



Administrative Conference of the United States

Peer Review in Awarding Discretionary Grants in the Arts and Sciences

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Administrative Conference of the United States

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I. INTRODUCTION

A country must have a strong and vibrant research and development capacity if it is to thrive in the rapidly emerging post-industrial world. To achieve this end, most of the industrialized nations have decided that government must play a prominent role in assembling and sustaining a sound scientific and engineering infrastructure. Most modern governments provide financial support for other professional endeavors, such as the fine arts, though usually on not as grand a scale. Although many procedural vehicles exist for making the difficult scientific and artistic judgments that necessarily arise in deciding which of a large pool of applicants will receive limited governmental resources, the United States has depended to a very large degree upon "peer review" grant systems in which the governmental decisionmaker assembles a group of the grant applicants' peers for advice. Under this peer review model, the government does not attempt to persuade researchers to undertake particular research or artists to create particular kinds of art. Instead, a granting agency allocates sums of money to entire fields and allows the researchers, artists, or performers to develop creative proposals for projects.¹ A group of "peers" with expertise in the relevant area then evaluates and ranks proposals, leaving the ultimate funding decisions up to the governmental officials in charge of the relevant programs.

The peer review process has proved remarkably durable in the 30-40 years during which federal agencies have employed it. It is, however, far from perfect. This Report will focus on one especially worrisome criticism of peer review systems for awarding discretionary grants--that they are capable of both ad hoc and systematic bias for and against individuals, groups, and innovative new ideas.² After taking some measure of the validity of this criticism, the Report will compare the peer review model to the primary competing model for awarding discretionary grants--the "strong manager" model. Concluding that on balance the peer review model is most appropriate for awarding discretionary grants in the arts and sciences, the Report will suggest some procedural reforms that should help reduce the potential for bias at a relatively little cost.

A. The Nature of the Peer Review Process

A "peer review" system of allocating governmental resources relies primarily upon the informed recommendations of experts in the relevant field of inquiry.³ First employed more than three hundred years ago for evaluating the scientific merit of journal articles, it was adopted by the National Advisory Cancer Council and the Office of Naval Research in the 1930s and 1940s for assessing applications for scientific grants. In the ensuing years the peer review model has evolved into a highly regularized vehicle for awarding research grants that "legitimizes the flow of resources and the establishment of priorities" in the scientific granting agencies.⁴ By the mid-1980s the Board of

¹The above description is somewhat idealized to the extent that it suggests that the funding agencies do not attempt to steer research. Obviously, budgetary decisions about which programs get what funds send messages to potential researchers about where they should direct their efforts. Sometimes the signals can be more direct as, for example, when NSF refused to continue funding the one of five supercomputer centers that used a particular brand of computer. See Ellis Booker, *NSF Cuts Supercomputer Grant*, *Computerworld*, October 30, 1989, at 127.

²The Report will not examine the closely related question of whether the funding programs themselves are biased toward or against funding research aimed at benefiting particular groups. The report will, however, examine claims that the system is biased for or against particular researchers. For example, one of the most frequent criticisms of peer review systems is that they result in "old boy" networks.

³Chubin and Hackett define peer review as: "An organized method for evaluating scientific work which is used by scientists to certify the correctness of procedures, establish the plausibility of results, and allocate scarce resources (such as journal space, research funds, recognition, and special honor)." D. Chubin & E. Hackett, *Peerless Science: Peer Review and U.S. Science Policy* 20 (State University of New York Press, 1990). [hereinafter cited as Chubin & Hackett] A House subcommittee report on peer review in NSF defines "peer review system" as "any method of evaluating a specialized creation - such as a proposal to perform scientific research - which involves having a group of people knowledgeable in the area of specialization evaluate the creation." National Science Foundation Peer Review: Report of the Subcommittee on Science, Research and Technology of the House Committee on Science and Technology, 94th Cong., 2d Sess (1976), at 13 [hereinafter cited as 1976 House Hearing Reports].

⁴D. Chubin & S. Jasanoff, *Peer Review and Public Policy*, 10 *Science, Technology & Human Values* 3 (1985). See also Chubin & Hackett, *supra* note 3.

