evidence.

Certain hints I gathered seem to indicate that the reaction to this depression by the R & D industry may be similar to that of U.S. industry to the great 1929 depression. Drives are on for retrenchment, greater relevance, economy, effectiveness, and planning. At the top policy level it seems that the Daddario science dream of the "American century" is being dropped—the dream of the United States' maintaining its position of world leadership in all the key fields of science and advanced technology. At least some seekers of research funds who come to Washington armed with the argument, effective in the past, that "the Russians are going to do it" are answered, "So what? Let them." The Marxist syndrome—that R & D must be directly relevant to social problems, from national security to drug addiction—is becoming the U.S. science policy rule of thumb. Agencies are asked to define more stringently their missions and to show how each R&D program, project, and problem is related to them. Those who a few years ago fought to sponsor research centers are now willing and trying to give these away to any taker. The more or less indiscriminate proliferation in the past of R&D centers in a given field is being curtailed; attempts are being made to concentrate facilities and research in a small number of places. At the level of the research production units, the "deadwood" in the form of projects, problems, and researchers is being ruthlessly cut out. There seems to be a new drive to increase understanding of the research processes and of the social impact of their outputs in the hope that this will lead to an increased efficiency and effectiveness in the use of R&D men, money, and materials.

Causes

The immediate cause for the R&D depression seems to be the curtailment of federal government support of R & D with as yet few signs of impacts of the economic slowdown on industrial R & D. Some students of the U.S. R&D scene —and I was not among them—have been predicting that this curtailment and the accompanying phenomena were bound to happen. Over the years a number of these observers have been pointing out that the volume of R&D support and its growth in the United States and its distribution were based on very tenuous rationale, were overinflated and unbalanced. To envious European and other non-American eyes during the past generation there seemed to be no limit in the United States to the support of any project so long as it was classified "science, research, development, test or evaluation."

The demand for a more rational R&D policy—for socially better committed R & D—has been growing in the United States over the years, not only in the science policy community debates but first of all in industry, then in Congress, and lately on the campuses and among the public at large. This R&D depression seems to be closely connected with the current process in the United States of reexamining social values and national goals and objectives. This social reexamination is resulting in the flight of motivated young talent from the physical to the life sciences, the social sciences, the humanities, and ethics and religion, on the one hand, and to a growth of interest in the policy sciences, in social problems studies, and in the definition of R&D relevant to them, on the other. All of this may result in the development of national planning in the United States in forms specific to its culture and its present state. Thus, in my opinion, although the end of the Vietnam war or the end of inflation may result in resumption of the growth of the U.S. R&D potential, there seems little reason to expect a return to the old R&D policy days. Although, as was pointed out at a recent Battelle Institute symposium on R&D policy, the functional distribution of the R&D potential in the United States, and elsewhere, tends to change slowly, it may be expected that the current R&D depression may speed the process of change in the way the R&D cake is cut in relation to the U.S. concerns.

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Possible Impact

The current R & D depression seems to worry most those engaged in non-mission-oriented basic research in the physical sciences. Every one of the leaders in these fields to whom I have had a chance to speak was pessimistically engaged in deciding how to argue with holders of the national purse strings, armed with "social merit" matrices, that research done for knowledge's sake, for cultural enrichment, or as "social overhead" had social relevance and deserved support.

The United States began to cut seriously its support of foreign research back in 1964. Thus, the current R&D depression may have little direct effect on the financial situation of non-American R & D. One can also neglect, at some risk, however, the possibility that the R&D policy communities in Europe and elsewhere will tend to cut their support of R&D "because the USA is doing it," just as in the past they supported R&D "because the USA is doing it."

Some non-American makers of science policy may, with some reason, expect a cessation of the brain drain on their R&D manpower by the United States, and may even hope for its reversal. Yet the most important impact of the U.S. R&D depression on world R&D, and the impact most difficult to assess, lies elsewhere. The U.S. share in the world R&D potential and production (manpower, money, facilities, and outputs) seems to be higher than its share in the world production of goods. The variety of channels of communications and exchanges through which U.S. R&D interacts with world R&D is so great that, if the depression continues, it will no doubt affect the whole of the world production of knowledge, inventions, and discoveries about nature, man, and his society. It is very hard even to conjecture what effect all this R & D depression may have on the up-to-now overwhelming innovative potential of the United States on the world scene.

On this issue, the R & D men I spoke to are clearly divided into optimists and pessimists. The optimists see in the current U.S. R&D depression a stimulus to larger and more diversified international cooperation in joint R&D projects, and even the beginning of a more rapid development of a world R&D policy.

The pessimists are inclined to see in the current R&D depression a first sign of the end of the U.S. age of science. The landing of men on the moon, they argue, may be the highest achievement of U.S. civilization, a symbol of its highest power, just as the Pyramids, the Parthenon, and the Taj Mahal are symbols of the highest achievements of other civilizations.

NEWS AND COMMENT

Wisconsin: Teaching Assistants' Strike Ends in Contract Signing

"Students, we are adults, we are workers. . . ."—Thesis 1, The Sorbonne Appeal

Madison, Wisconsin. A wholly new chapter in the annals of American university politics was formally inscribed here on 9–10 April. After a year of negotiations and a 24-day strike, the University of Wisconsin's Madison campus signed a labor contract with the Teaching Assistants Association (TAA), a local labor union of graduate students who are paid for part-time teaching and research assistance at the university. The contract not only covered various "bread and butter" issues traditional in labor-management bargaining but also granted, in a fuzzy fashion, the right of students and teaching assistants to participate in planning the educational courses in which they are involved.

While the University of Michigan was settling a successful strike by black students early this month (*Science*, 10 April), its sister Big Ten school here was in the grip of a highly organized, disciplined, and nonviolent student strike called by the TAA. The strike was particularly effective against the faculty of letters and sciences, where course attendance averaged less than 30 percent until the last 4 days, when a settlement appeared near.

The Wisconsin strike was fundamentally different from other student manifestations of recent years. The organizers, as teaching assistants, were not only students but workers as well, with an economic weapon. By staying out of the classroom they were able to prevent instruction in many courses.

As workers, they availed themselves of the traditional collective bargaining process to present their demands to the university. But their demands went beyond the traditional economic aims of American trade unionism to embrace policy and power issues that have motivated other student strikes across the country. The strike leaders claimed, in effect, the right to speak for undergraduate students as well as for their own constituency in bargaining on such issues.

Although neither side could claim a smashing victory in the settlement, the contract clearly altered the university's power structure by acknowledging the TAA as a force to be reckoned with in the formulation of educational policy at Wisconsin. And the potential exists for a similar movement at every university across the country that relies on graduate students to help teach courses and grade papers. One of the TAA's leaders in bargaining with the university, James Marketti (a graduate student in industrial relations), said shortly before settlement that his union had been contacted by teaching assistant organizations or by individuals from "50 to 60" campuses during the course of the strike.

The story of the TAA's negotiations with the University of Wisconsin is one of a challenge to the school's class structure and power relationships, which are probably not very different at other major public universities. A visitor who wants to get a sense of the physical layout of the university quarter here may seek out three high spots. One is Van Hise tower, the skyscraper where the university regents have their offices; a second, a short distance from the campus, is the Wisconsin state capitol. In between is the third vantage point, Bascom Hall, where Chancellor