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The Social Sciences and National Defense: Trends, Potentials and Issues

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Rapid and extensive cultural, technological, social, political and economic changes are not only commonly recognized characteristics of the modern age, but also they have worked to produce an increasingly complex world. Recent applications, especially in engineering, have shown that the social sciences—anthropology, economics, geography, political science, sociology and linguistics—can help us to understand the extent and import of the seemingly intractable questions these changes have raised.

THE SOCIAL SCIENCES AND NATIONAL DEFENSE:

TRENDS, POTENTIALS AND ISSUES

by

Demitri B. Shimkin

Defining National Policies: An Evermore Difficult Problem. In 1977, the economic, diplomatic and, in large measure, military capacities of the United States, although enormous, are no longer as compelling in world affairs as they were in World War II and for a quarter-century thereafter. This change has been the cumulative result of a variety of developments: the progressive depletion of our mineral resources, and a corresponding rise of dependence upon imports; massive investment abroad, facilitating the growth of competing industrial capacities; profligate expenditures in the Vietnam War; the increasing costs of advanced weapons systems and their technological bases; weaknesses in domestic administration, including incapacities to maintain national transportation systems, to control costs in health care, to undertake systematic energy development, etc.; weaknesses in national morale; and instabilities in the Third World, and, in part, Europe.

At the same time, it must be emphasized that favorable changes have also been evident. Prominent among these have been the rise of China as a counterbalancing power to the Soviet Union; Soviet problems in agriculture and the consumer sector, and in the control of dissidence; Eastern European restlessness, and consequent drains upon Soviet power for military control and economic support, ideological and nationalistic resistances to Soviet and, in part, Chinese expansionism, especially by Moslem peoples; and world material and technical shortages which have made U.S. export capacities, especially for food, particularly strategic.

A basic result of these extremely complex changes has been to increase greatly the difficulty of determining appropriate policies, plans and actions, including those related to national

defense, in every major country. In fact, no small group of decisionmakers can follow, let alone evaluate or act on, the enormous mass of potentially relevant information on domestic and foreign developments that pours in day by day. And all of this is compounded by the visible conflict between traditional, "commonsense" aspirations of national power and ideological dominance, and the sheer maintenance limits of a planet dangerously burdened by resource depletions, pollution, and a soaring human population.

A classic paper by the great cybernetic expert W. Ross Ashby[1] brings out the limits of possible discovery let alone management in complex systems. He points out that the examination of all possibilities in a misleadingly simple problem, the number of illuminated patterns that can be presented in the lighting or darkness of an array of 20x20 (or 400) lamps enormously exceeds the limit of possible computability established by Bremermann on fundamental physical grounds. This limit has, in fact, already been passed in such a problem as the assessment of relationships—say, only, friendly, hostile and neutral—between the 130-odd members of the United Nations, pair by pair. A truly comprehensive, detailed global foreign intelligence that could cover even a major faction of all contingencies, is physically not attainable.

It is clear that if our country and the world at large are to cope with today's problems, let alone those of the future, a great need exists for vastly improved ways of information gathering and social management, including the control of armed conflicts. Here, the growing potential of the social sciences, especially in the United States, is among the assets that should be better and more extensively employed.

The Social Sciences: A Growing National Asset. The social (often termed social and behavioral) sciences usually are defined to include anthropology, economics, geography, political science, and sociology; linguistics is often included, while psychology (which includes many clinical and other practitioners) tends to be handled as a separate field. As an aggregate, the social sciences, even in the United States where they are most developed, are a small field. In 1956, 16,000 social scientists were included in *American Men of Science;* in 1973, 34,000. The corresponding figure for 1977 would be about 40,000. At the doctoral level, about one-fifth of the U.S. supply of scientists and engineers is in the social and behavioral sciences.

