

ment of biological knowledge or technique. At this last sequential stage at which some form of official public action is indicated, policy implications have often developed to a point of feasible inquiry. There is seldom a clearly marked threshold when an issue passes from the political stages of conceptual formulation and legislative action to the confirmation of a public policy.

Policy is a vaguely bounded concept, but I take it to mean both what is intended and what is done in the name of public authority. In recent times the conventional agents of policy have been governments and intergovernmental agencies. Historically, of course, churches, religious brotherhoods, and private corporate bodies for trade and development have made public policy. Yet I believe that we should not assume that the concept *policy* is axiomatic, understood by everyone, and in need of no examination. Questions of definition and semantics often lead to sterile debate, but this need not be the outcome of serious inquiry into important but diffuse ideas.

During the past two centuries, the state has become the predominant policymaker, but its primacy appears to be waning. A phenomenon of our times is the growing complexity of the public policy process. At all levels of the process of governing—local, national, and international—nongovernmental organizations are becoming increasingly involved, not only in the politics of policy choice, but in the actual formulation and implementation of public policies. Thus both the environment and process of policy formation is changing, and the association of policy with government through the mechanism of the political state is not as clear as it has been. Politics has expanded beyond the *polis* to become a generalized process of social decision-making.

The expansion of the life sciences and their associated technologies has greatly enlarged the scope and complexity of biopolitical policy studies. It is becoming difficult to find a public issue that does not have somewhere within it a bioscience component. Thus, there will be little reward in seeking a precise focus for the policy subfield of biopolitics (however policy is defined). The

dynamics of biobehavioral research preclude it. Individual research efforts may be as sharply focused as their subject matter permits; very often it will not permit great precision. The diversity of the subjects and circumstances of policy suggests that no particular set of methods is exclusively appropriate to its study.

The development and implementation of policy is an ongoing process. The innovative, dynamic, and complex character of the biopolitical field of inquiry suggests that one function of the Association for Politics and the Life Sciences is consideration of the development of a system for monitoring the course of policy development on at least the salient biopolitical issues. From such effort it is possible that collegial strategy for policy research might be developed that would enhance the prospects for subject matter coverage and productive inquiry in this subfield.

At least one sector of inquiry into biopolitics and public policy should join analytic methods to hypothesis construction and conjecture. It seems to me that focus here should be on possible consequences of alternative policies. In open democratic societies policymaking appears more often to be reactive than anticipatory. Policies and programs are adopted on what are believed to be their intrinsic merits with little inquiry into their collateral and longer-range consequences.

Progress in bioscience has frequently led to unanticipated developments with which societies have been unprepared to cope. Examples are numerous and well-known. Sanitation and medicine brought death control to traditional societies with no attempt to alter birth rates. Birth control technologies reached a level of reliability and accessibility that has profoundly influenced the structure of modern society. Advancements in geriatrics, combined with birth control, are altering the age distribution in society and undermining established policies regarding social insurance and employment. Governments and social institutions generally have failed to anticipate problems which could have been foreseen.

The policy focus of biopolitics could provide, among other contributions, early warning of problems latent in biobehavioral innovation. To this end, systematic scanning of emergent developments for possible synergistic relatedness is needed. Here biopolitical researchers may benefit from the work of the more reliable futurologists and technological forecasters. However, to avoid the utopian taint that has too often diminished the value of conjectural studies, biobehavioral investigators need solid and realistic grounding in whatever knowledge is available regarding patterns and tendencies of human behavior. For all its deficiencies, recorded human experience should be drawn upon in estimating the probable human responses to innovations that have an impact on the most basic aspects of interpersonal and collective human association.

The rapidly expanding areas of information and communication science and technology are certain to join with biomedical developments in synergistic ways. Biopolitical studies, and especially their policy aspects, advance toward a receding horizon of knowledge. An expanding terrain thus opens for exciting and innovative work.

Lynton Caldwell
Indiana University

Report from the Curriculum Committee

The Association of Politics and the Life Sciences sponsored a curriculum workshop at the 1981 meeting of the American Political Science Association. Participants were Benson Ginsburg (University of Connecticut), Samuel Hines (College of Charleston), Glendon Schubert (University of Hawaii), John Wahlke (University of Arizona), Herbert Wilcox (West Virginia University), Fred Willhoite (Coe College), Elliott White (Temple University), and Thomas C. Wiegale (Northern Illinois

University). In their diverse and at the same time converging interests, these scholars are representative exponents of the field of biopolitics.

