Research in universities, independent institutes and government departments : Eleven contributions to a discussion

Nous avons publié, dans le numéro de mars 1966 *d'*Information sur les Sciences Sociales *un article de Henning Friis, intitulé " Division of work between research in universities, independent institutes and government departments ". L'auteur y exposait son point de vue sur le cadre institutionnel qui convient le mieux, à son sens, aux centres de recherche sociale appliquée. Il souhaite, pour sa part, la création d'institutions de recherche indépendantes, qui ne soient liées ni aux universités, ni aux organisations gouvernementales. Cet article a provoqué les commentaires des spécialistes intéressés. Nous en publions ci-dessous quelques-uns, avec la réponse de Henning Friis.*

An article by Henning Friis, " Division of work between research in universities, independent institutes and government departments ", was published in the March 1966 *issue of* Social Science Information. *There, he expressed his views on the appropriate institutional framework for centres of applied social research and argued in favour of the creation of independent research institutions which would be outside the university or government departments. The article provoked comments from interested scholars. These, together with a reply by Henning Friis, are published below.*

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Dr. Friis's paper is very interesting in its topical relevance particularly as our own new Social Science Research Council is being compelled to confront the special needs of independent research institutes. Dr. Friis's paper describes very well one particular model of a research institute, designed to meet the needs for policy-orientated research in a small country. His report on Ireland developed the same theme.

As seen in Britain, the picture is naturally different. Not only is a good deal of research of many kinds undertaken in our universities, but we also have more or less specialized research institutions and research facilities in one or two Government departments. For us, the question is : " What kind of research, in what kind of research organization? ".

Different kinds of research institutions

Existing research institutions have had as the motive for their foundation, one or more of the following :

1) The development of research in a new subject crossing existing disciplinary boundaries ;

2) The development of work in a particular problem area or group of problem areas ;

3) As a facility for research and fact finding in an area of interest to a Government department or departments, or to Government as a whole ;

4) To make provision for people who wish to spend full-time on research ;

5) To link research with some form of public activity, for example, acting as a pressure group ;

6) (Within a university :) To provide a focus for the research activity of the members of the department or faculty.

We have not had in Britain any entirely commercial research facilities which, without relying upon money from Foundations, have undertaken commissioned research for profit.

Institutes exist which have combined more than one of the motives referred to above, and have given rise to a range of units and institutes providing different " mixes " of activity. Those within universities provide a research-and-teaching mix ; others a research-consultancy mix and some give a research-and-public-activity mix. Those units entirely within Government have provided a research-intelligence mix. Broadly speaking, none of the institutes outside of universities has included a training function and there appear to be no true examples of an organization providing a training-research-and-consultancy mix.

Government's need for research

When the Heyworth Committee was considering the need for research for Government departments, it encountered considerable difficulty in discriminating between that kind of work which was predominantly of an intelligence nature, and that which could be more truly described as research. Departmental sponsorship of more or less fundamental research is a much more recent concept in Britain than in the United States, and has only in recent years led to the formation of research units within departments capable of undertaking a full research programme. It is notoriously difficult for a unit of this kind to achieve balance in its programme between comparatively long term research and the gathering of information for the immediate needs of its department. Not only is it likely to be under pressure for information of immediate relevance, but it is also in a weak position for undertaking the kind of investigation whose results might prove critical of departmental policy. Furthermore, a scholarly publication from a Government research unit is less likely to be completely free of the restraints of departmental responsibility. For these reasons, there is a strong pressure for more fundamental research to be farmed out. One additional difficulty under which a unit of this kind labours is the absence of academic sanction for its research results. It is far easier for the administrator to challenge the results of a unit within his own organization, than those of a group whose principal sanctions are academic ones. If this results in most of the more academically interesting research going out to universities, it further reduces the prestige of the research unit.

As Professor Rossi points out, research institutions, unless they themselves engage in teaching, are net consumers rather than producers of research talent. Whenever there is a scarcity of research talent — and when is there not? — the diseconomy becomes important to the extent that it does not make the fullest use, for training, of good research facilities. While in Britain, we have not shared with Professor Dahrendorf the sad

experience of seeing research fleeing the universities, we have not yet evolved an adequately flexible structure which enables the research institutes we have to contribute to training.

Relative costs of research in different organizational settings

We lack an assessment of the relative costs of research in independent institutes within university departments, in units in Government departments and so on ; nor is this mentioned in Dr. Friis's paper. In Britain, a Government department commissioning work from outside would certainly find the university the cheapest place in which to commission it. A good deal of the costs of the research is borne in one way or another by the university, and if the project is one in which research training is possible, the whole enterprise may look very economical on the surface. But we are not really in a position to make any real comparisons, and a study of the cost of research in different kinds of institutions is badly needed.

I have only touched here on the various considerations that obtrude themselves when a decision is to be made about where in an existing system research should be located. In a society which possesses a wide range of existing institutions, the problem takes us well beyond the considerations raised in Dr. Friis's excellent model of the inter-disciplinary research institute serving the needs of a small country for policy-orientated research.

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The optimal location for a social research institute along the spectrum from government through independence to university affiliation certainly must depend a great deal on the applied or basic nature of the research, the degree of substantive specialization intended, the identity and needs of consumers, and the like. It would seem natural, for example, that governmental administrative branches have research arms engaged in inquiries of the most applied, policy-oriented character. However, such research arms in the United States have difficulty attracting first-rate talent. Moreover, inquiry in this context, while perhaps adequate for immediate policy needs, has a narrow and episodic character which is unsatisfying from other points of view.

The multi-purpose social research institute with aspirations toward basic as well as applied research may well prosper with a somewhat closer relationship to a university than Dr. Friis suggests. This does not mean a departmental location, in view of the stultifying effects on inter-disciplinary work which are certainly quite real. Indeed, in this and several other ways, a precondition for a healthy relationship with a university may well be a capacity on the part of the latter for administrative innovation and flexibility. If such innovation is impossible and the institute must accommodate to administrative patterns fixed in a period when the functions of a university were quite different than they appear to be today, then it may be true that a greater independence of the institute from the university is to be preferred. Hower, administrative arrangements permitting an institute to be attached directly to a university or at least a social science faculty at a level of organization above that of the department, with senior staff dividing time fractions flexibly between the research institute and teaching in relevant departments, seem to offer sufficiently striking benefits to both parties that the necessary administrative innovations should not be avoided simply because they may be difficult to produce.

First, such closer union opens to the research institute a more direct and meaningful access to advanced students than an independent institute is likely to have. This access is profitable on both sides. For the institute, advanced students can represent a critical reservoir of intelligent help for part-time, junior staff positions. Such a flow of potential research talent through the lower echelons of the organization also has obvious advantages in selective recruitment for more permanent senior positions. Where student welfare is concerned, the opportunity to participate in close working relationships with senior personnel on " real " research enterprises provides a kind of apprenticeship system that is increasingly thought in the United States to be at least equal in value for the later stages of social science graduate work to the more traditional formal lectures or tutored reading. In the ideal case, such participation comes to constitute a part of the formal curriculum, although this degree of integration is plausible only if the senior institute personnel themselves have some active involvement in the overall design for student training.

Second, it goes without saying that a university connection aids in the attraction of top research talent. This is particularly true if some minor fraction of teaching time — which most researchers want and need — is recognized by appropriate academic titles as well as by the more idiosyncratic titles internally developed by the research organization.

Finally, such a closer union between institute and university renders large-scale research facilities more accessible to faculty members who wish to keep their center of gravity closer to the teaching function. While it is doubtful that multi-purpose research institutes can thrive or enjoy the continuity of programmatic research without a substantial nucleus of senior staff people whose formal teaching commitments are limited to

a minor portion of their energies (although they may contribute to student training in a broader way through the conduct of research as well), exploitation of the facility by faculty members can be encouraged as well. Within the United States, ready access to large-scale research facilities has become an increasingly important consideration in the job choices of persons seeking faculty appointments. Once again, flexibility in administrative arrangements for splitting appointments between teaching departments and institutes can provide for maximal individual satisfaction while promoting further healthy integration.

The more nearly independent a research institute may be from a university, the more alien to career progress any participation in the institute will appear to the student. Similarly, the less likely it will be that senior personnel will have either the background or motivation to shape junior-level research experience toward broader training goals. And while relatively independent research institutes are often able to attract eminent faculty members to spend a year of leave from university obligations to utilize them, the resulting stimulation, while important as part of any research institute, lacks the critical ingredient of intellectual continuity. This continuity can only come from the permanent staff, a fact which leaves the calibre of that staff a matter of vital concern.

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The condition of research in the social sciences as it is carried on either within the framework of universities or within independent institutes is determined by specific traditions of academic organization. In Germany, the 19th century universities had monopolistic claims so far as research was concerned. At the same time the heavy emphasis on the humanities, that is, on the style of work characteristic of faculties of philosophy, made it difficult for the natural sciences to become established. As a result, the Kaiser-Wilhelm-Gesellschaft was founded at the turn of the century as a financial and organizational framework for science institutes conducting fundamental research. This pattern has been continued in what are now called the Max-Planck-Institutes, which are by no means confined to the sciences but include fundamental research in law, history and education as well. Thus contrary to the experience of other

countries independent institutes are in fact the seat of fundamental research.

The result of the separation was, however, thoroughly unfortunate. Many of the directors of research institutes have tried and still try in vain to gain a position in a university which would enable them to lead their disciples to academic degrees. Universities on the other hand miss the stimulus of empirical research in the social sciences. For that reason, several attempts have been made in the recent past to bring together the various strands of academic organization. Some of these simply involve a closer organizational connection of Max-Planck-Institutes and universities. Others aim at establishing universities which are more varied in their internal structure and include research institutes as well as teaching arrangements. This is the case notably in the University of Konstanz with its general emphasis on the unity of teaching and research, and with its peculiar organizational form of the " Centre " (*Zentrum*), that is, the interdisciplinary research institute. The first Centre has been established for the field of education ; a further Centre will be founded for research on population problems.