Technical Trends. Much more important than overall numbers has been the expansion of the social sciences into a wide array of specialties including particular foreign areas. Entire subfields, such as medical anthropology, have emerged, while regional experts with specialized language training and on-the-ground experience are now found for every significant part of the world. Moreover, the nature of social-science training at the doctoral and, increasingly, undergraduate levels, has changed profoundly since the 1950's.

Formal analytical methods resting on explicit assumptions, precisely defined data, and specified rules of relationship (which once were limited to economics) have become significant aspects of every social science.[2] Underlying this has been a widening sophistication in the philosophy of science. Genuine competence in a considerable range of mathematics, as opposed to a mere "cookbook" use of statistics, is now to be found in all good social-science departments. This has come partly through special programs for the mathematical training of practicing social scientists, and partly from the recruitment of well-trained students, including an appreciable proportion of former mathematicians, physicists and engineers.

Paralleling these developments has been very extensive work by psychologists, linguists, anthropologists, and sociologists on sources of error in the processes of eliciting information from people. J.A. Williams' work in the 1960's[3] is illustrative. It evaluated the degree to which social distances between interviewers and respondents, on the one hand, and the degree of threat carried by the questions asked, on the other, biased the answers given. The respondents were black people in North Carolina; it is clear that their answers to high-status white and lower-status black interviewers were significantly different, especially in threatening areas.

Improved research design, better and more efficient data-gathering procedures, and the widespread use of computers by social scientists have generated an explosive growth of systematic social information over the past decade. The contents of the 500-odd computer data sets of the Inter-University Consortium for Political and Social Research for 1976-1977[4] may be cited as a case in point. The topics covered include historical and contemporary curves enumerations; community and urban studies; investigations of conflict, aggression, violence, and wars; economic behavior and attitudes; education; elite and leadership; environment and natural resources; governmental structures, politics and capabilities; instructional packages and computer programs; international linkages, relationships and events; legal systems; data on legislative and deliberative bodies; mass political behavior and attitudes; organizational behavior; social indicators; and social institutions and behavior. Many of these sets cover foreign areas, especially Latin America and Europe. Almost all are very substantial. For example, Inglehart and Robier's "1970 European Communities Study" (ICPSR 7260) has data on six countries drawn from 10,542 respondents.[5] It probed in some depth attitudes toward the unification of Europe, and toward world society and politics, with emphasis upon the informants' views of appropriate government priorities.

Applications: The Social Sciences and Domestic Federal Programs. Over the past decade, social scientists have entered significantly in attacks upon large, complex policy planning and management problems. A major impetus for this development was a comprehensive review of the use of social research in Federal domestic programs initiated by Hon. Henry Reuss, the Chairman of the Research and Technical Programs Subcommittee of the House Committee on Government Operations. Dr. Harold Orlans of the Brookings Institution directed the study, which has been published in four volumes.[6]

This effort focused on six applied programs: crime and law enforcement; education; poverty; social aspects of illness and medical care; social welfare; and urban problems. It sought not merely to develop current facts but to explore the wider policy problem of "... the extent to which social scientists should or can assist the Federal Government in its research on social problems."[7] The study harvested an enormous range of opinion, some facts of a largely statistical nature, but little discernible direction. Its most useful results were to point out a number of administrative problems, especially the protection of the rights of human subjects of research.[8]

Paradoxically, the apparent failure of the Reuss-Orlans study was the basis of its indirect influence. It brought together much work and thinking on the practical applications of the social sciences, and visibly brought the problems of both directions and cohesive, productive methods. Indirectly, it set the stage for stronger efforts arising out of Federal legislation, such as the National Environmental Policy Act of

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1969, the initiatives of Federal agencies, and the felt obligations of professional bodies.

Applications: Engineering and the Social Sciences. These more productive developments can be sketched out by a brief coverage of three cases: the recruitment of social scientists into engineering planning and design efforts; the growth of technical assessments of the Soviet economy, by the Congressional Joint Economic Committee; and the recent aspirations of the International Studies Association to appraise the effects of governmental institutions, worldwide, on "human dignity."

