

A Word to Set the Stage for a Memento from the Recent Past

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In the academic year 1969-70, I was a fellow at the Center for Advanced Study in the Behavioral Sciences in Stanford, California. I became very friendly with one of the other fellows, Stevan Dedijer, a Serbian physicist who had, through a complicated history, become a sociologist of science policy, and who was at the time, and from then until his retirement, a professor of science policy at the University of Lund in Sweden. Steve had had considerable experience in radical politics in the United States; after finishing a Ph. D. in physics in the early Thirties he had edited a Communist Serbian language newspaper for steelworkers in Pittsburgh. He fought in WWII as a member of the U.S. 101st Airborne Division, and returned to Yugoslavia after the war, where he was head of the Belgrade Nuclear Institute. After the fall of Milovan Djilas, with whom his brother Vladimir had been closely associated, he found it expedient to leave Yugoslavia, and moved to Sweden and his new career as a sociologist of science.

I was in the full flush of a paranoia which had attacked many American academics of the time, a feeling that the Nixon government and the forces it might represent were opposed to any kind of social science of the kind that interested me, and that it might be a good idea to think about how we would do our work if the government decided to clamp down on it or, at the least, discourage it. We had the example of the banning of academic sociology by the Brazilian military dictatorship, and the difficulties of social science under other right-wing regimes, and the experiences of social scientists in Russia and other Iron Curtain countries to think about. So our paranoia was not totally unfounded. And the events of the Reagan administration, when OMB head David Stockman carefully weeded any support for social science out of the improbable homes it had found in the nooks and crannies of the federal budget, as well as the more open sources of funding, showed that there really was something to worry about.

I asked Steve what he thought about these problems. How could we do research if the government refused to finance our work or, worse yet, forbade us to do it? Many of the other fellows in my year at the Center would have accused me of being a left-wing nut if I had raised such questions with them, but Steve took my worries seriously--he had been there, after all—and we spent many hours discussing such problems and possible solutions for them. He brought all his ingenuity and experience to bear.

We wrote this draft of a paper but never got around to doing anything further with it. And then he went back to Lund and I went back to Northwestern and the paper sat in a file and after a while I forgot about it. I saw Steve once more—he invited me to visit Lund while I was in Europe later in the 1970s--and then I lost contact with him. I tried to find him a few times, but he had retired from the university and people there didn't seem to know where he was or anything much about him.

I recently ran across this draft in a drawer and looked him up in the now available Wikipedia, where I learned that he had died in 2004 in his home in Dubrovnik. I read it over and thought that others might be interested in it, as at the least a souvenir of a time that may unexpectedly seem more relevant than it might have a few years ago. Once again we may find ourselves thinking of how we will do our work if a lot of the supports, material and otherwise, we are used to suddenly become unavailable.

Events have clearly passed a lot of our suggestions by—computers and the internet and e-mail and all that have changed the circumstances of scientific work a lot—but it seems to me that there is still something here worth thinking about. Our thoughts from the past might be what we need to start thinking about what lies ahead.



Counter-Establishment R&D

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(Examples and references to be added)

Insofar as political, cultural, and scientific establishments exist in a country, they control, or are in a position to control if they so choose, that country's research and development policy. They decide, or could decide if they chose to exert their power, what kinds of research will be supported or allowed. They can also decide what kinds of research will be discouraged or forbidden. Individual scientists or groups of scientists may nevertheless wish to pursue lines of research discouraged or forbidden by establishments. How can they do this? How can they collect the resources necessary to do research in the style to which they have been trained? Can they devise other kinds of research that will require fewer resources and thus be more capable of being done?

We use the idea of research and development to refer to organized human activity designed to produce new knowledge about nature, man, and society, and/or to put that knowledge to work in producing inventions and /or practical applications.