Research by government departments is a different matter altogether. Here, the execution of research work is largely removed from immediate control by the scholarly community. As a result, such research tends to be inferior in quality. This is notably the case with research supported by defense funds. Here again a more diverse internal structure of universities, such as their growth into " multiversities ", might be a solution.

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The article by Mr. Henning Friis raises a number of important points. The problems he discusses will be with us, perhaps as long as man wants to engage in science. The following are merely some reflections prompted by Friis' article, not a systematic analysis.

The distinction between pure and applied science is not so much in how the two types of scientists work once their problem is defined, but how they arrive at a problem. In the pure sciences a problem is defined as a gap in a hypothetical-deductive system : data in search of an hypothesis, hypotheses in search of a theory, a theory in search of hypotheses, or hypotheses in search of data. The task is to fill the gaps, or to reveal gaps. In the applied sciences the problem is defined in terms of some

kind of *value*. Thus, medical research is centered on somatic health, psychiatry on mental health, engineering science on control of physical nature, agricultural science on control of biological nature, pedagogical research on learning, criminology on law-abiding behaviour, peace research on peace, etc. The task is to uncover the conditions for realizing the value. Research in the applied sciences must by definition be interdisciplinary, as the situation is today.

But this situation may change rapidly. Imagine if universities were organized only with institutes that were given problems to solve, value-loaded problems (development, population control, peace, happiness, welfare, learning, etc.) and not as they tend to be today, partly in pure institutes and partly in applied ones. After some time these institutes would no longer be interdisciplinary for they would lead to the emergence of new disciplines, with new reservoirs of concepts, hypotheses, theories, methods of data-collection, traditions, ethos, etc. And after some time there would be a new cry for interdisciplinary research, for instance uniting peace science, development science and (individual-centered) happiness-science.

Thus, there is nothing absolute in the term " interdisciplinary ". It is meaningful in relation to a pre-existing tradition. For that reason the best organization for a university would probably be to have both pure and applied institutes. The best engineering schools in the world are good examples : they are usually coupled into a network of pure and applied institutes, with adequate provision for mobility of researchers and ideas, from the pure to the applied and back again. An ideal faculty of social sciences, to my mind, would have institutes of psychology, sociology, history, anthropology, political science, international relations, economics, etc., *and* institutes devoted to learning, health, happiness, development, peace, etc.

But this plan is rather utopian, and as things stand today there seems to be a certain polarization between the classical, pure tradition and the more modern, applied tradition. The researchers of the latter tradition often get more money and do costly, descriptive, simplistic jobs because politicians and other decision-makers must have facts presented in simple terms. The former, however, get little money and are forced to do highly imaginative, fundamental research. The mutual perceptions and stereotypes are obvious and are not very conducive to co-operation.

Thus what is wrong with universities in most countries is not their orientation towards pure research, but rather their incredible conservatism in adapting to new styles and visions of research, pure or applied. This is related to the almost universal pattern of recruiting into positions of academic leadership older men and frequently university personnel unable to engage in original research. One new applied science may be absorbed per generation (pedagogical research, criminology), but the absorption shocks are considerable and the conflict residues many, obliging newcomers on the scene to wait. For this reason the best organi-

zational innovation in the academic field is probably a pattern of decentralization and pluralism, giving more power over funds and administrative details to active research teams. Academic life in the United States is, of course, famous for good approximations to this ideal.

The alternative to universities organized as an inter-locking framework involving pure and applied institutes side by side is probably independent institutes. Such institutes should not live forever ; experience shows that they tend to be born, become active, flourish and then die after some time. The innovator may be gone or have become stale, the accumulation of internal conflict dissipates too much energy, rigidity impedes adaptation to new developments, etc. At this point the university institute has the advantage that even if it is scientifically dead, it can always fall back onto teaching. And since there are few formal criteria as to what constitutes good teaching, growth and decay are less visible. The university institute that once was scientifically active may survive as a teaching instrument until new life can be blown into it — but not the independent research institute. Instead of being kept artificially alive, dying institutes should either be killed or be radically transformed and centered on a new field of research — like the tuberculosis associations that turn their attention to cancer. Such change is difficult without a high level of external and/or internal control, and that again brings one back to the problem of decentralization. One possibility is, of course, to make funds dependent on ongoing and original research activity and to cut them off if there is a too severe decay in the scientific output ; but that is a brutal process. We all know that creativity tends to disappear before retirement age and that the older generation becomes set on protection, preservation and self-defence against the younger generation. Such conflicts are humanly destructive and usually socially unproductive, and should be avoided. One way of so doing would be to encourage scholars to enter new fields of research when the originality in their first field has been exhausted.

Another factor that differentiates between pure and applied research should be pointed out. Applied research is meaningless unless the propositions describing how to obtain a given value can be tested empirically. This testing is usually referred to as " contact with real life ", " contact with clients ", etc. In practice it is a question of access to patients which is obtained by physicians in the university clinics, by the pedagogical research department in the classroom, by the psychiatrist in the mental hospital, and so on. For the applied social sciences dealing with macro-problems (development, population, peace) testing is more difficult. Their counterparts in the world of practitioners are usually government departments, and research in government departments tends to be classified, unimaginative or supportive of government policies (or any combination of these). The best solution here does not seem to be reliance on government intra-departmental research alone (although that is certainly an obvious aspect of modern, rational culture), but to facilitate contact and flow of information by arranging for governmental employees on leave to spend

time as researchers at independent institutes or university institutes, and for researchers to spend time as employees. By means of this system considerable flexibility could be obtained.

These are problems that all of us who administer policy directed at the development of social science institutes must wrestle with every day. They are tempered by the idiosyncrasies of local conditions but have strong, general components. Why not organize a good conference and a comparative research project on this subject — or do social scientists prefer to apply social science to everybody — but themselves?

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IN discussing the problems of the organization of applied social research raised by Henning Friis, I should like to give particular attention to the university. At first glance, the concentration of all social science research, pure and applied, in the universities seems warranted by the long research tradition of the universities and the obvious qualifications of their staff. However, further reflection will tend to diminish one's initial enthusiasm for this point of view, particularly as far as applied research is concerned.

The university, as traditionally conceived in most countries, is held to be chiefly dedicated to the promotion and development of science and to obtaining new and deeper insights into the nature of reality (in this case, social reality). The practical application of scientific knowledge to policy problems is considered at best to be of secondary importance. Consequently the programmes of universities, conceived in these terms, will tend to conflict with practically oriented programs of research proposed by government authorities and private bodies. This is not to say that university-type research may not lead to results of practical value, but merely that shortening the distance between policy and research is not its " style ", at least in Europe. The universities are neither inclined nor prepared to carry out research on command, or if so, they will be apt to refuse conditions concerning the research design and precise deadline.

Another difficulty arises from the fact that the function of a university is not only to engage in research, but also to teach. Ideally it should be possible to do both in a complementary and integrated fashion. Today, however, the sharp rise in university enrollments which is not, and indeed

cannot be compensated by a corresponding increase in faculty, has raised the teaching load to a point where the performance of research activities may be seriously endangered. Under certain conditions, teaching and research may actually hamper each other's development. However desirable the unity between research and training (Humboldt's Forschung und Lehre), a choice between them will probably have to be made. In the end, in my opinion, the university will acquire a primarily teaching function and research will accordingly be organized around autonomous institutions which may or may not be attached to a university.

To assign a primarily teaching function to the university does not mean that research should be excluded from its activities. A university whose faculty did no research at all or even no research of an applied nature would be deprived of a valuable asset. Not only is teaching stimulated by research, but training, which must focus (particularly in the social sciences), on the problems of a constantly changing world requires that students participate actively in research projects of both a basic and an applied nature.

The point is merely that the traditional university will have to accept some restrictions on its pretended monopoly of research. It is entirely probable that the university will continue to be the focal point for the execution of fundamental research, but given existing pressures on their time, this is all the more reason why university faculties should be relieved of the burden of applied research, which in any case, as we suggested earlier, does not really fit into the traditional university framework. Admitting that some applied research should be carried on in the university for training purposes merely underlines the need to assign the more important applied projects to autonomous institutions. The use of a research project for training purposes implies important modifications in the research design : a project executed for didactic purposes has its own (slow) pace and will develop a different emphasis from one executed purely in terms of policy requirements. Finally, students are by definition less efficient than professional research workers, and the project director will find it difficult to speed up their work even to meet an agreed deadline.

Accordingly, in my opinion, most applied research undertaken to provide solutions to specific problems should be transferred to autonomous research institutions, within or outside the university. These institutions should have at their disposal an adequate and independent professional staff, not burdened with teaching tasks and protected against feelings of guilt about neglecting fundamental research. To protect the scientific integrity against undue dependence on the laws of supply and demand their financial independence should be guaranteed by unrestricted long-term subventions, which in Europe, at least, would tend to come from the government.

Such institutions would perforce have continuing contacts both with government departments and universities. Their scientific independence demands that there should be no organizational links between them and

government departments. Their relationship with the universities on the other hand will probably be more intimate and may even involve collaboration in the execution of particular projects.