In 1968, the National Academy of Engineering undertook an exploration of the problems and potentials of assessing the impacts of new technologies at congressional request.[9] The efforts of its 31-man task force, which included only two social scientists, were devoted to analyzing three nascent developments as "experiments." These were the use of instructional television and computer-assisted instruction in higher education, the abatement of noise in subsonic commercial aviation; and the use of automated, computerized multiphasic health screening to identify medical problems in the supposedly well population. The major results of these exercises were to suggest logical evaluative procedures, to formulate improved concepts of interested parties, and to indicate the need for robust decision criteria. In the key area of social benefit versus technological risk the task force used historical accident records as measures of acceptable rates, citing as its justification: " . . . the absence of economic or sociological theory which might do better."[10] In justice to the task force, it perceived its results to be quite preliminary. It urged that, for the future:

> . . . The necessary, thorough investigation of the sociological and political impacts of technologies under assessment requires extensive participation by behavioral and political scientists. The NAE experiments in technology assessment indicated that engineers and economists were able to work in harmony with those other professionals.[11]

In 1972, the Sloan Foundation funded efforts by a number of leading schools of engineering to explore the best methods of incorporating the viewpoints, methodologies and results of the social sciences and humanities into engineering, practice and education. An ultimate result of this effort was a conference convened in 1975 by the American Society of Civil Engineers, on "Human Factors in Civil Engineering Planning, Design and Education." In addition to civil engineers, the conference included representation from architecture and environmental design, anthropology, geography, industrial engineering and human factors, operations research and systems engineering, economics, social psychology and other behavioral sciences. Social science approaches were formulated in processual and, in part, as mathematical models. A large range of considerations was covered, from human sensory response to physical variables to the behavioral aspects of fire safety. Particular attention was given to attitude measurement and its relationship to public systems planning, design, and operation. The group concluded that " . . . the final criterion determining the success of a project will be based on its acceptance by the people whom it affects."[12]

In sum, a partnership between engineering and the social sciences, with profound reciprocal influences in thinking and techniques, is now emerging.

Applications: Research on the Soviet Economy. Perhaps the largest scale, most competent and most effective application of the social sciences to issues of national policy, including

defense, has been the continuing study of Soviet and Allied economics by governmental, academic and business economists. The partial results of this work have been published over the past 20 years and more by the Joint Economic Committee of the Congress. In particular, the 1976 report[13] exemplifies a very broad, deep, technically excellent and cohesive undertaking of manifest importance to Western and—quite likely—Soviet policymakers.

The report communicates the work of 51 authors representing 26 institutions as diverse as the Central Intelligence Agency, *The New York Times* and Hebrew University (Jerusalem). It is unified by broad, professional concerns with truly reliable findings on the Soviet Union, and common backgrounds in rigorous quantitative methods (generated especially by Harvard's economists) and an extensive, systematic, shared knowledge of the institutional and quantitative raw materials. The efforts of the group have been supported by the development of a medium-scale econometric model, designed to "... reflect Western understanding of Soviet economic institutions and bureaucratic behavior."[14] This model is, moreover, used with judicious care as only one element of a judgmental process which has embodied both a variety of qualitative aspects and the viewpoints of both conservatives and liberals, econometricians and more intuitive analysts.

In this work, traditional economic considerations have been broadened to include assessments of population, natural resources, and technological innovations. But there are significant gaps, nonetheless. The most important of these relate to the nature and significance of Soviet socioeconomic and political stratification, particularly between the population of Russia, other North European, and caucasian and Central Asiatic nationalities. The question of consumer anticipations with particular attention to the balances between needed motivation and effective coercion, and to the colossal costs of a quasi-voluntary Siberian development might have been more deeply explored. And, of course, the uncertainties surrounding military expenditures limit attainable results, as the authors indicate with great clarity.