Directors of the American Association for the Advancement of Science could conclude that "the scientific community has accepted primary responsibility for defining research needs and opportunities and providing insurance that public funds are allocated on a priority basis through peer review."⁵ It is nevertheless true that "[s]cience flourishes all over the world without the use of individual proposal peer review."⁶

Peer review in the arts is of even more recent vintage. Until the mid-1960s, private arts patrons rarely invoked formal peer review as a vehicle for making funding decisions.⁷ With the creation of the National Endowments for the Arts and Humanities, however, the federal government became the nation's most prominent single fine arts patron, and both institutions borrowed the peer review model from the scientific funding agencies. As with the scientific agencies, peer review has helped legitimate NEA funding decisions among the practitioners of the arts, though not necessarily among members of the general public.⁸

As it has evolved in the United States, peer review is intended to ensure that public funds are awarded to the most meritorious scientific and artistic projects in a way that renders the system accountable to the public and its elected representatives. And herein lies the potential for considerable tension. As long-time observers Chubin and Hackett note:

[P]eer review is expected to operate according to values of fairness and expediency yet its product is to be trustworthy, high-quality, innovative knowledge. There is no assurance that the process will yield the product; to the contrary, the process may interfere with efforts to secure the product.⁹

B. Bias in Decisionmaking

Perhaps the most important goal of the peer review process is objectivity. Governmental allocation of monies to fund projects in the arts and sciences is built upon the assumption that objective criteria for excellence can be articulated and applied in a way that is capable of identifying meritorious proposals and of selecting the best from among those. To the extent that bias infects the decisionmaking process, it loses its objectivity and, consequently, its legitimacy.

The word "bias" takes on different meanings in different contexts. For example, in Administrative Law the courts consider a decisionmaker biased when he or she has a "irrevocably closed" mind with respect to the facts.¹⁰ In the context of peer review, however, the concept comes closer to the dictionary definition of "a highly personal and unreasoned distortion of judgment."¹¹ A biased decisionmaker does not decide questions on their merits, but rather allows irrelevant personal considerations to intrude systematically into the decisionmaking process. Decisionmaking bias in the award of discretionary grants can result from favoritism, animus, or conflict of interest. The first two stem from the identity of the potential grantee; the latter has more to do with the characteristics and position of the decisionmaker. Bias can also reflect "tunnel vision," or the systematic refusal to give sufficient weight to particular criteria that are supposed to be relevant to the decision. Finally, ex parte lobbying and political pressure can cause an otherwise objective process to become biased for or against particular persons or approaches.

⁵American Association for the Advancement of Science Board Statement on Politics and Science, 223 Science 27 (Jan. 1984).

⁶R. Roy, Funding Science: The Real Defects of Peer Review and an Alternative To It, 10 Science Technology and Human Values 73, 74 (Summer 1985).

⁷Ian M. Kriegsman, "The Dance Dilemma: Taking Stock at a Meeting of Moguls," Washington Post, July 17, 1983, L1 (corporations "don't have a peer review panel system for determining what dance to support—it's unique to NEA") (quoting Mr. Richard LeBlond).

⁸Joseph McLellan, NEA: The First Twenty Years, Washington Post, Sept. 16, 1985, D1 (peer review "seem[s] to have generated considerable respect for the NEA among American artists, who feel they are being evaluated not by bureaucrats but by fellow artists.")

⁹Chubin & Hackett, *supra* note 3, at 3.

¹⁰Federal Trade Comm'n v. Cement Institute, 333 U.S. 683, 701 (1948). See 3 Kenneth C. Davis, Administrative Law Treatise — 19:2, 19:4; 19:7 (2d. 1980).

¹¹Webster's Ninth New Collegiate Dictionary (1988).

1. Animus

Animus is the ugliest aspect of bias. A governmental assistance program is affected by animus if an applicant's prospects of receiving a grant is adversely affected by some characteristic of that person unrelated to the articulated criteria. Another word for animus in this context is "blackballing." The animus may result from any one of a number of causes, ranging from personal dislike to philosophical differences to racial bias. Animus can stem from personal dislike of an individual, or it can display a general lack of regard for "mavericks" who challenge conventional norms. It may be manifested in many ways, ranging from introducing factually inaccurate information into the decisionmaking process to ranking the applicant at the bottom of the list.