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Professor Friis' excellent statement of the " main requirement for a satisfactory organization of social research " was, as will be recalled, as follows :

" *a*) There must be possibilities for continued research through a long-range research programme and through a permanent staff, which can draw upon the experiences gradually harvested through research work.

b) There must be possibilities, within reasonable economic limits, for accepting research demands from public and private institutions as well as for executing research of a wider character.

c) There must be close cooperation between scholars from the various disciplines relevant to social research who, depending on the problems under investigation, should work together on research projects.

d) The research establishment should be so organized that it would have, on the one hand, sufficient contact with the relevant policy-making bodies and, on the other, the freedom of research and of publication of research findings which is fundamental for scientific research and a condition for attracting the best scientific staff.

e) In order to undertake empirical studies based on sufficient samples, including national sample studies, it is necessary to establish a technical apparatus for survey research with a corps of interviewers and adequate possibilities for data processing.

It is hard to say anything definite about the critical minimum size of an institute of applied social research. In the Tavistock report on *Social research and a national policy for science*, it is indicated that : ' an appropriate range in terms of recurrent annual expenditure is probably between £100 000 and £500 000 (at present values). These figures include all recurrent expenditures (staff salary costs, research expenses, and administra-

tive and other overheads). As regards research staff a group of less than twenty is not usually viable — unless embedded in a supporting institution such as a university department. The more effective special institutes tend to be considerably larger, the need for size increasing with the degree of independence. A research staff of thirty-five would appear to constitute a balanced number for a small institute, and there is some evidence to suggest that another critical point is reached with the attainment of a staff level of sixty to seventy. This level enables a number of project teams of varying sizes and types of composition simultaneously and thoroughly to pursue a range of complex problems each of which has possible bearings on the others '. "

My own experience at the Danish Institute of Social Research has been that until the minimum size mentioned in the Tavistock Report has been passed, it is not possible nor economically sound to establish and exploit an apparatus capable of relieving research workers of technical and administrative tasks as well or better left to other staff members.

Professor Friis pointed out also that in many countries there is a serious shortage of social scientists who are trained and experience in the conduct of research and in facilitating sound application of research findings. Hence, the provision of training of social researchers is an important requirement to be added to those stated above.

There is at least one further requirement of paramount importance which should be added. Major universities, to maintain their role as centers of knowledge and intellectual life and as the institutions in which all bodies of knowledge are taught, must be leading centers of research in all fields.

These last two requirements clearly point to a different conclusion than that reached by Professor Friis. If the other requirements stated by Professor Friis can be met by a university-based research institute, it clearly is to be preferred to establishing independent institutes.

As Professor Friis states so clearly, there are powerful forces in most universities which have prevented the creation of research institutes organized to meet the needs he expresses so well. The question then becomes : can a research institute be organized in a university so as to meet the requirements he states and also enable the university to train researchers and to maintain its role as a center of intellectual leadership. The following, taken from a recent paper [1], indicates that this is possible and describes the nature of the research institutes and the organization of the university which is necessary for the venture to be successful :

Basic research financed by the Federal Government is being conducted in industrial, governmental, and non-profit research laboratories and in our universities. Universities, which have always been seats of scholarship and learning, should play a much greater role in basic research than they

1. A speech given by Rensis Likert at the dedication of the Institute for Social Research building on March 30, 1965.

do at present. Our leading universities should undertake the major part of all basic research, both to improve teaching and to strengthen their role as centers of American intellectual life. Our major universities cannot perform their educational functions well without conducting the basic research which this nation requires. The exciting pursuit of new knowledge by university scientists and scholars, assisted by their students, is and should be one of the most important activities of our major institutions of higher learning. Research is in the historic tradition of university scholarship.

The great strides made in creating new knowledge in recent decades are causing our scientific disciplines and their methodologies to become increasingly complex. It is no longer possible for invidual scientists working along with a few graduate students to do all the research that is needed. Large-scale organized efforts using highly complex equipment, the cooperation of several colleagues, and the assistance of a number of technicians are also required.

To embrace the opportunity to do the research which funds from the Federal Government, foundations, and business make possible, our leading universities will need, consequently, to do this work in three different organizational ways :

1) Research done by the individual scientist assisted by students ;

2) Research undertaken by centers in a particular discipline or department ;

3) Interdisciplinary institutes engaged in problem-oriented, programmatic research, established on a university-wide basis, and with their own research staffs.

The first of these two ways of conducting research, i.e., the individual scientist and the department center, are well-known and widely used. The third, the interdisciplinary research institute with its own staff, such as the Institute for Social Research, is much newer and fairly unique. Let us examine briefly its role in the conduct of research.

The need for such institutes springs in part from the nature of many of the problems requiring basic research. Problems on the frontiers of knowledge often must be tackled with methodologies and concepts drawn from more than one discipline. The nature and the magnitude of the methodological resources required is another reason for interdisciplinary institutes. The sample survey, for example, is by its very nature an interdisciplinary tool. It is interdisciplinary both in its origin and in its use. As a method, it uses sampling developed by mathematical statisticians ; interviewing, attitude measurement, and content analysis developed by political scientists, psychologists, and sociologists ; and data processing relies on statistics and mathematics. The sample survey is an essential research tool for many studies in all of the social sciences as well as in such fields as health, education, and business and public administration. To do basic research on many of the problems in these and related fields, a university needs to have available the facilities for sample surveys. This

is but one example of why a major university requires the resources to do interdisciplinary research if it is to conduct research on the full range of significant problems.

Research in all three ways can and should greatly enrich teaching. The experience of the Institute for Social Research illustrates the significant contribution to teaching which the large interdisciplinary institute can make. Members of our staff teach courses based on their research covering new methodologies and new substantive findings, as well as courses of more general content, at both graduate and undergraduate levels. Their teaching is done on invitation of a particular department or school and has steadily increased over the years. More than 35 Institute staff members are teaching in the social science departments and in several of the professional schools.

Research, properly organized, contributes appreciably to improving instruction. Probably the great enrichment of instruction comes from the actual participation in the research. By taking part in the research, undergraduates, graduates, and post-doctoral fellows " learn by doing ". This may increase somewhat the cost of conducting the research, but it is by far the best way to teach research methods and an understanding of the major conclusions emerging from research. Approximately one hundred and fifty doctoral dissertations have been done under the direction of Institute staff members and based on Institute research. Research contributes greatly to the excellence of teaching. The best instruction can be given in many fields only in conjunction with research.

Based on the total amount of research funds in prospect over the next decade or two, it is probable that a relatively small number of universities will establish facilities for full-scale research in the social sciences in all three ways : the individual scientist, the departmental center, and the interdisciplinary institute. That is, I believe that over the next ten to twenty years relatively few universities will establish large interdisciplinary social science research institutes with the characteristics which I believe are essential to conduct research in the third organizational way. Important among these characteristics are the following : the institute is organized on a university-wide basis with its own permanent staff to do problem-oriented research on a long-range programmatic basis. It is engaged in such research on many widely different problems. It is fully equipped with the technical resources required for large-scale social science research. For example, it has the facilities for conducting sample surveys, including sampling, interviewing, coding, and data processing. The size and complexity of such an institute persuades me that relatively few will be established.

Moreover, even in the physical sciences, where far larger sums are available for research, there are a relatively small number of large interdisciplinary research institutes. A few of these are in universities. Others are independent, non-profit research organizations where the basic research conducted usually contributes little to enriching instruction directly.

Let me paint a picture of what I believe is likely to occur at the handful of universities which establish resources to do research in all three ways. Their interdisciplinary institutes will not only conduct interdisciplinary research, they will also provide methodological and other facilities to assist research conducted in the other two ways, namely, by individual scientists and department-based centers. The experience of the Institute for Social Research illustrates the manner in which the research institute can facilitate other research. For example, the Institute is providing resources to individual investigators and department-based centers for such projects as the following : a study of automobile accident costs and payments, an investigation of the investment decisions of high-income families, studies dealing with family size and family planning, and a project dealing with law enforcement in low-income urban areas.

The extraordinary research resources of this handful of universities will enable them to become the nation's primary sources of new knowledge. As national centers of intellectual leadership, they will attract the most able scientists and scholars because of the intellectual fervor and stimulation attending the creation of new knowledge. For the same reasons, the most able students will strive to be at one of these universities, especially for graduate, professional, or post-doctoral work.

The plan of Judge Woodward in 1817 for Michigan's educational system and the 1836 constitution of the State anticipated this kind of key intellectual role for a major university. The intention was to have The University of Michigan perform a " capstone " role for the state's system of education. Drawing on this concept, this handful of universities as national centers of intellectual activity and growth could well be thought of as performing the capstone function for the nation's institutions of higher learning.

The budget of the Institute for Social Research illustrates the probable source of support for the research efforts of such universities. Approximately one-half of the Institute's budget comes from various Federal agencies, such as the National Science Foundation, the Department of Health, Education and Welfare, and the Department of Defense. About one-fifth comes from foundations, one-sixth from industry, and one-eighth from the University. A large proportion of our funds come from sources outside of the State of Michigan and yet Michigan benefits appreciably from the Institute for Social Research's presence.

The research of the Institute for Social Research illustrates the contribution which the large interdisciplinary institute, equipped to work on many different kinds of problems, can make. We find that the presence of the Institute with its research resources encourages business and governmental agencies to seek our help. Moreover, our resources aid us as social scientists in our efforts to encourage business and government leaders to use research to help them find better solutions to their problems.

Another contribution of research institutes is creating new bodies

of knowledge and adding them to established disciplines. The Inter-University Consortium for Political Research is an example. This is an organization of some 77 universities in cooperation with the Institute's Survey Research Center. Each participating university contributes to the support of the Consortium ; for most of them, this amounts to $ 2 500 each year.

The Survey Research Center, through the Consortium, makes available extensive data on voting behavior to the member universities and trains their faculty members and graduate students in the use of survey and quantitative methods for studying political behavior. One-fourth of all Ph.D. candidates in political science in all universities in the United States are being trained in Ann Arbor in these methods and becoming familiar with the major findings. This training is being done largely in special courses offered during the summer.