We have deliberately used the notion of "establishment" in the most inclusive possible way. We mean by it not only the combination of political, social, and financial position and power that prompted the term's invention in England, the less exclusive coalition Mills spoke of as the power elite, or the military-industrial complex, though we do mean them. We include, in general, any group which has the power over some aspect of social activity, some geographical area, some organization or whatever sufficient to influence the activity of all the members of that group. We can thus speak of political and financial establishments in the conventional sense, but also of the establishment within a particular area of

scientific work, of moral establishments (which exercise influence by means of a presumed monopoly of moral purity and wisdom), of establishments within universities and firms, or even embryo establishments aiming to overthrow by revolution the existing establishments, and so on, We can also, on a global scale, conceive of the large and scientifically advanced countries as constituting an establishment which influences smaller, less developed nations.

We define "counter-establishment" in a similarly inclusive way, meaning by it any activity or group designed to operate counter to the desires or interests of any establishment. Obvious examples are political and cultural revolutionaries, but the list should include, for instance, methodological revolutionaries in the sciences, believers in unconventional moral codes, and even believers in what are popularly regarded as mystical beliefs or crank ideas.

(We have considered the question of crank ideas at some length. Everything we shall later suggest can be used by believers in a flat earth as well as those whose political beliefs might command more serious attention, and some may view this as a defect in our analysis or a sign of our lack of seriousness. But we view crank ideas as the necessary concomitant of freedom of thought, and freedom of ideas as importantly dependent on access to resources necessary to do research. In our view, then, crank ideas must necessarily be treated seriously. In addition, crank ideas have more than once turned out to be important scientific contributions. We would be more aware of this were it not that we have forgotten the crank origin of some of our commonly accepted ideas.)

We offer here some suggestions for counter-establishment researchers, based in part on our knowledge of practices already in use in various countries and in part on speculation as to what might be possible. We have, where relevant, suggested research that might be done to increase our knowledge of possible counter-establishment tactics and strategies. The topic is especially relevant at this time, when so many scientists find themselves at odds with government research policies in every country. These same scientists appear frustrated because, having learned to do research in extremely expensive ways, they cannot see how to continue their work without receiving government or industrial grants which embody the very policies they oppose. We hope that our suggestions may at least point toward the area where a solution to this problem can be found.

Counter-Establishment Research

Establishments actively support research they conceive as possibly useful to them. They allow, though they may not particularly encourage, research which appears not to threaten their position, interests, or view of the world. Many topics of potential interest to scientists fail to meet these tests and thus become extremely difficult to pursue.

Political establishments, of course, are most alive to the dangers of research that would interfere with their control over the institutions of government and their position of legitimate authority vis-à-vis their citizens. Scientists who wish exactly to interfere with such control and legitimacy may wish to do research designed to produce weapons to be used against governments, tactics that will undermine authority. For example, considering that governments habitually tap telephone conversations, counter-

establishment engineers might wish to develop inexpensive portable scrambler systems to be used by those who wished to communicate privately. They might want to develop cheap portable atomic weapons. Social scientists might wish to work on counter-counter-insurgency strategies (anti-Camelots), on improving the resistance of revolutionary organizations to infiltration by government agents by producing a more reliable system of revolutionary credentials, on improving methods by which radicals can infiltrate governmental institutions, or on effective ways of creating riots. In countries where sociology in the style we know has yet to be accepted as legitimate, counter-establishment social scientists may find it necessary to gather basic data on their own society and economy. Workers in every branch of science can easily invent similarly useful counter-establishment research problems.

Cultural establishments see to it that research does not violate moral norms or long-held world views. Scientists who counter such establishments might, for example, wish to violate the norm that suggests that enjoyers of immoral pleasures must suffer, and work on perfecting an alcohol-like substance which does not interfere with coordination or produce hangovers. Biologists might wish to investigate methods of producing life outside the womb--"test-tube babies"--only to find their way blocked by religious scruples enforced by law. They might wish to work on ways of enhancing sexual pleasure. Many people might wish to develop astrological research into the occult, or into other culturally disapproved cosmologies.