The greatest weakness of the study is that it is a publication by excellent economists and related professionals written for their peers. The summary is uniformative, and the various interpretative articles are sometimes remote from the central evidence. A second-phase report, which could reflect the exploration of these massive materials by policymakers and planners, civilian and military, governmental and private, in interaction with the authors, would indeed have been valuable.

Applications: A Proposed "Global Monitoring System" by Political Scientists. Social scientists have, in recent years, sought not only to be team members in policy and planning, but institutional innovators as well. One of the boldest proposals of this type has been that "policy scientists" unite to form a cooperative, nongovernmental global monitoring system to assess and communicate "... the impact of governmental actions on espoused official goals and on the attainment and distribution of basic human values. Taken collectively, these basic values can be summarized as human dignity...."[15] As the authors see the results of this political monitoring, it would:

> ... allow the governmental actors themselves (the public sector) and—in at best some societies—individual citizen (the civic sector) to determine whether or not alternative policies should be advocated. Whatever the difficulties encountered in the formulation of alternative strategies of change based on systematic knowledge and information from monitoring,

> such redirection of government action would not be a leap into the unknown. It would be an attempt to *make* the future, rather than simply to *know* it.[16]

The Snyder, Hermann and Lasswell proposal is sophisticated in many respects. The discussions of potential data bases, methodologies, and procedures of application are farseeing yet represent sound extrapolation from today's technical levels. But the proposal is curiously provincial in its broader assumptions: it is neither global nor socially universalist but rather an appeal for American academic political scientists and their associates abroad to seek coherent influence, if not power. While the ultimate rationale of the proposal is the Universal Declaration of Human Rights,[17] the question as to whether the proposed monitoring is not really a proper function of a perhaps revitalized United Nations is never raised. Although it was the nominal central topic of the 1977 meetings of the International Studies Association,[18] the idea of the "Global Monitoring System" has apparently captured few enthusiasts. Only a small minority of social scientists see themselves as Philosopher Kings.

Trends in U.S. Social Sciences—A Summary. Social scientists, although still a relatively small professional group, have almost tripled their numbers over the past 20 years. Moreover, while naive design, poor documentation, and bad reasoning have not disappeared, technical standards among the better social scientists have improved enormously. Great expansions in substantive knowledge, much more reliable data gathering, storage, and retrieval, sounder epistomology including good to excellent mathematics; and major conceptual advances, especially in systems analysis and modeling have become general. Fruitful areas of application have developed, particularly in cooperation with engineers. Difficulties of translation between technical results and policies and plans are still evident. And the rates of social scientists as institutional members or as power-hunting entrepreneurs remain somewhat ambiguous.

The Social Sciences and National Defense: Some Potential Applications. Let us now consider in what way the social sciences can now or in the visible future become useful actors in policies, plans or actions related to U.S. national security and, more narrowly, the national defense. The focus of this assessment is *technical;* the many problems related to the *desirability* of such efforts are the subjects of the next section.

In broadest terms, the social sciences can aid in the more informed and rational management of problems largely at two levels—particular local, individual and small group phenomena and macrophenomena at the national and longer term perspectives. They can discourage badly conceived plans and enhance technically sound operations. But they cannot offset dominating situations: no propaganda to win Vietnamese "minds and hearts" could be effective in the presence of merciless bombings.

Within the realm of social phenomena—authority and support relationships, semantics, value systems, group and personal strategies, and the like—social scientists are particularly competent in evaluating primary observations, especially from the standpoints of source and method of observation, and in terms of contextual interpretation of social structure and social events. It must be emphasized in this regard that many of the hoary standards of observational evaluation utilized an intelligence almost everywhere are very unreliable. In Cuba, there was abundant confirmation of dissidence prior to the Bay of Pigs. But the narrow span of the dissidence in terms of class and place needed

the social science technique of assessing sampling bias for identification.