Another example of a contribution from the Institute's research concerns the important impact of consumer motivation and behavior upon our economy. Our research has demonstrated the importance of the consumer sector and shows that a new and promising approach is available for minimizing those fluctuations in our economy so costly to this state.

Our research on leadership, organization and management is pointing to newer ways to organize and administer which can significantly improve productivity, labor relations, employee satisfaction, and employee health and mental health.

Perhaps another indication of the value of our research is the large and growing stream of visitors to the Institute from all over the world. We have become an important international center for social science research.

The University of Michigan model from which I believe capstone universities will emerge is relatively unique. Its individual scientists are widely recognized, as are its department-based centers. And as our new building makes obvious, the University of Michigan is far ahead of other universities in the conduct of research by the large, interdisciplinary institutes.

The University of Michigan model upon which I believe the handful of key universities will be built has come into being as a result of two important factors. The first is the unusually fine cooperation among the different departments and schools of this university. There are few universities where the relationships among the departments and schools are as friendly and constructive as here and where so many successful interdepartmental programs exist. The second important factor is the administration of this university. In my judgment, it has been more imaginative and creative in the organization and management of research and in relating research to teaching than the administration of any other university. The University of Michigan is distinctly ahead of other major universities in these two respects. These are crucial factors in providing the climate in which institutes like the Institute for Social Research can be created and can

grow. These factors are essential for the establishment of a capstone university.

The following, taken from another paper[2], describes the organization of the Institute for Social Research within the administrative framework of the University :

Objectives

The original objectives of the Survey Research Center, the first center of the Institute, were as follows :

1) To provide a well-trained staff to conduct sample surveys on problems which are scientifically important or which are of major significance to our society ;

2) To provide graduate and post-doctoral instruction and experience in the conduct of sample surveys ;

3) To conduct methodological research to improve and develop survey procedures ;

4) To disseminate findings with regard to substantive research and methodology through such processes as publication, teaching, consultation, and participation in professional meetings ;

5) To help integrate the social sciences by providing facilities for researoh on problems which involve more than one department or scientific field, and to foster basic theoretical advances in the social sciences based on new data from research involving problems cutting across several different scientific fields.

These objectives, appropriately broadened to include specific attention to research methods other than the sample survey, are still the objectives of the Institute for Social Research and the guide for current activities. However, a sixth objective has been added :

6) To develop procedures for the interpretation and application of research findings.

This last objective was made explicit in 1948, at the time when the Survey Research Center was joined with the Research Center for Group Dynamics ; it has since been expressed in the creation, in 1964, of a third Center called the Center for Research on the Utilization of Scientific Knowledge.

The objectives of the Center for Research on the Utilization of Scientific Knowledge are :

1) To conduct studies and experiments concerning the process of science utilization, with a special focus on the roles of professional and non-

2. Institute for Social Research, University of Michigan.

professional persons and groups in the diffusion and utilization of new knowledge ;

2) To conduct studies and experiments concerning the kinds of training that will best prepare practitioners effectively to receive and to utilize new knowledge in their respective fields.

A critical early issue in the planning of the Institute for Social Research involved the definition of this relationship with the several relevant disciplines and with instructional units representing these disciplines. Consideration was given to two different models or precedents then prevailing in university organizations, and both were rejected in favor of an organizational plan of a kind not commonly found in the social and behavioral sciences.

One model provides for the incorporation of the research organization within a particular school or department. This was thought inappropriate to the purpose of the new Institute, for the reason that disciplinary identification and departmental control would discourage the conduct of research on topics outside of departmental interests and on problems that cross disciplinary boundaries. It was felt then, as now, that many of the most significant research issues are at the boundaries of disciplines and do not fall clearly within any one. The forming of an interdisciplinary staff would be made difficult in an organization administratively located within any one of the traditional academic disciplines. Accordingly, it was thought important that the new organization be established on a university-wide basis, with the possibility of equal collaboration with any school or department.

An alternative and commonly used model provides for a university-wide organization consisting of a small permanent staff, mainly for administrative and service functions, supplemented by temporary research members drawn from the teaching units on a released-time basis. This model has the attractive feature of permitting flexible use of a large and varied staff. It has the complementary defect of discouraging certain kinds of long-term, programmatic research activities that demand a staff of people who can give a substantial and continuing effort to the work. In addition, this form of organization tends to separate the administrative, service and fiscal responsibilities from the research itself, and this was thought to be inappropriate in the case of an organization that had to be self-directing and self-supporting.

The model of organization chosen for the Institute, however, contains elements of the foregoing plans. We are a University-wide Institute with permanent research and administrative staff, with all key staff members having their major and continuing appointments with the Institute itself, with no restrictions as to the disciplinary identification of staff members, and with internal policies designed uniquely to sustain the main research objectives of the staff. Discipline-oriented staff groups exist within the Institute, but their primary identification is with their research programs

rather than with other academic activities. The Director of the Institute is responsible to an administrative officer of the University (initially to the Provost and currently to the Vice-President for Research) rather than to the dean of a school or department. Collaboration with the various schools and departments and the occasional sharing of some staff is arranged through voluntary negotiation between organizationally-equal units.

As provided in the original action of the Board of Regents, the Institute was from the start a self-supporting research unit. The University's practical aid, however, was greater than is suggested by the formal action of the Regents. The University provided office space, utilities, and janitorial service. It also provided working capital (i.e., the underwriting of short-term indebtedness) and such services as those performed by the legal counsel, payroll office, and the internal auditors. The most important and generous financial support, however, had to do with the use of indirect cost recovery.

The usual practice at Michigan and elsewhere is for each research project budget to include some provision for necessary costs beyond those directly chargeable to the project. These funds are used by the University administration to help offset the University-wide costs of maintaining physical facilities and administrative services. In the case of the Institute for Social Research, this indirect cost recovery is credited to an account administered by the Institute staff within policies established by the University. From this account the Institute pays its own current indirect costs of doing research (e.g., accounting, communications, furniture and equipment, etc.) and allocates a modest but critical sum each year for certain research activities that do not receive outside support. These " overhead research projects " include methodological studies, pilot studies leading to new project proposals, comparative analyses of data from completed studies, integrative writing, staff participation in scientific and professional activities, and the like. In years when these funds are adequate, some balance is allocated to a reserve fund; this fund is now sufficient to provide current working capital and to assure some term of staff continuity between studies. This unique provision regarding the use of indirect cost recovery was initially, and continues to be, a critical factor in the survival, stability and growth of the Institute. It has enabled us to retain staff members during the unavoidable periods between projects; it has enabled us to risk the starting of new research ventures without waiting for confirmation of expected outside support; it provides some security for our senior staff.

During our first year at Michigan virtually all our income came from research contracts with agencies of the Federal Government. During subsequent years we endeavored to diversify our sources of support, partly to limit the probability of a disaster should a particular source of income be closed off, and partly to assure a diversification of the kinds of research problems and interests available to the staff. The aim generally has been to obtain research support about equally from the Federal Government, from

private foundations, and from private organizations other than foundations. In any given year, the proportions will deviate from this ideal. With rapidly rising Federal research efforts, for example, about half of our research support in the last years has come from the Federal Government and only about a fifth from private organizations. The Institute has grown steadily over the years from an initial budget of a quarter-million dollars to a budget in 1966-1967 of approximately four and one-half million dollars.

In keeping with its status of fiscal autonomy and responsibility within the general University regulations, the Institute maintains its own budgeting and accounting system. This system is designed specifically to meet the needs of senior staff who must operate within the limits of grant and contract funds obtained by themselves and administered by themselves. Accounts are kept separately for each study and each Center with allocations from each study budget to help support the shared institutional administrative facilities and staff. All contracts and grants, however, are executed in the name of the Board of Regents and are under the fiscal surveillance and ultimate control of the University's Vice-President for Finance.

The Institute is organized as a collegium of semi-autonomous Program Directors, each having full responsibility for the administrative as well as the scientific aspects of his program of research. We now have 22 staff members who are Program Directors or heads of sections having similar functions. It is the work of this group and of our Center Directors that has been primarily responsible for our achievements. We have allocated to the Program Directors the responsibility for conceptualizing the research to be undertaken, securing and expending the necessary funds, recruiting and directing the research personnel engaged in the different projects in their program and providing on-the-job training, reviewing and integrating the research reports emerging from the different projects, and publishing the major findings. The Center Directors provide assistance, but the primary responsibility for these tasks falls upon the Program Director. This arrangement gives each Program Director great freedom in the planning and conduct of his research, but also substantially increases the total load he carries.

In the administration of the Institute, we have endeavored to apply the findings emerging from our own studies of group dynamics, leadership, and organizational performance [3]. This has influenced the concept of the Program Director's position and our use of overlapping groups for communication, influence and decision-making purposes. In addition to innumerable special-purpose and ad-hoc groups formed to deal with Institute-wide and Center-wide problems, there are a number of standing committees designed to deal with major administrative and policy matters.

3. A. CAMPBELL, " Administering research organizations ", *American Psychologist* 8 (6), 1953 : 225-230; R. LIKERT, *New patterns of management*, New York, McGraw-Hill, 1961 ; D. PELZ and F. ANDREWS, *Scientists in organizations : productive climates for research and development*, New York, John Wiley and Sons, Inc., 1966.

The Executive Committee

In establishing its major policies and procedures, the Institute has had the invaluable advice and guidance of its Executive Committee composed, for the most part, of members of the University faculty who have an interest in the Institute work but have no other form of membership in the Institute. Nine of the eleven members are appointed for overlapping three-year terms by the Board of Regents upon nomination by the President. The other two, The Dean of the Graduate School and the Director of the Institute, serve ex officio.