Each participant was asked to respond to three principal questions. The questions and a synopsis of the participants' responses to each one are presented below.

1. What has been your experience in teaching biologically oriented political science courses, what observations would you want to make on the basis of this experience, and what suggestions do you have?

The teaching of biologically oriented political science courses seems to be more successful at smaller colleges more than at large universities. Both Fred Willhoite at Coe College and Sam Hines at the College of Charleston reported that the cooperation of colleagues in various departments is good, that there is substantial student interest, and that enrollment in their courses is good.

Willhoite, together with a psychologist, an anthropologist, and a biologist, is involved in an interdisciplinary major called "Biosocial Science." He and the psychologist have taught the introductory course for five years. During the past four years, the course has acquired an explicitly sociobiological frame of reference, although it also includes an introduction to human evolution. Willhoite reports that it is difficult to find people to take on the added burden of teaching in an interdisciplinary program. Nevertheless, overall cooperation is good, and the major has attracted some of the ablest students in the college.

Willhoite also includes evolutionary materials in most of his political science courses. Last year he introduced a new course called "Political Origins," combining evolutionary theory, prehistory, archeology, and ethnography as well as political science to explore the evolutionary origins of politics, government, and the state.

Sam Hines's experience at the College of Charleston is equally favorable. During the past five years, he has taught several political science courses that incorporate substantial materials from the biobehavioral sciences. These offer-

ings include: a course in contemporary political issues, with attention to scarcity and biomedical technology; an introduction to Western political thought, which exposes students to ethological and sociobiological findings as well as to the work of anthropologists and paleontologists; a scope and methods course, which directs attention to naturalistic observation; a course on the politics of violence, which includes the study of the work of Lorenz and Eibl-Eibesfeldt; and a seminar in biopolitics, which has attracted biology majors as well as political science students. He plans to develop an interdisciplinary minor in biobehavioral or biosocial sciences.

By contrast, at the University of Hawaii (a large institution) the program in biopolitics has been exclusively the responsibility of Glendon Schubert. He has been teaching biologically oriented political science courses there for the past ten years at all levels, including an introductory sophomore course in biopolitics, upperclass undergraduate courses, first year graduate courses, and advanced seminars for Ph.D. candidates. Schubert reported that, with the exception of a single colleague, the response of departmental colleagues has ranged from neutrality to open hostility. The senior ethologist in zoology at the University of Hawaii is interested in Schubert's efforts, but he remains convinced that the real scientists are in biology and that social scientists with interests in social biology are dilettantes. Schubert finds that, since work in the biology of political behavior takes so much time and effort, only persons who firmly believe that it is indispensable are likely to attempt it. Undoubtedly, every person in our profession who has a serious interest in biopolitics shares this view. The enormity of the task is probably one of the reasons why the field has attracted very good, but relatively few, graduate students.

Cooperation from biological scientists in teaching biopolitics has certainly not been a problem at the University of Connecticut, as Benson Ginsburg, the head of the Department of Biobehavioral Sciences, reported. The department has areas of concentration in neuromorphology, neurochemistry, neuro-

psychopharmacology, endocrinology and reproductive physiology, human genetics, behavioral genetics, developmental psychobiology, and biological anthropology. Ginsburg's specialty is behavioral genetics, but he has also developed courses in animal behavior, neurogenetics, population biology, and human evolution. Resources for teaching biopolitics are immense at the University of Connecticut, and they have been utilized in the undergraduate and the graduate courses that are taught jointly by the Departments of Biobehavioral Sciences and Political Science. Furthermore, with these resources, complete and very effective undergraduate and graduate programs in biopolitics could be developed. However, as at the University of Hawaii, relatively few, although again very good students have been attracted to the program. If more postdoctoral fellowships were available, the number of students would probably increase.

The teaching of biopolitics also can take place without any formal recognition of such a field. Herbert Wilcox, who indicated at the workshop that he does not share the group's commitment to bringing the life sciences into political science, exemplifies this situation at West Virginia University. His overall objective is to instill in students "the courage to fear" a frightening future. Strengthening the capacity for confronting anxiety includes giving students an understanding of the physical, chemical, biological, political, social, technological, administrative, and moral factors in the crisis. The experience of Wilcox has been that students are much better prepared in that respect now than they were earlier in the decade. On the basis of the evaluation of his teaching by students, he thinks that the response of students to this unorthodox instruction has been favorable.