2. Tunnel Vision

Objectivity is also lost when the process becomes afflicted with "tunnel vision," a malady that obstructs the ability of highly trained professionals to view proposals from different perspectives. The problem is not so much invidious discrimination as it is the inability or unwillingness to see the relevance of entire categories of proposals. The tendency becomes a disadvantage when it operates to exclude otherwise qualified proposals that come within the statutorily or administratively drawn bounds of the program. A process that screens out irrelevant proposals is not biased; a process that excludes relevant proposals because the decisionmakers have an unduly narrow professional view of the domain of relevance may be biased.

3. Favoritism

Favoritism is probably much more prevalent than animus in the peer review system. A decision is affected by favoritism when one or more of the applicants in the applicant pool obtains favorable treatment for reasons that are not relevant to the statutory or administrative criteria. The favoritism may manifest itself in many ways, ranging from unmerited high ranking to explicit singling out of an individual for the grant award. Nepotism is one form of favoritism; cronyism is another. The former is almost nonexistent in science, but the latter may play a role in peer review granting agencies. Favoritism is not necessarily limited to peer reviewers. The agency staff can also play favorites by selecting reviewers who are inclined to fund some kinds of proposals and not others.¹²

4. Conflict of Interest

A conflict of interest exists when a decisionmaker's judgment is clouded by his or her own personal stake in the outcome of the decisionmaking process. The clearest conflict of interest exists when the decisionmaker will obtain financial gain or suffer monetary loss if the decision goes one way rather than the other. For example, if one of the peer reviewers will share in the proceeds of the grant under review, the reviewer's judgment could be clouded by the prospect of financial gain. A reviewer also faces a conflict of interest if, through a consultantship or other arrangement with a company, the reviewer can convey financially valuable information to the for-profit enterprise with which he or she is affiliated. This familiar form of conflict of interest will be referred to here as "financial conflict of interest."

A less dramatic, though perhaps more prevalent, form of conflict of interest might be characterized as "research conflict of interest." An active researcher is always on the lookout for new ideas that have not been tried, previously undiscovered approaches that have succeeded, and novel approaches that have failed but have future potential. Even if a reviewer does not directly appropriate an idea from a grant application, much can be learned from the review process that is not available in the published literature. Knowledge gained during the review process may steer a reviewer away from a line of inquiry that has proved fruitless for other researchers (and therefore not

¹²Roy, *Funding Science*, *supra* note 6, at 73-81. (Peer review "is susceptible to manipulation by managers who operate under the emotional cover of the 'peer review' rubric so that individual proposals may be favored or disfavored simply by appropriate selection of the reviewers.")

published in the literature), or it may trigger an idea that, given sufficient time, would have become apparent to the applicant.

Conversely, a reviewer who has established himself in one field of inquiry may tend to discourage the development of alternative lines of inquiry that may pose a threat to the reviewer's prominence. By simply downgrading a competitor's proposal, a reviewer can simultaneously reduce the competitor's probability for success and enhancing the probability that the reviewer's research will continue to receive support. This can be especially troubling when the scientific field at issue is in the process of a "paradigm shift" in which younger scientists question the power of the old paradigm to explain new phenomena, seek out different formulations of the critical questions, and advance alternative theories to explain observations.¹³ If the granting agency review panels are filled with devotees of the old paradigm, the development of such new paradigms might be impeded.

5. Lobbying and Political Pressure

In legislative decisionmaking bodies the most common vehicle for persuading the decisionmaking entity to send resources in one direction or another is the lobbyist. In the lobbying paradigm, the potential recipient of the funds or a paid representative of the potential recipient attempts to make as many contacts as possible with persons in a position to determine the outcome of the process and to persuade those persons of the wisdom of appropriating resources to that supplicant. There is a long American tradition of bringing political pressure to bear on decisionmakers in the bureaucracies. In the context of discretionary grants, prospective grantees can attempt to persuade influential higher-ups in the Administration or important congresspersons to "go to bat" for their proposals.

Although the lobbyist is a well respected participant in the legislative appropriations process, the legislative model does not necessarily lead to the most objective results. Rather than awarding grants on the merits of the applications, the process appears to favor insiders and influence peddlers. A decisionmaking process in which the results depend upon political access and subtle promises and threats is not likely to value objectivity very highly. It could yield the impression that the results are biased in favor of the politically well-connected, and in the extreme could give rise to charges of partisan favoritism.