By the same token, the development of even approximate models of population composition, social structure, value orientations and decision and bargaining loci can yield more valid information, and greater economies as well. Approximations of probability sampling, operationally precise question formulations and statistical testing for the adequacy of information can be utilized to these ends. Their greater efficiency cannot only reduce unnecessary efforts but in doing so can reduce the immense noise of meaningless reporting that often serves to mask really important indications. Moreover, careful evaluations of the interrelations of various data sensors, e.g., responses to public opinion surveys, political humor, and private and public broadcasts, can serve to reconstruct missing data in other areas where, say, only official sources and scattered unofficial data are available.

In projecting the future and in planning, social scientists can provide the fruits of two types of competence. On one hand, with saturation in the patterns and dynamics of a particular society or social area (economics, communications, etc.) they are likely to have sound intuitive judgments. Characteristically, they will identify gaping holes and contradictions in basic assumptions, or downgrade alarming predictions in terms of local realties. Much more rarely, they will have positive suggestions emanating from observed trends in the society under consideration. On the other hand, social scientists can be important participants in model building and simulations.

As participants in military activities, social scientists are useful both as trained, acute and discriminating observers with a wide gamut of techniques, and as model builders capable of generating questions of system coherence. This effectiveness depends greatly on the degree to which they can be brought into the serious essence rather than the cosmetic surface of problems. For example, no approach to the psychological problems of military personnel can be adequate that fails to consider their ultimate requirement: to kill and be killed when properly ordered.

These somewhat newer capacities of the social sciences should not obscure older but still fundamental applications. Psychologists, sociologists, linquists and anthropologists can aid in the classification and evaluation of skills, in the evaluation of communication and learning effectiveness, in the design of equipment and operating groups consonant rather than in conflict with human capacities, and in the identification of problems such as alcoholism that every organization has and seeks to control.

Issues: Social Scientists, Social Science and National Defense. At the present time, the relations of social scientists and the use of social science skills in fields even remotely related to problems of national security or defense are extremely emotional issues among many Americans. At one extreme, held by many powerful academic figures, is the position of total abstention on the grounds of corruption and evil in everything smacking of U.S. national interests. Out of this come heavy pressures, sometimes blatantly illegal, to coerce social scientists from any role of aid or support especially to the Central Intelligence Agency. At the other extreme are the aggressive defenders of the status quo who justify every error and illegality of our own past, and who regard any questioning, especially by civilian academic people, as communistic or at least impudent.

This is a very bad state of affairs. From my standpoint, as I have played the game for many years, a compelling dual need exists, for leadership and for stewardship. The affairs of this nation

including its roles abroad are so complex and so determinative, actively or negatively, for the world at large that those capable of practical or intellectual leadership have the obligation to serve our nation. By the same token, that service must be conducted with the maximum wisdom and courage with which one is capable. Hard problems of power and conflict must be faced; simply to decry them and pretend they do not exist or to offer self-serving fantasies as substitutes is an evasion of hard responsibilities. But the proper exercise of these responsibilities also requires that questions of morality, and honest accountability, including those of personal conscience, be faced each day.

I know of no easy way that this country can return to the kind of moral consensus that it had in regard to the war against Hitler or to the Marshall Plan. Yet if our tasks in the many dimensions of national life are to prosper, the dialogues needed for such a reunification must proceed. And among the most important of these, practically and symbolically, are those between the social scientist and the soldier.

The gaining of reciprocal respect is an essential but only an initial step in examining many of the philosophical issues that must be identified if never fully resolved in the application of the social sciences to key national problems.

What are the fundamental values to be pursued? Is our national sovereignty an overriding consideration? Should new entities, a Eur-America perhaps, be goals of the future? And within the framework of nation states or their successors, what rights should persons have? And by whom, by what means, and to what limits should these rights be secured?

In quite a different vein, how are conflicts to be construed? How real, how unconditional is the persistent Soviet drive for universal communism? To what extent is the issue not one of kill or be killed but rather one of bargaining for limited goals by pragmatic powers?