Scientific establishments, as Kuhn has shown, disapprove of research which does not use the currently accepted paradigm: its statement of the problem, approved form of conclusion, and approved methods for gathering and analyzing data. Many scientists will want to be freed of these constraints so that they may pursue problems which, in the current paradigm, seem foolish or uninteresting, by methods which are not currently counted as fully scientific.

Though we have given some examples above, it should be clear that the range of counter-establishment research is very wide. Indeed, whatever is not approved by establishments *ipso facto* becomes an appropriate topic. Thus, our recommendations should be, allowing for local variations in conditions and needs, equally useful to anti-government forces in the U.S., Russia, China, Cuba, Greece, Spain, and so on. With some amendments, they may also be useful to countries which find themselves at a scientific disadvantage vis-à-vis larger and more developed countries. Small countries may be scientifically developed but lack the resources for large-scale work in many fields; such countries as Israel and Sweden typify this problem. Large countries like India may simply be scientifically underdeveloped.

Finances

Research always costs something, and counter-establishment researchers will have difficulty raising money in the conventional way. We suggest here some less conventional possibilities, noting that some are much more likely to prove useful than others.

1) We might persuade central governments, industries, and other establishment financers of research that it would be good business for them to set aside, let us say, ten per cent of their total research budget for overtly counter-establishment work. They might reason that this would give them

valuable knowledge of what counter-establishment scientists were thinking about; that good science, whatever its motivations, can be used by one side as by the other; that by providing such funds they would be able to buy off the best minds of the opposing side. Counter-establishment scientists would, of course, have to be alert to these dangers. In any case, the ease with which this would produce funds is inversely related to its probability of its occurring.

2) Somewhat more likely, we might convince universities to devote some fraction of the overhead on research grants and contracts to research which has been denied financing from conventional sources. Many problems would remain, for universities themselves tend to establishmentarianism, especially of the scientific variety, since scientific decisions are usually put in the hands of eminent scientists. They also respond quite readily to political and moral pressures, so we cannot put much faith in this solution. Nevertheless, the possibility should be explored.

3) Research and development necessarily allow workers in them considerable leeway because no one can be completely sure what the right approach is. Nor can anyone tell for sure how long it will take to complete a given piece of scientific work. Scientists therefore can pretend to be doing establishment-oriented work while in fact working on a counter-establishment program. The technique has already been widely used (indeed, it is part of the tradition of science), as when biologists describe basic research in ways that make it appear they are working on a cancer cure and thus get funds that would not be available otherwise. To our knowledge, however, revolutionary scientists have not availed themselves of this opportunity in a systematic way. It might prove useful for counter-establishment groups to develop specialists who could search for available sources of funds that could be used in this way.

This alternative suggests that it will be possible to do Big Science as well as Little Science in a counter-establishment style. As Nieberg has shown, it is apparently relatively easy for U.S. scientists and industrialists to convince their government to spend vast sums on scientifically foolish and unworkable projects. Ingenious counter-establishment scientists would presumably find ways to feed at the same trough, disguising their research aims in analogous ways. Nor is this possibility limited to the U.S. It is possible, for instance, that a country like Yugoslavia joined the European Organization for Nuclear Research (CERN), and thus made CERN's facilities available to its own scientists, because politicians believed that the work done there would be useful for military purposes.

4) Especially in capitalist countries, scientists might locate rich patrons, willing to devote their considerable resources to counter-establishment research, out of political conviction or from mere eccentricity. In countries where private fortunes do not exist, analogous concentrations of private power may be held by members of government juntas, Central Committees, and the like. Likewise, large firms and industrial enterprises, in capitalist countries and socialist countries as well, often have sufficient free resources and room for maneuver to provide substantial patronage. Patrons, of course, often try to call the tune and scientists should be prepared to find this an erratic form of financing.