C. Organization of this Report

The next four Parts of this report examine several discretionary grants programs in four granting agencies: the National Institutes of Health (NIH); the National Science Foundation (NSF); the Environmental Protection Agency (EPA); and the National Endowment for the Arts (NEA). The facts and analysis contained therein are drawn from an extensive literature on peer review in NIH and NSF and a growing literature on the NEA grants process. More importantly, the description draws upon extensive interviews conducted with agency officials and in some cases successful and rejected applicants. All interviewees were assured that their responses would be kept confidential. Several graciously consented to allow their interviews to be cited for attribution; most did not want their names associated with the report in any way. In all cases the interviewees' wishes were honored. Candor was far more important to the author than the ability to attribute a factual statement to a particular source.

Although all of these agencies rely heavily upon the principal of peer review in awarding discretionary grants, there are numerous variations across the agencies in how they manage the peer review process. None of the programs has completely eliminated the potential for bias, but some have made great strides in that direction. Each can learn lessons from the others, and the many granting agencies not covered here can learn a great deal from their combined experience.

¹³See T. S. Kuhn, *The Structure of Scientific Revolutions* (1962).

After describing the peer review process in four real-world contexts, Part 6 of the report will analyze in detail the potential for bias in peer review systems and examine the damage that the potential for bias can do to the integrity of the process. Finally, Part 7 will identify and analyze several possible solutions to the bias problem in peer review system, ranging from the radical suggestion that peer review be abandoned in some contexts to relatively minor "patch and repair" solutions to problems that have arisen in some programs. The report concludes that peer review is a very effective tool for ensuring objectivity in awarding grants in professional contexts. For the most part, favoritism, animus, tunnel vision, conflict of interest, lobbying and political pressures do not play large roles in existing peer review systems. While this is a comforting conclusion, some improvements can be made and some changes are in order.

II. PEER REVIEW IN THE NATIONAL INSTITUTES OF HEALTH

The National Institutes of Health (NIH) is a collection of research institutions in the Public Health Service of the Department of Health and Human Services.¹⁴ One of the premier research institutions in the World, it provides almost \$7 billion per year to support more than 25,000 separate research awards in health and environmental sciences. In a very real sense, NIH is the father of the biotechnology industry in the United States.¹⁵ NIH is composed of thirteen separate institutes, each of which directs its attention to a particular area of health-related research.¹⁶ Much of the research that the NIH sponsors is conducted by federal employees at the flagship campus in Bethesda, Maryland and at several other research centers around the United States. In addition to conducting its own research, NIH sponsors billions of dollars worth of research annually at Universities and other public and private research institutions.¹⁷ Virtually all of these outside grants, contracts and interagency agreements are awarded through an intricate process that relies almost exclusively upon peer review for evaluating the quality of grant proposals.

A. Discretionary Grant Programs

Since NIH has in recent years suffered from chronic underfunding, many more worthy applications are submitted than can be funded.¹⁸ Therefore, the goal of the discretionary grant programs in NIH is to select the best applications from among a large number of very good applications. The competition among exceedingly qualified researchers for a shrinking pool of resources may itself threaten the integrity of the peer review process. When the stakes are so high, the temptations to cut corners and apply inappropriate criteria may be higher and the need to shield the process from bias correspondingly greater.¹⁹ Although all of the Institutes follow the same model for awarding discretionary grants, the following description of the NIH process will attempt to provide a feel for the variety of the grants that NIH funds by focusing particularly upon four very diverse grant programs: (1) the Program for Cancer Cause and Prevention Research of the Division of Cancer Etiology of the National Cancer Institute; (2) the Program for Biological Response to Environmental Health Hazards of the National Institute of Environmental Health Sciences; (3) the General Clinical Research Centers Program in the Division of Research Resources of NIH; and (4) the Biomedical Research Technology Program in the same Division of NIH.

1. The National Cancer Institute

The Program for Cancer Cause and Prevention Research, located in the Division of Cancer Etiology of the National Cancer Institute, awards grants, contracts and cooperative agreements to universities, colleges, hospitals, public agencies, nonprofit research institutions and for-profit organizations for projects designed to identify factors that cause human cancer and to develop mechanisms for preventing cancer. Research programs include studies in epidemiology, chemical and physical carcinogenesis, biological carcinogenesis, nutrition, immunology, and various other field studies and statistical research. The grants and cooperative agreements may be used for personnel, consultant costs, equipment, supplies, travel, patient costs, animals, alterations and

¹⁴The National Institutes of Health are established by the Health Research Extension Act of 1985, Pub. L. 99-158, 99 Stat. 820 (1985). 42 U.S.C. §201 et seq.