At Northern Illinois University, Thomas C. Wiegeler has incorporated biopolitical components into traditional political science courses. For example, in his foreign policy decision making courses he includes materials on biomedical aspects of elite behavior, and in courses in international politics a broad range of subject matter from demographic

factors, through leadership behavior, to food and climate can easily be approached from a biopolitical perspective.

2. *What kind of curricula do we need for graduate and undergraduate students, especially with respect to combining education in the biological sciences with education in political science? Please refer again to your own experience, if you wish.*

The suggestions for curriculum at the workshop were as diverse as the teaching experiences of the participants. John Wahlke made a distinction between "intermediate range" plans and the "long run future," extending the former to an examination of the applicability of biobehavioral sciences to political behavior topics and pursuing the latter only after a sufficient reorientation in a sufficient number of departments has taken place.

Wilcox, who wishes to proceed along informal lines, wants to make students aware of aspects of reality ranging from the physics of energy-matter relationships to all evolutionary phenomena, including prehistory and history.

The suggestions of Elliott White went beyond the boundaries associated with a biobehavioral orientation in political science. To be sure, White has a special interest in neurobiology, and he was emphatic in his remarks about including statistical research methods in the curriculum. He also emphasized the importance of maintaining the rapport between political philosophy and a biological approach to the study of politics, an importance that Willhoite and Hines also stress.

Ginsburg expressed the opinion that there does not have to be just one model for a biologically oriented political science curriculum. Students should acquire an understanding of the evolutionary legacy in analyzing the roots of human group behavior, but they also should be grounded in the public policy areas of biopolitics. In this connection, an awareness of the uses and abuses of ethology and sociobiology in arriving at interpretations of "human nature" and in making assessments of human behavior and behavioral goals is important.

The evolutionary perspective also

is one of Willhoite's principal interests, both in his research and writing and in curriculum development, especially as it relates to the history of political thought. Indeed, this aspect is important, for it has been demonstrated quite frequently now that there is a considerable convergence of the ideas of the great political thinkers with evolutionary explanations of political phenomena. The evolutionary dimension is one of Hines's main interests in his work on the origin of the state and in his teaching, but in his curriculum suggestions he also noted the special opportunities for furthering biobehavioral inquiries that lie in the study of organization theory, technology assessment with respect to public policy, and public administration.

Schubert was quite specific in his suggestions for curriculum, undoubtedly as a result of his extensive experience in this respect. He proposed that there should be a university-wide interdisciplinary course in social biology, with political science participating in instruction and providing students. Biopolitical findings should be integrated as an important component into the introductory course of political science. Furthermore, introductory courses in biological approaches to the study of politics and more specialized upper division courses should be taught. Similarly, at the graduate level, biopolitical research results should be incorporated into existing courses and more specialized graduate courses and seminars in biopolitics should be taught. However, not even an undergraduate curriculum can stop at such a point. Undergraduate political science majors should be encouraged to enroll in courses in general biology, chemistry, mathematics, cellular biology, genetics, ethology, comparative psychology, human development, ecology, physical anthropology, reproductive biology, and other courses along such specialized lines. Moreover, Schubert was quite emphatic on the need for developing good Ph.D. programs. From the viewpoint of the discipline of biopolitics, such a development is imperative, of course. However, scholars trained in biopolitics may find that they have limited professional opportunities.

3. *What kind of careers do we envisage for students educated in biologically oriented political science? In particular, for careers in the public service is the education we have in mind more appropriate than conventional training in public administration and the policy fields?*

The most divergent views expressed by the participants of the workshop were on career development. Ginsburg and Schubert took the position that a biologically oriented education is more appropriate for public service careers than conventional training in public administration and in the public policy fields. Thomas C. Wiegele expressed reservations in this respect, however, arguing that biomedical policy training combined with traditional public administration would be a fine, marketable combination. Wahlke stated that it actually would be a disservice to students to encourage them along these lines in view of limited career opportunities.

Of course, an appreciation of biobehavioral dimensions can be acquired outside a formal program. Even Wilcox, who indicated reservations about career preparation within a biological setting on the ground that biological terminology by administrators may become a haven for bureaucratic rationalization, agreed that awareness of and sensitivity to the survival prospects of the human species have to be cultivated in future public servants.