5) Following the lead of various Communist Parties and the Vatican, groups of counter-establishment scientists might develop firms or corporations whose income would finance further research. Thus, if one were interested in developing hallucinogenic drugs, it might be possible to use the

proceeds from the sales of the first discoveries to finance further exploration. The sale of portable telephone scramblers might similarly finance further research, especially if the product were relatively inexpensive and thus capable of large sales. The possibility of a large profit might, in capitalist countries, convince capitalist financiers that they should support research which, in some long-term sense, was against their interests. (It can be argued that capitalist systems support a great deal of revolutionary entertainment and publication for just this reason.)

6) Especially in those cases where the counter-establishment motivation is totally or in part political, members of such groups might be willing to tithe, giving up a portion of their own income to support counter-establishment research.

7) All of the above suggestions assume that research will continue to cost approximately as much as it does now, that the same techniques, data, and materials at the same cost will continue to be used. Scientists should consider the possibility that their conventional styles of research, reflecting currently accepted paradigms, may blind them to alternatives which would be considerably cheaper. (They might well search for alternatives in the work of those who are at odds with the scientific establishment, whatever their political or moral beliefs, because scientific mavericks of necessity must use inexpensive alternative methods. They should, as well, keep in mind Rutherford's remark that important advances in physics can still be made with no more complicated equipment than string and sealing wax.) Consider, for example, the degree to which social scientists now depend on the national survey as a form of data gathering. This technique, which has produced many important pieces of research, is extremely expensive, with its requirements of interviewing crews, coding and punching operations, computer time, and so on. Suppose that it simply were no longer possible to finance a survey. What alternate designs might we use to gather and analyze data that would approximate to a useful degree what we get from the survey?

Personnel

Research cannot be carried on without people to do the work. The people involved must have the time to devote to their scientific work, some means of support while they do it, sufficient and appropriate expertise and training, and an inclination or desire to work on counter-establishment problems. Establishment research recruits personnel by its near monopoly on secure and well-paid jobs, on access to equipment and research sites, and on financial support, having everything scientists could want to get their work done, and in material reward, it has little difficulty. (Note that it is not only material perquisites that lure people into establishment research, but also the ease with which one can do paradigmatically appropriate research.)

Where will counter-establishment research find the people necessary to get the work done, not having these easy and obvious ways of recruiting personnel? We might begin by remarking that the notion of recruitment is not wholly appropriate, since it is not likely that counter-establishment R&D will simply be bidding in the open market for ideologically neutral personnel. Rather, the work will be done by people who are already interested in a counter-establishment position. The problems will consist of finding the

time in which such people can work, and in securing the full complement of skills and knowledge necessary for work on particular problems.

1) Appropriately trained researchers can, if they themselves desire to do counter-establishment research, steal time from their regular research. Since, as we have already suggested, few people can tell for sure when scientists are working on what they are supposed to be working on, this tactic can provide substantial amounts of time. Indeed, most scientists already make use of the device to work on other projects than the one they are paid for. Furthermore, it seems to be adaptable even to the extreme conditions of research in a prison described in Solzhenitsyn's *The First Circle*, Dudintzev's *Not By Bread Alone*, etc.

This device, however, becomes more difficult to use as it requires the cooperation of larger numbers of people with different kinds of specialized expertise. For some projects, the chances of the large and varied crew that might be needed all being present in the same laboratory or institution, all sharing the political, cultural, or scientific beliefs which would lead them to engage in the project, seem very slight. Stealing time is best adapted to problems which can be investigated singly or in small teams. However, we have already noted the possibility that quite large projects might be funded because of the fundamental ignorance of funding agencies about what they are putting their money into. In such cases, if the counter-establishment researcher can gain control of a large project he can assemble personnel, without respect to their ideology, in the same way as more conventional research.

2) Since the working week in developed countries is about forty hours, counter-establishment intellectuals can devote their leisure time to R&D. They can recruit specialists from a variety of work settings, through the medium of their political or cultural connections, and devote their common efforts to a relevant project, stealing the time from chess, boating, rock climbing, or whatever has hitherto claimed their attention.