The Executive Committee is responsible for the establishment of policies which will serve the best interests of the entire University. They do not " represent " particular departments or schools nor decide issues in such terms. One of their chief contributions has been to create policies and administrative guides that have brought about a relationship of cooperation and mutual aid between the Institute and the various other parts of the University that share our research interests. They also have made significant contributions to the development of improvements in policies affecting all research people throughout the University.

Self-supporting research institutes face dilemmas and hard choices regarding the kinds of grants and contracts they will seek and those they will accept. The compulsions of fiscal security and convenience must be kept from leading the staff into activities that may undermine the character of the Institute and its potentiality for adding significantly to the quality of the University as a whole. Our Executive Committee has helped us to create and maintain sound research policies. Three of these deserve mention here.

The Institute will undertake programs and studies only if they offer a substantial promise for the generation of information and ideas of scientific importance, and only if they are related to issues of social significance. Some studies, of course, turn out in the end to be trivial or inconsequential, but none is undertaken with this expectation. Our Executive Committee has kept this policy in mind in the process of reviewing and approving each grant or contract proposal prior to its acceptance by the University. Our senior staff have been guided by this policy as they plan research activities and seek financial support. The significance of the policy is felt most keenly when a staff member finds he is refusing to accept restrictive funds offered by an outside agency while at the same time he is undertaking, with considerable effort and risk, to find support for some venture more in keeping with the broad purposes of the Institute.

Another important policy, which our Executive Committee helped establish, defined further the character of the research grants or contracts which we will accept : we will do no wholly confidential research for private organizations. All of our contracts provide that the data collected belong to the University, that they remain available to us for further scien-

tific analyses, and that the scientific findings may be published. We have undertaken a few projects classified for reasons of national interest or national defense ; however, the major findings of all of these studies with but one exception have been published. The choice of manner and time of publication rest with the Institute, with priority ordinarily given to publication of theoretical papers and supporting data in the scientific and professional journals. Some studies do not, by themselves, produce separate publishable results but are joined with related studies for the eventual public reporting of the work. In all instances, the Institute is guided by existing ethical codes regarding the use of private information, and when publication of study details might be harmful to research subjects or informants, this information is not revealed. The implementation of this policy, particularly in our collaboration with private organizations, has rested upon their acceptance of the Institute's character as a public and scientific organization, and upon their confidence in our handling of private information necessarily acquired in the conduct of the work.

A third major research policy established and maintained by the Institute concerns the freedom of the individual research staff member to determine the content, methods and interpretation of his work. The Institute's Executive Committee has sustained the idea that the Institute shall not be obliged to undertake research of a service character, i.e., at the request of an outside organization or of another unit of the University. While many studies do have their origin in such requests, they must meet the test of compatibility with research program objectives and of engaging the interest of some staff member. In instances where it is felt that the views of a sponsor might infringe unduly upon the work of the staff member or on the scientific interpretation of his results, protective devices (for example, impartial advisory committees not responsible to the sponsor) are sometimes introduced to insure some tolerable degree of scientific independence while working on controversial issues.

The initiative and support of the chairmen of the Social Science departments were instrumental, as mentioned previously, in launching the Institute. Continued support by these and other departments, as well as by the professional schools, has contributed greatly to the effectiveness of the Institute's efforts and has enlarged its scope of activities. This has been especially important in enabling the Institute's senior staff to contribute to the graduate instruction programs of the University.

As a university-wide research organization, the Institute is in a position to cooperate readily with any school or department in any teaching program or research undertaking. It is significant that the extent of cooperative undertakings in both teaching and research has grown, and at an accelerating rate.

When a department invites a member of the Institute to teach a particular course or seminar, the department determines the appropriate rank of appointment by its own standards while the decision as to the

amount of time involved is determined jointly by the department and the Institute. To avoid ambiguities in the terms of appointment and associated perquisites (the departments and the Institute having equivalent but different personnel policies) the individual remains a full-time employee of the Institute. The department or college involved transfers to the Institute a sum equal to its prorated share of the individual's salary, the salary rate being determined by the Institute. Under these circumstances all individuals whose primary appointment is in the Institute experience coherent and uniform policies while the teaching units retain control over their curricula and choice of staff.

There is an important reason for handling part-time teaching assignments of the Institute staff members in this manner. The success of the Institute as a research organization, and even its survival, depends fundamentally upon how well our program directors and the other members of our senior staff perform the duties for which they are responsible. Superior performance of research or administrative functions, along with teaching competence, should be reflected in income. For these reasons, the Institute has retained primary responsibility for setting the salary levels of members of its staff. The teaching department's freedom to review appointments annually provides a force for university-wide equity in salaries and perquisites.

It is significant that the policies pursued by the Institute have enabled it to maintain a stable research staff. Since 1946 only three persons at the program director level have left. Among the senior staff twelve have been with one of the Centers for fifteen years or more. Another nine have been with the Institute for more than ten years.

The activities described in preceding pages, while in some ways unique to the Institute for Social Research, are also similar to developments in other universities and in other fields of science. Permanent and large-scale research organizations within universities have been established in many fields of science during the last two decades. This has created a number of problems, at Michigan as elsewhere, because the requirements of such organizations, whether located within teaching units or outside of them, are sometimes not well served by the traditional administrative processes of a university. For this reason, considerable strain has been associated with attempts to develop organizational structures, management processes, and institutional policies conducive to the growth and effective performance of such research units.

Universities historically have been oriented primarily towards teaching ; research and other scholarly activies have been regarded as part-time tasks to be conducted by the teaching faculty in their free time. At Michigan, the accommodation to the requirements of semi-autonomous research organizations has been accomplished to a greater extent than elsewhere. Progress in these adaptations has depended first upon acceptance of the full-time researcher and of the concept of the research team of the interdis-

ciplinary Institute into legitimate partnership in the academic task. Second, it has depended upon a recognition that the administrative and financial requirements of a research organization are different in important ways from those oriented primarily toward teaching.

In the case of the Institute for Social Research, the gradual acceptance of the legitimacy of the research staff member has come about with the passage of time. This process has been aided by the part-time participation of ISR staff members in teaching, by the concurrent engagement of some teaching staff members in the research program of the Institute, and by a growing realization of the interdependence of research and teaching at post-graduate levels. The progress of legitimation has been symbolized from time to time by formal changes in the faculty status of our staff members, beginning with such trivial matters as parking privilege and library usage, and later including provisions similar to or the same as those of the regular faculty with respect to economic security, retirement benefits, and periodic leaves of absence.

The mark of acceptance of the research staff member into the University community is seen in his inclusion in the general decision-making and policy-making apparatus of the University. ISR staff members have been encouraged to give their time and attention to such matters. Staff members have in fact occupied key non-research administrative and policy positions, for example, coordinator of doctoral degree programs, member of departmental executive committees, Chairman of the Faculty Senate, member of the Executive Committee of the College of Literature, Science, and the Arts, and many others.

One major problem that remains, and which may be a matter of continuing concern in all universities, is the problem of providing an administrative and control structure for research that is compatible with, or at least in some reasonable balance with, the academic values of faculty freedom and autonomy.

The organizational structure and the administrative processes necessary to accomplish these objectives will require the use of theories of organization which are now emerging from research on organization and management. The traditional form of administration is unsatisfactory since it does not provide the complex, multi-channeled influence and decision-making structure which the educational and research objectives require for their attainment.

The kind of interdisciplinary research institute described here, organized on a university-wide basis with its own permanent staff engaged in problem-oriented research on a long-range programmatic basis, has the capability to meet all the requirements stated by Professor Friis. It also can meet the other two needs suggested, namely, train social science researchers and enable major universities to be the centers of intellectual leardership by making them the source of new knowledge.

In addition to the information stated previously concerning the In-

stitute's growth and activities, there may be interest in a few facts indicating the viability of the kind of interdisciplinary research institute which has been proposed. The Institute has grown rather steadily since its organization in 1946. The first year's budget was $ 234 000. The rate of growth up to 1962 was about five to eight per cent per year. Starting in 1962 the growth rate has been about fifteen to twenty per cent per year. The budget for the 1966-67 fiscal year will be about four and one-half million dollars. The Institute now has 120 academic persons and 123 non-academic and field persons.

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Mr. Friis' remarks were written from the perspective of how best to serve the research interests of government departments which are concerned primarily with generating data of use in social planning and in the evaluation of existing social policies or of alternative proposed policies. His comments seem to be quite reasonable assuming for the moment that such research, to be useful, would require large scale efforts and center around the use of sample surveys of appreciable size. An independent institute of the size range he proposes would be capable of conducting research of the necessary scale, retaining sufficient independence to insure the impartiality of the findings, and would be capable of developing sufficient technical expertise to conduct research of high technical quality. Were I serving on a government commission, whose only task it was to suggest ways of organizing social research to accomplish the social research needs of government agencies, I would certainly subscribe to this viewpoint.

However, there are other perspectives from which to view the relative advantages and disadvantages of alternative organizational forms for social research. The separate institute is essentially a consumer of technical personnel and social science rather than a producer. Hence, a country which has the problem of a serious shortage of trained social researchers may do itself a serious disservice by investing its human capital in an organizational arrangement which does not, by itself, insure that new generations of social researchers are bred and trained. There is considerable tension between the tasks of training and the tasks of accomplishing empirical

social research efficiently. The latter requires as elaborate a division of labor as the size of the organization can sustain : the former requires a flexible allocation of tasks so that neophytes may experience through direct contact the myriad functions that go into large scale research. Hence, independent institutes, focused on the end products of research, tend to slight training.

The training of new generations of researchers can best be accomplished when the research institute has some organic connection with a great university. The type of connection best suited for this function includes a considerable overlap between the university and the institute and the acceptance on the part of university departments of apprenticeship in the institute as an integral part of graduate training in the disciplines involved.