¹⁵Thomas E. Malone, then Deputy Director of NIH, said of NIH's role in the biotechnology industry: "We fathered the industry. We are part and parcel of it." Nell Henderson and Michael Schrage, *Government R & D Funding Spawns a New Industry*, Washington Post, December 16, 1984, A1 col.1.

¹⁶See National Institutes of Health, *NIH Data Book* - 1989.

¹⁷NIH has only funded research in for-profit institutions since 1981, and applications from private companies still constitutes only a miniscule proportion of the total NIH budget. See Henderson and Schrage, *supra* note 15, at A1 col. 1.

¹⁸See Kolata, *Beginning Scientists Face a Research Fund Drought*, New York Times, June 5, 1990, C1, col. 2.

¹⁹See Rosenberg, *Medical Research Is In Ruins*, New York Times, Sept. 2, 1990 §4, p. 13, col. 1 (The chronic shortage of funding at NIH "results in such a small fraction of meritorious grants being awarded that it jeopardizes the very objectivity and integrity of the peer review system for evaluating research—a system that depends on a vigorous and varied research community.").

renovation, miscellaneous items and indirect costs.²⁰ The Program allocates about \$250,000,000 per year to cancer researchers in 300-400 awards that range from \$2500 to more than \$6,000,000 per grant.²¹ About 25 percent of all applications are funded.²²

The Program also awards Small Business Innovation Research (SBIR) Grants to small businesses. The objectives of the SBIR awards are: "to stimulate technological innovations; to use small businesses to meet Federal research and development needs; to increase profit sector commercialization of innovations derived from Federal research and development; and to foster and encourage participation by minority and disadvantaged persons in technological innovation."²³ Approximately \$800,000 per year is available for a small number of SBIR grants and contracts.

2. The National Institute of Environmental Health Sciences

The National Institute of Environmental Health Sciences (NIEHS), located in Research Triangle Park, North Carolina, is the federal agency with the primary responsibility for conducting and supporting research on the effects of chemical, physical and biological environmental agents on human health. NIEHS attempts to prevent disease through programs that "provide the scientific information base, advanced methodology, and trained manpower to understand and prevent adverse health effects."²⁴ Although about one-half of its work is done by its own staff,²⁵ NIEHS supports more than 500 research and training grants that are designed to: "[i]dentify and characterize potentially harmful environmental agents; [l]earn the mechanism of action in biological systems after exposure to hazardous agents; [s]how what effects these agents cause, by themselves and in combination with other environmental factors; [l]earn what diseases are caused or aggravated by environmental factors; and to determine [t]he extent of exposure of various population groups to these agents."²⁶ The grants are usually substantial and have an average duration of about four years.²⁷

The objectives of the Program are to identify and measure the biological, chemical and physical factors that are hazardous in the human environment as an essential first step in establishing the relationship between different levels of exposure to these factors and possible impacts on public health. The ultimate goal is to obtain a better understanding of the dose-response relationships between toxic substances and human exposures so as to improve public health protection against toxic environmental agents. In addition the Program aims at developing sensitive techniques for analyzing human exposures to environmental agents and for determining the rates at which such agents enter the body, how they are stored, metabolized and excreted. The Program also seeks to achieve an understanding of how human enzymes systems increase or decrease the toxicity of environmental toxins. Researchers examine how environmental elements affect the liver, lungs, intestines, nervous and immune systems, etc. They also investigate possible carcinogenic, genetic and reproductive effects. Examples of funded projects include a prospective study of diet and cancer in women, a

²⁰Office of Management and Budget, Catalog of Federal Domestic Assistance 296 (1989). See also 42 U.S.C. §241; National Cancer Institute, NCI Fact Book 26 (1989).

²¹CFDA at 296.

²²Telephone interview with Dr. David Longfellow, Branch Chief, Chemical and Physical Carcinogenesis Branch, Division of Cancer Etiology, National Cancer Institute, NIH. September 28, 1990, Friday, 10:00 a.m. and Oct. 3, 1990, 12:00 p.m. (301) 496-5471.