Perhaps the most difficult question is that of using valid knowledge when it conflicts with preconception or special interest. Here is the underlying weakness of all advisers, particularly in areas of necessary secrecy. All too often, sins attributed to faulty advice have been those of advice refused. An illustration is pertinent. In late 1945, a task force headed by Dr. William Shockley was commissioned to evaluate when the Soviet Union would explode its first operational atomic weapon. Using extensive informational resources and careful systems design, including specific index items, such as the capacity to produce ultrapure graphite, the group estimated the date to be 1 January 1950. The report was submitted to Dr. Oppenheimer and General Graves, whose quick opinions were, respectively, "15 years" and "never." The Shockley report was thus overridden by self-serving opinions, with sad historical consequences.

To bring this argument to a sharp point: The social sciences are increasingly able to contribute importantly to difficult, increasingly intractable ques-

BIOGRAPHIC SUMMARY

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tions of national policy, including those of national defense. This use is hampered by perceived conflicts of morality and reliability, although these have been overcome to a considerable extent in such limited areas as the evaluation of the Soviet economy. It is of great importance that these conflicts between academic and military people be resolved. Beyond these issues are many philosophical ones that have no absolute answers, but which need extensive review by both parties if the bases for sound policies, plans and actions, including the proper use of social science skills, are to be attained for our nation.

NOTES

1. W. Ross Ashby, "Analysis of the System to be Modeled," Ralph M. Stogdill, ed., *The Process of Model-Building in the Behavioral Sciences* (Columbus: Ohio State University Press, 1970), pp. 94-114.

2. An illustrative recent handbook is H.M. Blalock, Jr., ed., *Causal Models in the Social Sciences* (Chicago: Aldine Publishing Co., 1971).

3. J.A. Williams, "Interviewer-respondent Interaction: A Study of Bias in Information Interviews" in Raymond Cochrane, ed., *Advances in Social Research* (London: Constable, 1973), pp. 229-248.

4. Inter-University Consortium for Political and Social Research, *Guide to Resources and Sciences 1976-1977* (Ann Arbor: University of Michigan, Institute for Social Research, 1976).

5. *Ibid.*, p. 252.

6. Ninetieth Congress, 1st sess., House of Representatives, "The Use of Social Research in Federal Domestic Programs." A Staff Study for the Research and Technical Programs Subcommittee of the Committee on Government Operations (Washington: U.S. Govt. Print. Off., 1967), 4 vols.

7. *Ibid.*, v. 1, p. iv.

8. See v. 4, pp. 187-458.

9. Committee on Science and Astronautics, U.S. House of Representatives, "A Study of Technology Assessment." Report to the Committee on Public Engineering Policy, National Academy of Engineering (Washington: U.S. Govt. Print. Off., 1969).

10. *Ibid.*, p. 19.

11. *Ibid.*, p. 4.

12. George C. Lee and Tiyokan Hung, eds., *Proceedings of the Specialty Conference on Human Factors in Civil Engineering Planning, Design and Education* (Buffalo: State University of New York, 1976), p. 3.

13. Ninety-fourth Congress, 2nd sess., "Soviet Economy in a New Perspective." A compendium of Papers Submitted to the Joint Economic Committee, Congress of the United States (Washington: U.S. Govt. Print. Off., 1976).

14. *Ibid.*, p. 302.

15. Richard C. Snyder, et al., "A Global Monitoring System: Appraising the Effects of Government on Human Dignity," *International Studies Quarterly*, v. 20, pp. 221-260, 1976. See p. 222.

16. *Ibid.*, pp. 222-223.

17. *Ibid.*, p. 230.

18. International Studies Association, Preliminary Program of the XVIII Annual Convention, *Worldwide Appraisal of Institutions: Toward Realizing Human Dignity* (Columbus: The Mershon Center, Ohio State University, 1977).