Furthermore, since science changes so rapidly and scientists so frequently change fields, it is possible for people who know the basic techniques and language of science to move into areas that are needed for counter-establishment purposes and train themselves quickly to do useful work in them. A phenomenon that occurs often in the world of conventional science can thus be put to use for other purposes.

3) It may prove impossible to find all the necessary skilled personnel, especially when the numbers required are relatively large. In such cases, one could encourage amateurs who have the time, support, and appropriate ideological position, but lack scientific expertise. Counter-establishment scientific training could be set up. Since resources will be scarce, these training programs should dispense with the elaborate rituals of conventional training, especially those involved in certification of competence, and achieve the job in the least expensive and most efficient way. For this purpose, it may be necessary to investigate unconventional training programs as those have operated in other areas. (For example, large numbers of people learn to be competent rock musicians, even though no conventional training apparatus exists for this purpose. Whatever mechanisms are involved might be put to use in helping counter-establishment scientific workers learn what they need to know.)

4) Along this line, it may also prove convenient to break down scientific training into less complicated tasks that could be done by amateurs. Alternatively, we may find it convenient to take advantage of the research amateurs already do without benefit of any particular training. For example, persons investigating the side effects of newly-discovered hallucinogenic drugs can (as has sometimes happened) simply distribute thousands of doses of a drug free in a relatively circumscribed area like San Francisco's Haight-Ashbury district and wait for users to report on such effects as are immediately noticeable to an experienced but perhaps untrained observer. In another direction, where survey-like data are wanted, one could use an organization of ideologically motivated and unpaid observers in the style of Britain's Mass-Observation organization. Although scientists are inclined to distrust amateurs, one should note that the relatively amateur political scientists of the Viet Cong have made vastly superior use of their knowledge of Vietnam than have professionally skilled American social scientists.

Communications

Research achieves its best results most efficiently when interested scientists can communicate quickly and effectively with one another on matters of common concern, making findings, techniques, etc., available throughout the interested research community. Conventional research uses the standard scientific journals for this purpose. We must expect that establishment journals will not make room in their pages for the findings of counter establishment research; and we must also expect that counter-establishment researchers may not want to make their findings available to the establishment by publication in its journals. How can communication be achieved?

1) It is relatively easy to start a new journal; the birth rate for journals has climbed steadily. Many, perhaps most, however, rely on subsidies from professional associations, on government subventions, or on advertising from large industries (as do most medical journals). If the editor and authors are willing to forego printing and slick paper for typing and mimeograph, the cost can be much reduced and brought within the range of what can be paid for by one person or stolen from a laboratory or department budget without causing much upset.

2) For many purposes, and certainly for some of the practical ones to which counter-establishment research might be oriented, the conventional journal, whether printed or mimeographed, is ill-adapted. Too wed to ritualistic formats, too slow in getting into the hands of those readers who need it, the journal tries too hard to cover too much ground. With scarce resources, counter-establishment researchers might wish to consider alternative forms of communication such as the Information Exchange Groups set up by NIH in 1961 (and ruthlessly put to death by conventional journal editors in 1966). The IEG provided a quick and relatively inexpensive way of getting anything any member of the group wished to say into the hands of all other members. Counter-establishment researchers could profit by study of this operation.

3) The Russian institution of the *samizdat*--the privately circulated typewritten copy of an original document--provides an illustration of a method of communication feasible under conditions of political repression. Russian scientists have for years conducted research that was forbidden by the regime and managed to communicate their results to one another by this means. Genetics during the hegemony of

Lysenko is an interesting case in point. Again, counter-establishment researchers elsewhere should study this mechanism for the clues it may offer should conditions become worse elsewhere or with respect to topics which are already politically dangerous (e.g., making privately available atomic bombs or hallucinogenic drugs).