I realize that this is best accomplisbed within universities whose departments are less rigidly structured than many European universities and in which the faculties contain more than just a few senior persons. Indeed, as I view some of the European universities from this distance, it seems to me as if some of the research institutes were being established in order to break out of a rigid intra-departmental structure in which only a few persons can ever become senior professors. Under these circumstances, the independent research institute provides an alternative career path for those who, by the accidents of vital processes, have their upward mobility within universities blocked.

A third perspective from which the issue can be viewed, concerns the circumstances under which social science knowledge may best be advanced. Applied research, it must be recognized, does play an extremely important role in advancing social science knowledge, but this is a role primarily of providing an empirical foundation. The pace of applied research and the insistent demands made upon independent research institutes is too great to allow the personnel of the institute ordinarily to digest, synthesize and build social science theory. Full-time research, however, tempered by part-time teaching, does not lead to social science theory, but to research monograph after research monograph. This consideration also argues for the research institute which has an organic connection with a university. The ability to disengage from research, to rebuild one's intellectual capital and to develop general social science can be provided by alternating between university and institute assignments.

Of course, the decision whether to go one way or the other is only critical when resources are scarce and personnel are few. A country with few social scientists and few resources to invest should be best advised to establish research institutes with close connection with its major universities. Other countries, more fortunately situated, might best employ both modes, establishing independent research institutes which would be sensitive to governmental needs and university research institutes with training and basic research capabilities.

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I regard the discussion initiated by Henning Friis to be of utmost importance for social scientists as well as for research and university administrators. One of the reasons why the problem is so important is the fact that the number of people engaging in scientific research increases rapidly. I believe that J. Robert Oppenheimer was the first scientist to draw attention to the fact that the the scientific population is increasing by 100% every ten years. This phenomenon was later analyzed in a remarkable way by Derek Price, who commented on " the exponential curve of science ". Since the growth of the scientific population is more rapid than that of the general population, the developed countries will soon reach the limit of their intellectual manpower, and a competition between nations for brain-power will ensue. The careful allocation of intellectual manpower becomes of utmost importance. In order to plan an optimal allocation one must seek to define the degree of flexibility of the border between basic research and goal-oriented or applied research. Although it may be desirable to maintain a separation, a rigid division is not necessary. The reason for defining the problem this way is that it seems appropriate to propose that researchers from industry and other sectors should be given the possibility of participating in the training of students and that a focus on problems of concern to the economic sectors should be included in the training programs of research workers. If one is in favour of such an exchange, i.e. researchers from industry and public administration being called upon to teach and university teachers to help in solving practical problems, then one must consider the question of the *autonomy of scientific research.*

By autonomy I mean the right of scholars to decide and choose 1) the object of research, 2) the methods to be employed, and 3) to estimate the *fundamental value* of the results obtained. The value of the results for application in economic life may be decided by others. It seems likely that industry, as well as governmental agencies may violate the autonomy of scientific research in their eagerness to solve practical problems. Therefore, in order to secure rapid investigation of such problems, while safeguarding autonomy, special research institutes for applied research, similar to those discussed by Dr. Friis, should be created.

Two factors are a common requirement of all scientific research, basic and applied : 1) a general theory and defined concepts as frame of

reference (without a comprehensive theory there cannot be accumulation of knowledge, only scattered bits of information), and 2) a generally accepted method and research technique which permits verification of the derived hypotheses by all competent scientists in the field. No legal, administrative, political or economic authority could induce scholars to accept the results of research that does not qualify in these respects.

An important principle to which not enough attention has been paid in the social sciences follows from this : the level of the theoretical system of a science, in terms of inclusiveness, coherence, etc., determines the degree of autonomy of the science. No politician of today would try to influence a scientist working in the field of physics or chemistry as these sciences have developed strong theoretical systems. But as long as only miniature theories or theories of middle range are available in social sciences, a considerable risk of exertion of outside pressure remains. Therefore, I find it dangerous that social scientists have so little concern for theoretical and epistemological problems. I draw the following practical conclusions : the stronger the theoretical framework of a discipline the less will be " the autonomy risk " for the scientist participating in applied research. In a context such as this, aspects of theoretical interest will be present in problem-oriented studies and highly theoretical research will be valued because of the significance of its results for applied research.

Another threat to the independence of science, especially concerning the autonomous choice of the object of inquiry, is the dependence on research grants, public or private. This danger increases as the number of people engaged in research augments. The scholar who is a research director will feel responsibility as an employer and will have to choose projects that can support his staff. The result may be less willingness to explore new fields of research, because of the uncertainty of finding support for such investments from research councils or private foundations. The obligation to maintain the staff and to ensure good working conditions may lead to a conservative choice of research objects. We must realize, however, that it is of utmost importance that scientists do not lose their pioneering spirit.

Dr. Friis points out that it is difficult to organize interdisciplinary research within the universities. One should perhaps distinguish between genuine and pseudo-interdisciplinary research. *Genuine interdisciplinary research* presupposes a common theoretical basis, shared by two or more disciplines, which is a relatively rare case. With the term *pseudo-interdisciplinary* I designate research in which specialists from different disciplines collaborate, each applying his methods and theories, in order to study a problem. The latter type of research is common in applied medical research, and can easily be organized in social science. I think we should decide what kind of inter-disciplinary research we want to realize. Interdisciplinary research with a common theoretical frame of reference has been the vision, but in reality only interdisciplinary cooperation has taken place.

My conclusions are the following :

a) We must plan the utilization of our researchers. They should all be used both in research and in training.

b) As a consequence there should be close cooperation between the university and institutions for industrial research.

c) The importance of such exchange and intercommunication derives from the fact that applied research depends upon the same theoretical foundations as pure research.

d) Research councils and scientific foundations should not lay down their policy so rigidly that there will be no place for innovation. Even if there is a scarcity of competent scholars and many important social problems requiring investigation we must allow and encourage experiments in new fields, although they may not give immediate results.

e) As a concrete proposition I suggest the creation of a special organism within each university (or other institution for advanced study) with the function of mediating communication between clients for research, research institutes outside the university and the university researchers. The flow of communication should be multi-directional. In a situation of scarcity and allocation of human resources we must seek to evolve modes of close cooperation between university research, independent institutes and government agencies.

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Il est difficile de définir les meilleures conditions d'organisation des recherches en sciences sociales, ne serait-ce que parce que les Universités, élément partout important, présentent d'un pays à l'autre des différences considérables et que des différences non moins importantes existent quant aux sources de financement des recherches.

Mieux vaut, par conséquent, définir brièvement quelques objectifs sur lesquels l'accord semble général, avant de considérer les raisons qui recommandent le choix de tel ou tel système d'organisation pour les at-

teindre. On peut admettre que tout domaine de recherche scientifique se caractérise par les trois traits suivants :

1) *L'intégration*, c'est-à-dire que l'intérêt d'une recherche se définit par la place que ses résultats peuvent acquérir dans un ensemble intégré de connaissances. Comme le rappelle si bien M. Segerstedt, plus une science est avancée, plus elle est théorique et plus par conséquent, son organisation doit être autonome, dirigée par le seul souci de son développement interne.

2) *La mobilité*, c'est-à-dire qu'un ensemble de recherches ne doit pas être circonscrit par un domaine pratique, mais par le champ possible d'application d'une méthode. En d'autres termes, le contenu d'un domaine de recherche est changeant et ne correspond que très mal à la permanence d'une " discipline ".

3) *L'interdépendance des techniques et des méthodes à l'intérieur des unités de recherche*, c'est-à-dire la dissociation entre le spécialiste et la spécialité. Un nombre croissant de mathématiciens, par exemple, sont employés hors des instituts de mathématiques.

Il est clair, et généralement admis, que ces caractères généraux de la recherche excluent que celle-ci, pour l'essentiel, soit localisée dans des institutions non scientifiques, dont la recherche n'est souvent qu'une fonction secondaire, ou même latente. On ne peut confondre études et recherches.

On peut ajouter que ces caractères semblent accorder un privilège net au rôle d'instituts de recherche placés dans des institutions universitaires, au sens large du terme. La recherche ne peut être un simple complément de l'enseignement. Une fois admis ces principes généraux, la diversité des solutions possibles apparaît du fait que le trait n° 1 conseille de localiser la recherche le plus près possible du centre du système universitaire, c'est-à-dire sous la dépendance exclusive des savants eux-mêmes ; que le trait n° 2 recommande au contraire une organisation tout-à-fait autonome, puisque l'enseignement universitaire est nécessairement organisé par disciplines ; et que le trait n° 3 ferait préférer des organismes complexes, multidisciplinaires. Pour plus de brièveté, appelons ces trois solutions possibles, la *Faculté*, le *Centre* (unités peu institutionalisées, dont l'existence peut être brève et le champ d'action variable) et l'*Institut*, de taille plus grande, plus fortement organisé. En d'autres termes encore, disons que dans le premier cas le lien avec l'enseignement est étroit, dans le deuxième rompu, dans le troisième partiel, car l'Institut peut former des chercheurs appelés à travailler dans un domaine particulier où leurs connaissances trouvent à s'appliquer.

Une solution simple consiste à juxtaposer les trois types d'organisation, à placer dans les Facultés les recherches les plus théoriques, dans les Instituts autonomes des recherches pluridisciplinaires, donc moins intégrées, et dans les Centres, hors de l'Université, l'exploration de domaines mal définis ou en voie de redéfinition. Apparemment au moins, cette solu

tion est celle qu'a choisie la France où sont juxtaposés les Facultés, les Centres de recherches et Laboratoires du Centre National de la Recherche Scientifique (CNRS), et l'École Pratique des Hautes Études qui peut être considérée comme une fédération d'Instituts.