²³CFDA at 296. The SBIR program is a federal program that cuts across all of the scientific granting agencies. It was established in 1982 by the Small Business Innovation Development Act of 1982. Pub. L. 97-219; Pub. L. 99-158, 42 U.S.C. §285. SBIR Phase I grants (of approximately 6-months duration) are to establish the technical merit and feasibility of a proposed research effort that may lead to a commercial product or process. Phase II grants are for the continuation of the research initiated in Phase I and which are likely to result in commercial products or processes. Only Phase I awardees are eligible to apply for Phase II support.

²⁴Division of Extramural Research and Training, National Institute of Environmental Health Sciences, Grant Support for Investigator Initiated Research Projects (undated manuscript).

²⁵Telephone Interview with Dr. Thor Fjellstedt, Deputy Director, Division of Extramural Research and Training, NIEHS, NIH. Thurs. Sept. 27, 1990. (919) 541-7723.

²⁶Division of Extramural Research and Training, National Institute of Environmental Health Sciences, Grant Support for Investigator Initiated Research Projects (undated manuscript).

²⁷Telephone Interview with Dr. Thor Fjellstedt, *supra* note 25.

study of the epidemiology of melanoma, a study of cellular and biochemical effects of tumor promoters and experimental tobacco carcinogenesis.²⁸

The Program on Biological Response to Environmental Health Hazards has a budget of approximately \$30,000,000 with which it supports 150-200 research grants.²⁹ Grants range from \$43,000 to \$1,544,000, with a median of \$175,800. Like NCI, NIEHS awards grants to universities, colleges, hospitals, public agencies, nonprofit research institutions and for-profit organizations. NIEHS also has a SBIR program similar to that of NCI. Examples of funded grants include molecular mechanisms of organophosphate immunotoxicity, the molecular basis for initiation of DNA repair, and a probable mechanism for the carcinogenicity of 2-nitropropane.

3. The General Clinical Research Centers Program

The Program for General Clinical Research Centers (GCRC) in NIH's National Center for Research Resources provides major funding to construct and maintain research centers within hospitals at academic institutions to host investigators funded by other NIH components, other federal and state agencies and the private sector.³⁰ The purpose of these grants is to create and sustain specialized institutional resources in which clinical investigators can observe and study human physiology and disease. Centers operate as "discrete, multi-departmental, multi-categorical research inpatient and outpatient units." They are intended to be "institutional resources where scientists from many departments correlate their laboratory studies with carefully controlled clinical investigations and analyses."³¹ When the number of researchers at an institution receiving outside funding (often from NIH) reaches a "critical mass," high level administrators can prepare a proposal for GCRC funding. In the words of one investigator, the centers are like a "holding company" for a group of principal investigators at an institution. A GCRC award lends prestige to an institution and can help it in recruiting new researchers. Grants can be used to pay the cost of "renovation of facilities, equipment, hospitalization, core laboratories, salaries of center directors, biostatisticians, nurses and technical staff, and other operational costs."³² At present there are seventy-four such centers throughout the United States.

The Program awards approximately \$120 million in grants to the 74 grantee institutions and several other entities. The grants range from \$300,000 to \$4 million annually, and average around \$1.6 million. A small SBIR program awards one or two grants per year. Phase I SBIR grants run about \$50,000, and Phase II grants can be as large as \$3 million. General Clinical Research Centers typically support multiple projects from many disciplines, including internal medicine, pediatrics, surgery and obstetrics and gynecology. Projects address all aspects of disease mechanisms and may range from studies of nutrition and growth and development to genetics and immunology. One typical SBIR project supported the development of computer software for handling clinical research data.³³ The vast majority of the centers are refunded each year, but one or two centers typically drop out or are not refunded. Although one might predict that the competition would be quite stiff for the two or three available grants, in fact the agency receives only 1-3 applications for new centers per year.³⁴

²⁸CFDA at 296.

²⁹CFDA at 186.

³⁰See 42 U.S.C. §287 et seq.

³¹Although grant awards may be made to for-profit institutions, the grants are not intended to support the routine development of products for sale. For example, it is not proper for a for-profit drug company to use a GCRC funded Center for safety and efficacy testing of drugs as part of the application process for drug approval at the Food and Drug Administration without paying the center for the resources used in the project. On the other hand, if a scientist associated with a Center desires to test a new idea that he has developed about the mechanism of the drug, use of the Center's resources would be appropriate.