According to Willhoite, students were well prepared to enter public service careers with a background in biopolitics. His majors generally have gone into social services or public graduate programs, and the indications are that their education in "biosocial science" has made them more perceptive and realistic about human nature. Essentially, these thoughts were also reflected in the comments by Hines.

Conclusion

Representative exponents of biopolitics are not in agreement on career development for students in this field. For a field that has emerged fairly recently, such a position undoubtedly is understandable and responsible. The participants agreed that a biological orientation was necessary to a meaningful political

science. Since a higher degree of explanatory power is the aim of any academic discipline, the agreement on this point undoubtedly is the decisive criterion.

Fred Kort
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TEACHING BIOPOLITICS

In each issue of *Politics and the Life Sciences*, we plan to publish course descriptions and syllabi covering topics in biopolitics. We invite comments about experiences teaching biosocial science, as well as any materials that might have been developed. We would also like to hear about the responses of colleagues and students to these efforts.

We include here a description of a new set of courses developed from a biopolitical perspective and offered by the biology, anthropology, and government departments of Dartmouth College.

A Curricular Experiment: The Nature of Human Nature

Many students have complained about the fragmentation produced by the elective system in colleges like Dartmouth. Too often, it is said, the curriculum fails to provide experiences linking different disciplines in a coherent way. As a response to this concern, *The Nature of Human Nature* is a major curricular experiment developed at Dartmouth College. Designed for juniors and seniors, *The Nature of Human Nature* is intended to show the complex relationships between evolutionary biology, genetics, human evolution, political theory, and contemporary ethical issues. More simply, it is an inquiry based on the Socratic injunction: "Know thyself."

The current generation will have the awesome possibility of changing the direction of human evolution. Modern biology has transformed our

knowledge of genetics, and human evolution is understood in more detail than ever before. Biomedical technologies advance at a dizzying rate. But will the species survive? How does our evolutionary past illuminate the problems of the present and the challenge of the future? What are the philosophical, political, and ethical implications of contemporary research in the life sciences? *The Nature of Human Nature* is designed to enable students to confront such questions.

Three new courses have been created as an integrated program to be taken as a package: Biology 16, Evolutionary Genetics and Humans; Anthropology 16, Biological Basis of Human Behavior; and Government 26, Evolutionary Theory, Politics, and Ethics.

Biology 16 begins with a survey of human genetics and a description of the methods used to analyze the inheritance of simple and complex traits. Included is a discussion of modern genetic engineering and its applications to humans. Next, the neo-Darwinian theory of evolution is considered, with emphasis on the kinds of evidence that can be used to confirm or disprove its theoretical assumptions. Finally, we examine the validity of sociobiological theories that claim that many facets of human nature and society are genetically evolved traits.

Anthropology 16 focuses upon the evolution of human behavior. The paleontological evidence for hominid evolution is studied with emphasis on its behavioral implications. Varied interpretations of this evidence relating the coevolution of genes and culture are evaluated in light of competing theoretical constructs. This inquiry is grounded in the present with cross-cultural analysis of selected human behavioral characteristics, e.g., incest avoidance, gender asymmetries, and kin-based social units, that frequently have been held to manifest specific genetic predispositions. Finally, the different kinds of evidence that might illustrate the nature of the interaction between genes and culture are critically examined.

Government 26 focuses on the ways that "human nature" has been related to ethics and politics since the ancient Greeks. Almost every

major thinker has had some understanding of the natural grounds of political obligation and social institutions. Texts to be studied and compared with contemporary scientific approaches include Antiphon the Sophist's *On Truth*, Plato's *Republic*, and Rousseau's *Discourses on the Origins of Inequality*, as well as selections from Aristotle's *Politics*, Hobbes's *Leviathan*, and Marx's *German Ideology*. Particular attention will be given to recent developments linking evolutionary theory to the analysis of human cultural behavior, politics, and ethics.

Each course is open only to juniors and seniors also enrolled in the others. To ensure that all participants have a common background, there are two prerequisites, one course covering contemporary evolutionary biology and another in political theory. Students are required to attend all classes, which are not formally divided by subject matter. Classes and reading are planned as a coherent whole, but distinct assignments are given for each of the courses, and students receive three distinct grades.

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