Mais cette solution n'est en réalité, au-delà de son apparente logique, qu'une absence de solution, si l'on admet les trois caractéristiques qui nous paraissent définir la recherche.

Prenons donc la situation française comme un point de départ. Y-a-t-il des chemins permettant le passage de cet éclatement initial à une certaine réunification, qui permettrait de répondre simultanément aux diverses exigences de la recherche scientifique?

C'est ici qu'interviennent les deux facteurs dont nous avons signalé dès le début la grande variabilité. Le premier concerne la nature de l'Université. Plus son objet est de transmettre la connaissance, de donner une formation professionnelle, ou de servir les besoins de l'État ou de l'économie, plus il est probable que l'autonomie des Centres et des Instituts est indispensable, puisque les uns et les autres ont des buts spécifiques de recherche.

Le second concerne le mode de financement. Plus il est décentralisé, plus l'autonomie des institutions de recherche les unes par rapport aux autres peut être faible. Au contraire, si le financement provient d'une source publique, unique, ou quasi unique, il est souhaitable que " l'on ne mette pas tous ses œufs dans le même panier " et qu'un grand nombre d'institutions de recherche indépendantes les unes des autres puissent agir comme autant de groupes de pression.

Ces deux observations expliquent la situation française, dominée à la fois par la prédominance de la fonction d'enseignement de l'Université et par la centralisation des ressources financières. Ces deux facteurs conseillent simultanément un éclatement du système universitaire et la complexité des stratégies administratives. On peut probablement considérer les grandes Universités américaines comme un cas doublement inverse, leur orientation vers la recherche et la multiplicité de leurs sources de financement rendent souhaitable au contraire l'unification des institutions de recherche dans un cadre proprement universitaire.

En dehors de ces cas extrêmes, se définissent deux cas intermédiaires, non moins importants.

Le premier est celui d'Universités ouvertes à la recherche, dans une société où le financement des études est centralisé. C'est le type auquel pensent la plupart des réformateurs de l'Université française. Il conduit à diversifier l'organisation universitaire, en donnant aux diverses unités une certaine autonomie financière, leur permettant de continuer à agir comme groupes de pression.

Le second est celui d'Universités traditionnelles, vouées surtout à l'enseignement dans un pays où les ressources de la recherche peuvent venir de sources diverses. Cette situation conduit souvent à rompre l'unité de la recherche et à constituer des organismes puissants, extra-universitaires,

qui sont les pôles de développement de la recherche. Une telle situation se rencontre dans certains pays d'Amérique Latine. Peut-être l'Italie en fournit-elle aussi quelques exemples.

Aujourd'hui, dans la plupart des pays européens, le problème qui se pose est celui de la réintroduction des recherches dans un cadre proprement universitaire, pour éviter la dissociation de l'enseignement et de la recherche, à un moment où le besoin se fait sentir de former un nombre rapidement croissant de chercheurs. Encore faut-il être assuré qu'une certaine réunification ne se traduira pas par une rigidité plus grande et une influence accrue des éléments les plus traditionalistes. Toute réforme des rapports entre les institutions de recherche passe donc par une transformation des Universités elles-mêmes. En France, le CNRS, en créant la formule des laboratoires associés après celle des recherches coopératives sur programme, a pris des initiatives auxquelles on souhaiterait que les Facultés répondent largement, et l'École Pratique des Hautes Études s'oriente, avec raison, vers le développement d'instruments collectifs de la recherche.

Dans ces conditions rien ne s'oppose à ce qu'une pluralité d'initiatives s'associe à l'installation d'organismes de recherche dans les Universités. Mais il n'est pas concevable qu'un tel objectif puisse être atteint tant que les Universités elles-mêmes ne disposeront pas de leur indépendance, ne se diversifieront pas, ne seront pas en état d'élaborer leur propre politique de recherche.

Cette indépendance et cette diversification en retour seront plus facilement acquises si les Universités reconnaissent la multiplicité de leurs fonctions : recherche, formation à la recherche, enseignement général, préparation à la vie professionnelle. C'est dans la mesure où un professeur peut simultanément appartenir à une unité d'enseignement et à plusieurs types d'unités de recherche que s'introduit la souplesse dont a besoin la recherche.

Il est bien entendu hors de question de reconnaître à l'Université le monopole de la recherche. Cette prétention serait insoutenable dans quelque pays que ce soit. En revanche on peut souhaiter que tous les chercheurs aient accès à l'Université et que celle-ci assure l'unité et la protection du milieu scientifique.

C'est dire simplement que dans la plupart des pays, et probablement dans tous les pays européens, l'Université ne peut accroître son rôle dans la recherche que si la croissance de son personnel et de ses moyens d'action est très nettement supérieure à la croissance des besoins d'encadrement des étudiants. Mais, étant donné la forte poussée de la demande dans l'enseignement supérieur, cette condition est pratiquement irréalisable si n'est pas introduit, ou maintenu, un système de sélection, qui dirige une partie des étudiants vers des établissements n'ayant pas pleine vocation d'Universités, et qui assurent un enseignement général ou de préparation à la vie professionnelle, sans avoir aucune responsabilité dans la recherche.

Dans le cas de la France, il faut reconnaître que les Facultés ont fort à faire pour accueillir le flot montant des étudiants et que l'augmentation

de leurs moyens ne fait que suivre avec difficulté celle de leurs tâches d'enseignement. On ne peut envisager le développement des activités universitaires de recherche que si celles-ci obtiennent une priorité, dans certains établissements, sur l'enseignement supérieur de base. Toutefois, une telle séparation entre enseignement supérieur élémentaire et recherche comporte des risques graves de rupture entre les étudiants et les professeurs-chercheurs. Ce danger peut être limité par des mesures diverses, et surtout en maintenant une certaine unité institutionnelle entre les divers types d'unités universitaires.

En tout cas, il est impossible de maintenir l'image ancienne de l'Université, lorsque l'enseignement supérieur devient un enseignement de masse et lorsque la recherche suppose des installations lourdes et un travail collectif et continu. L'attachement à un type périmé de vie universitaire ne peut avoir pour conséquence que l'exode de la recherche hors des Universités, et donc une forme extrême de ce qu'on souhaitait éviter : la séparation de l'enseignement et de la recherche. Le problème soulevé par la présente discussion et qui se pose d'abord comme le choix de la meilleure implantation des organismes de recherche, est donc en fait celui de l'avenir de toute l'institution universitaire.

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The question raised by Dr. Friis and commented on by other contributors can be looked at in a more general way; that is, as a problem of designing and locating a research organization — locating in the sociological sense — so that it can function effectively in terms of its objectives and of its external and internal relations.

Some of the issues which arise in tackling this problem fall under the following headings :

a) The relation of primary and secondary, of manifest and latent objectives, in the proposed organization.

b) The character of the external groups, networks and community segments with which it will need to make and maintain relationships.

c) The different types of activity and skill required, and the intellectual climate which will be appropriate to each of them.

(These matters are even more complex than they seem, for " goodness of fit " between objectives, organizational structure, and ecological situations need consideration of the proposed organization both as an " open system " and as a set of internal arrangements to contain the " tribal wars " which are endemic in such organizations).

d) The relation of the occupational and career structures of the relevant parts of the academic community to the manning of the different components of the proposed organization.

e) The political position of the new organization — that is, its power to deal with external ambivalence and to maintain progress towards its objective by attracting and retaining the external support it needs. Equally important is the type of political equilibrium necessary for the work of its internal sub-groups, each with a different academic background and a distinctive intellectual climate, and each having a particular relation to the demands, constraints and satisfactions of the tasks of the organization as a whole.

The relevance of these issues to the design and location of social research organisations are illustrated in other contributions to this symposium. I will comment later on some of the points made ; but let me first touch briefly on one familiar misunderstanding, or conflict of attitudes, which is recurrent in discussions of social research. It can be argued — and I would so argue — that the relation between pure and applied research is crucially different in the social sciences and in the traditional natural sciences. In the latter, ' pure ' research is largely undertaken by abstracting the objects of study from their natural environment, so that controlled laboratory conditions can be applied as fully as possible. At a later stage the findings of this research may undergo a process of modification and evaluation for practical use; this can be described as ' applied ' research.

This particular sequence is much less characteristic in the social sciences where the field of study can seldom be abstracted in this way or controlled for experimental purposes, and the relationship of the observer to his field is invariably a potential problem. Study of the motivation of individuals or the inner workings of groups or institutions, involves immediate difficulties over access for purposes of observation. The background factors in this problem are exemplified by the widespread rule of government departments that nothing of their inner workings may be studied by an external observer until the records are at least twenty-five years old ; and another illustration is perhaps to be seen in the small number of research studies on the working of universities or university departments.

Perhaps the most obvious way in which such problems of access for observation of actual events can be tackled is to be seen in the familiar practices of clinical research in medicine, where the problem is tackled by the establishment of a professional relationship — that is, a fiduciary, service relationship — between patient and doctor. Within this, for re-

search purposes and by explicit agreement, an additional component in the contract may come into being, to the effect that observations or actions not absolutely essential for treatment may be made or undertaken, with two provisos ; first, that they do no harm to the patient, and, second, that in any publication there will be some agreed disguise of the source of the confidential data [4].

A professional relationship which gives privileged access for observation represents, for some areas of social research, the nearest possible analogue to the laboratory of the traditional sciences. Work of this kind is based on what could be called a " professional model ". The limitations of such an approach are familiar. They can lead to a contention that the social sciences should take no part in work of this kind and that they should work in isolation, avoiding the problems of access and direct observation, until they reach a stage of development which makes applied research and practical application a real possibility. Such a viewpoint could be held to over-estimate the quality of the data which can be obtained without sanctioned agreement for direct observation. It also under-estimates the contribution of work done through use of the professional model as well as its special meaning for the social sciences at this stage in their development. It is a particular value of work done on this professional basis that the hypotheses to be tested will have been formulated with the collaboration of those who are familiar with the basic phenomena.