³²CFDA at 282.

³³CFDA at 283.

³⁴Telephone interview with, Dr. Bernard Talbot, Program for General Clinical Research Centers, National Center for Research Resources, NIH, September 26, 1990. So few institutions apply for funding each year because of the agency's tradition of continuing funding for existing grantees and because of the expense of preparing an extensive application for a large center.

4. The Biomedical Research Technology Program

The Biomedical Research Technology Program is another program in the National Center for Research Resources of NIH. The program awards grants to assist academic, nonprofit and for-profit institutions in developing and sustaining the kind of sophisticated technological capabilities that are vital to modern biomedical research. These grants provide biomedical investigators with exceedingly expensive and sophisticated tools for research, education and patient care, such as facilities for computing and data processing, high-voltage electron microscopy, mass spectroscopy, nuclear magnetic resonance spectroscopy and other specialized instrumentation. The program's focus on technology, rather than pure research, makes this Program somewhat unique in NIH. Special emphasis is given to large scale multidisciplinary projects of regional and national scope. The grants, which may be awarded to institutions of higher education, hospitals and other institutions and other organizations with programs of biomedical research and specialized research services, provide funds for primary equipment, professional staff and related operating expenses. Smaller awards are available to provide support for pilot projects to demonstrate feasibility of innovative ideas in the fields of high technology and engineering.³⁵ A small number of SBIR grants are also available.

The Program's annual budget of about \$40 million is used to fund 55 biomedical research centers, 10-20 resource-related research grants, 10-20 other small grants, and 10-20 SBIR awards.³⁶ Grants range from \$16,897 - \$2,192,567, and average \$573,587.³⁷ Average Phase I SBIR awards are for approximately \$50,000, and Phase II awards may range up to \$500,000.³⁸ The program is very competitive. Less than 40 percent of large grant applications are funded, and only about 25 percent of small grant applications receive awards.³⁹ Examples of funded projects include biomedical computer centers, biological structure research, biomedical engineering and biomedical and biophysical analyses. Examples of funded SBIR projects include research aimed at producing interactive instructional videodiscs and developing fiber optic sensors.⁴⁰

B. Criteria for Awarding Grants

NIH can award individual research grants to any nonprofit or for-profit organization, company or institution engaged in biomedical research. The usual beneficiaries are universities and nonprofit research institutions. Applicants for GCRC grants must be medical schools, research hospitals or similar institutions. SBIR grants can only be awarded to domestic small businesses.⁴¹ The broad criteria for awarding grants are the same for all of the Institutes: The major elements in evaluating proposals include assessments of: (1) the scientific merit and general significance of the proposed study and its objectives; (2) the technical adequacy of the experimental design and approach; (3) the competency of the proposed investigator or group to successfully pursue a project; (4) the adequacy of the available and proposed facilities and resources; (5) the necessity of the budget and components requested in relation to the proposed project; and (6) the relevance and importance to announced program objectives.⁴² Although the criteria for awarding General Clinical Research Center grants

³⁵CFDA at 291.

³⁶CFDA at 292; CFDA update at E-55.

³⁷A \$650,000 per year limit is now in effect except where exceptional justifications can be made. CFDR at 292.

³⁸CFDA at 292.

³⁹CFDA at 292.

⁴⁰CFDA at 292.

⁴¹Small businesses are entities that are independently owned and operated for profit, are not dominant in the field in which research is proposed, and have no more than 500 employees. The small business entity must constitute the primary employment (more than one-half time) of the principal investigator at the time of award and during the conduct of the proposed project. According to one NCI grant administrator, there are two categories of typical applicants: 1) individuals formerly associated with large institutions who are very familiar with the program (these applicants are usually successful); and 2) others with some training, usually in software development who keep applying and finally, by trial and error, get funded.

⁴²CFDA at 283. The primary criteria for evaluating Phase I SBIR grant applications include: (1) the technical merit of the proposed research; (2) the soundness of the proposed design and methods; (3) the qualifications of the proposed principal investigator, supporting

vary somewhat because of the focus on funding centers for multiple research efforts,⁴³ the evaluators tend to apply the above criteria to the research that is to be carried out at the centers in deciding whether to award a grant to the center itself.