4) Since much of the communication between scientists in the conventional scientific world is highly organized, even burdened by bureaucratization, we should also note that counter-establishment researchers need not imitate this characteristic. Indeed, it may prove most efficient for work to be organized and coordinated in a very loose fashion. Thus, workers in the same general field might simply meet periodically to share experiences and talk about what seemed to be profitable avenues to pursue next, without reaching any agreement about what actually was to be done. Each scientist would then do what seemed most reasonable in the light of what had been discussed. This would represent a realistic adaptation both to the participants' lack of sanctions over one another and to the relatively greater ease with which a more organized effort might be suppressed.

Needed Research

One thing that is clear to us is that counter-establishment scientists do not do enough research. They incline more to complaining about the character of the research done under establishment auspices than they do to actually conducting research of a kind they consider more worthy. Perhaps more important, they not do research on the modes and mechanisms of collective scientific activity that would allow them to carry on their work under adverse conditions.

We have already suggested some important areas of research along these lines. For example, one would like to know a good deal more about the actual mechanisms by which undercover research has been done in the Soviet Union and in other communist countries. Similarly, one would like to know how successful revolutions against "normal science" have been carried out in the past. How have scientists managed to get the necessary preliminary work for such revolutions done, given the opposition of established political and scientific regimes? Again, one would like to know a great deal about ways of training scientific workers to carry on counter-establishment work, and research into alternate forms of education would be extremely valuable.

Why the lack of such counter-establishment research? When the opposition to the establishment rests on political or cultural analyses, it often includes in its bill of particulars an opposition to science itself as an oppressive force, dehumanizing people in a search for mechanistic laws and enslaving them to industrial enterprise. In addition, some opponents of the establishment believe that the times are too perilous to allow for the frivolity of basic research, no matter how important or relevant the topic, that politically aware people must band together for revolutionary activity and lay their scientific interests aside.

We disagree profoundly with this point of view. Whatever one's political or cultural beliefs, it seems to us indisputable that systematic knowledge of the workings of the natural and social worlds cannot but help achieve the aims implicit in them. Even if one desires to produce non-rational experiences

through the use of drugs, chemistry is still the best way of creating and identifying the compounds most effective in that quest. Likewise, radical political organizations have always suffered, for example, from an inability to control factionalism, from an inability to protect themselves against enemy infiltration, and so on. Radicals have typically dealt with these questions by political analyses, deductions from sacred writings and other non-empirical forms of work; sound empirical research might prove more useful.

We find it more difficult to understand why those who oppose scientific establishments themselves—scientists who are attempting to revolutionize "normal science" by creating a new paradigm—have done so little research on these important topics. Perhaps it is because, as we have already remarked, scientific revolutions are themselves part of the tradition of science, so that they have been enshrined in folklore and myth. This gives scientists the feeling that they understand what has occurred, when in fact they only celebrate it. In addition, natural scientists, who are most alive to the historic features of scientific revolutions, are perhaps not technically equipped to analyze them as social phenomena. Indeed, the resistance of many influential scientists to Kuhn's extremely sociological analysis of the matter suggests that they are actively opposed to attempts to treat science as an activity capable of being analyzed in the same way as other human action; in this, scientists behave just like other elites who find social science a threat.

In any case, counter-establishment scientists should actively engage in research, both research designed to solve problems posed from a counter-establishment point of view and research designed to work out ways of accomplishing that research expeditiously and efficiently under conditions of scarcity and/or repression. The more research done from varying points of view, the better will science be able to serve man and society. Science becomes repressive when it is done in a one-sided way, designed to help some segments of the national or world population at the expense of others. If the means of conducting research are available to all--and our suggestions point to ways that might be made true--science can be a democratizing force.

One final word. Successful revolutions produce new establishments which can be every bit as repressive as those they replaced. A number of "Hippocratic Oaths" for scientists have been devised. We would like to add another, especially addressed to counter-establishment scientists: *Thou Shalt Not Commit A Counter-Establishment Establishment.*