Such work has the additional characteristic — the value of it can be debated — that the topics selected for study will inevitably be determined in part by the needs and interests of the individuals, groups and communities who are the subjects of research.

From what has been said it will be seen that people like myself would say, in reply to Dr. Friis' question, that all three types of research organization are essential. Let me make this more explicit by a quotation from a Tavistock pamphlet " Social Research and a National Policy for Science ". In this conceptual scheme three " ideal " types of social research organization are described :

Type A : Centres of professional social science activity, with associated research and development establishments to undertake work on immediate practical problems.

These centres are envisaged as located within user organizations. Lacking them, user organizations remain without agents able to identify areas of social science knowledge relevant to their problems. They are also without social science professionals in continuous contact with administrators. In such centres research problems are highly determined by client needs, and express what may be termed a *research/service* " mix ".

4. RUEBHAUSEN and BRIM, " Privacy and behavioral research ", *Columbia Law Review* 65, 1965 : 1184-1211. WILSON, " A note on the social sanctions of the social sciences ", *Sociological Review* 3 (1), 1955 : 109-116.

Type B : Centres of basic research associated with major teaching facilities. Centres of Type B are the opposite of, and complementary to, those of Type A.

They are envisaged as located within universities, as autonomous departments based on particular disciplines, undertaking both undergraduate and graduate training. Here, research problems are more highly determined by the needs of theory and method, and express a *research/teaching* " mix ".

Type C : Centres of applied research associated with advanced research training. Centres of Type C may be regarded as a resultant of Types A and B. They supply the necessary link between them and are the intermediate bodies between user organizations and orthodox university departments.

They may be located either on the boundaries of universities or outside them as independent institutes. They are problem-centred and interdisciplinary, but focus on generic rather than specific problems. They accept professional as well as scientific responsibility for the projects they undertake, and contribute both to the theoretical development and to the improvement of practice. Their work expresses a *research/application* " mix ".

The four criteria of work and the one of setting that have been used to differentiate the three types are summarized in Table 1.

TABLE 1. *Characteristics of main types of research organization.*

Type of work	*User organizations*	*Type of setting University departments*	*Special institutes*
Source of problem	Specific client needs	Needs of theory and method	General ' field ' needs
Level of problem	Concrete	Abstract	Generic
Activity mix	Research/service	Research/teaching	Research/application
Disciplinary mix	Multiple	Single	Interrelated
Overall pattern	Type A	Type B	Type C

The three types of institutional resource, A, B, and C, form an interdependent system. One type cannot be fully effective without the others, since the feedback of each of the types into each of the others is critical for the balanced development of the system as a whole.

Finally, let me offer comments on some of the issues briefly indicated in the opening paragraph.

The history of empirical social research does not suggest that it is universally regarded as a blessing, either in the academic world or in the community at large; and this is particularly obvious in societies such as

the U.K. where a long-standing tradition of pragmatism and empiricism is in sharp contrast to the slow acceptance of systematic social research. In some countries there are scholarly objections to involvement in the difficult factual problems of sanctioned access, of sustained observation and of collecting data for research purposes. With this there often goes a preference for library research. Wherever any general situation of this kind exists within the academic world, a basic objective of a new organization concerned with empirical research must be to find and develop an independent position where its work can survive and develop without direct competition for financial resources with organizations or university departments concerned with more familiar types of scholarly activity. A considerable degree of independent finance is almost essential, particularly to provide a central core of staff who are predominantly concerned with research and prepared to devote to it at least ten years of their careers.

From the description given earlier of the distinctive characteristics of the three types of research organization, it will be seen that there is a very direct relationship between their characteristic " mix " of activities and the types of staff likely to be concerned in each case. Between them the three types cover a wide range of activities, from the very general and very abstract to the very specific and the very concrete. If one accepts these — by over-simplification — as two ends of a spectrum, it can be said that tensions or even antipathies are not uncommon between research workers concerned with different regions within it. One way of looking at the need for three types of research organization is based, in effect, on this point.

There is an additional complication. Research groups concerned with theoretical development are often based on a single academic discipline, and their work makes essential contributions to its life and growth. The approach and activities necessary for this particular purpose are often unsatisfying to those concerned with more practical and specific problems for which a multi-disciplinary approach is often more appropriate. But the formation of multi-disciplinary teams is not simply a matter of finding financial support, designing a team and recruiting members to its individual posts. Effective membership needs sufficient certainty of knowledge and experience, and sufficient flexibility of outlook, to be unthreatened by other contributions and approaches to the topic of research ; for it is not unusual that the choice of an initial basic academic discipline by an individual is geared to deep-seated interests and characteristics of personality. When this is the case, any demonstration of the limitations of this chosen discipline, as a means of analyzing or representing complex reality, can arouse anxiety or even hostility in the team member concerned.

In summary, it seems to me that the different types of research organization which have been briefly outlined together make up an essential basis for effective growth of the social sciences. The important point is to design and locate each of them in such a way that their activities are complementary in fact as well as in theory.

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I am very pleased that the reflections in my article on " Division of work between research in universities, independent institutes and government departments " have caused a number of colleagues to present their views on various basic organizational issues confronting the social sciences. My remarks were, as Rossi observes, directed towards research that is intimately related to public policy formation, as it is primarily in this perspective that the choice between executing research in government departments, in universities or in independent institutes has come to the fore in several countries. However, as Dahrendorf indicates, the location of fundamental research outside universities constitutes another important problem, which is particularly relevant in Eastern European countries, where fundamental research is undertaken, to a great extent, through the Academies of Science. As has been pointed out by Converse, Galtung and Rossi, the existence of conservative university structures which resist the development of new scientific fields and interdisciplinary co-operation, may motivate the establishment of independent institutes, whether for applied or for fundamental research.

The comments of Galtung and Segerstedt imply that they foresee a future where universities will be more inclined to accept applied research. Galtung imagines that universities, in the future, may be organized with institutes to solve value-loaded problems in the same way as engineering schools, that comprise both pure and applied institutes. It must be noted, however, that parallel to such applied institutes, independent institutions for " requested " research have been established. Segerstedt argues that when a more inclusive and coherent scientific theoretical frame of research is developed there will be less of an " autonomy risk " for university scientists who take part in applied research. In my opinion, considerable time will pass before this stage is reached. For a long time the social scientists in universities will be preoccupied with teaching and fundamental research. They will be hesitant to attend to the demands for research which are not in the centre of the development of their disciplines. I am not suggesting that, in many cases, universities will not undertake research which has relevance for policy formation. However, the increasing number of outside bodies which feel the need for social research which is directly related to their short-term or long-term programs can not, and should not, feel assured that universities will devote sufficient interest and

time to their research problems. As Likert points out, it is certainly possible to conceive of the university as an administrative framework including units for teaching, and fundamental research, as well as units for policy oriented research. Nevertheless, I fear that such a combination of " inner-directed " and " other-directed " research units, however efficiently they operate, may create either an imbalance favouring the latter or may result in the provision of unsatisfactory service to the consumer.

For this reason and for the reasons indicated in my paper, I feel convinced that there is a need for independent research institutions devoted to policy oriented research. Wilson has described this type of research centre in his Type C : Centres of applied research associated with advanced research training.

Converse and Rossi hold that training can only be offered if the institute has a close tie with the university. I agree that the training function is undeveloped in most independent research institutes. Not only do they appropriate too little time and funds for the continuous training of their own staff but their potentiality for graduate and post-graduate training in empirical research is rarely used. However, several university research institutions also fail in this respect. In my paper I expressed the view that independent institutions should offer students possibilities for practical research training. Further, the staff members should be permitted to hold teaching positions at the universities. This is particularly necessary in countries that have a shortage of university staff. The institutes and the universities ought to cooperate in these matters, but an organizational unification is not a precondition.

Converse argues that a university connection facilitates the attraction of top research talent. Whether an independent research institute can attract research talent does not, in my experience, depend on its being part of a university, but on its own research facilities, the atmosphere of the institute and the career possibilities. While the possibility of concentrating on research is far greater in independent research institutes than in most universities, the career prospects vary in both places. Obstacles to movement from independent research institutes to higher positions in universities may constitute a handicap for the independent institutions in certain countries.

With regard to staffing of institutes for applied research one must take into consideration that the personality-types attracted to applied research may be somewhat different from those attracted to universities. Researchers coming to institutes of applied research will probably be attracted not only because they are interested in research, but also because they are interested in the particular type of research that is expected to have an influence on public policy.

Cherns holds that the particular model of independent multipurpose research institutes which I have proposed is only designed to meet the need for policy oriented research in small countries such as Ireland or the Scandinavian countries. I have recently studied the means of organizing social

policy-oriented research in India[1], and have reached the conclusion that also in India, a specialized organization independent of government departments and of universities is the best form of organization. Much research which could be of importance to social policy formation has been undertaken in India by various universities, but the research is scattered, usually confined to small geographical areas, and is not efficiently brought to the attention of the policy makers. There is a need for organization of research collaboration and presentation of results. This requires a national body with a sufficiently large, qualified research staff to comprehend already existing research and to prepare and pilot research projects which can be carried out in collaboration with universities and other research bodies in various parts of India. The strength of an independent national body will be derived not only from its scientific qualities, but also from the very fact that it is independent of any university.

1. *Social policy and social research in India.* A report by Henning FRIIS, UN Adviser on Social Research and Planning to the Council for Social Development, India International Centre, New Delhi, 1967.