C. Procedures for Awarding Grants

NIH must by law "require appropriate technical and scientific peer review of . . . applications made for grants and cooperative agreements . . . for biomedical and behavioral research,"⁴⁴ and peer review plays an exceedingly important role in determining which projects are funded. Applications for NIH support go through a "dual review" process. A grant application is assigned according to subject matter by NIH referral officers to one of 90 standing peer review groups, usually referred to as "study sections," that are located within the Division of Research Grants.⁴⁵

The Division of Research Grants, which houses the study committees, is not within any of the individual institutes, and its staff does not report to any of the Programs that are responsible for funding and managing the grants. Each study section has a "Scientific Review Administrator" (formerly called "Executive Secretary") from the staff of the Division of Research Grants to provide clerical and ministerial support. Approximately 2700 external reviewers serve four-year terms on NIH study sections.⁴⁶ They are paid \$150 per day for their efforts plus travel expenses and per diem. Potential peer reviewers are identified through several sources, including the committee's Scientific Review Administrator's knowledge of the field and the scientists who work in it, the Scientific Review Administrator's contacts at scientific meetings, NIH staff recommendations, existing research grant applications and awards, research publications, and recommendations of existing panel members.⁴⁷ No study section may have more than one member from the same institution. Although most study section members are appointed for fixed four-year terms, members can be added on an ad hoc basis when additional expertise is needed to evaluate particular proposals. In addition, when no existing study section appears to have the requisite expertise to evaluate a proposal or group of proposals, an ad hoc study section can be appointed for the limited purpose of reviewing a small number of applications.⁴⁸ Ad hoc committees are also used to evaluate applications from other study section members. Most SBIR applications are reviewed by ad hoc committees, and the Programs make a special effort to locate scientists in industry for membership on these committees.⁴⁹

Each study section typically holds three annual meetings⁵⁰ at which the reviewers collectively apply the Program's previously articulated selection criteria to the grant applications assigned to the section. When no member of the panel has sufficient expertise to evaluate all aspects of a proposal, one or more external written reviews may be requested to aid the panel.⁵¹ The application and any outside reviews are assigned to two or more panel members (called the primary and secondary

staff and consultants; (4) the potential of the proposed research for technological innovation and commercial application; (5) the appropriateness of the budget requested; and (6) the adequacy and suitability of the facilities and research environment. CFDA at 186.

⁴³Institutions must demonstrate potential research productivity, quality of the proposed physical facility, and soundness of the administrative plan for the center. CFDA at 282.

⁴⁴Health Research Extension Act of 1985 §492(a)(1)(A). 42 U.S.C. §289a.

⁴⁵United States General Accounting Office, *University Funding: Information on the Role of Peer Review at NSF and NIH* 14 (March 1987), at 15 [hereinafter cited as 1987 GAO Report]. The National Cancer Institute and the National Institute of Neurological and Communicative Disorders and Stroke in 1985 initiated grant programs designed to take special account of the applicants' track records in making longer-term awards. These special programs have relied on mail reviews similar to those typically used in NSF. See Culliton, *NIH Proposes Extending Life of Grants*, 226 Science 1400 (1984).

⁴⁶1987 GAO Report, *supra* note 45, at 15.

⁴⁷*Id.* at App. IV.

⁴⁸Some programs make more extensive use of ad hoc study sections than others. For example, most applications in the Biomedical Technology Program are reviewed by ad hoc committees, although there are a few permanent study sections.

⁴⁹In this regard, NIH differs from NSF, which declines to place scientists from industry on SBIR review committees because of the potential for conflict of interest.

⁵⁰Study section meetings are usually held at hotels near the NIH campus or at the locations of important scientific meetings.

⁵¹NIH Manual 4510, "Referral and Initial Review of NIH Grant and Cooperative Agreement Applications" 9 (July 1, 1982).

reviewers) who prepare detailed written reviews prior to the panel meeting at which the application is discussed. All panel members are expected to read all of the applications.⁵² Study sections in programs, like the General Clinical Research Center and Biomedical Research Technology programs, that fund large capital projects, conduct site visits to the institutions that house the projects at least one time per grant cycle. There are usually about 15 visitors, nearly all of which are from academia. Applicants in these programs are given the opportunity to specify particular scientists that they prefer not be on the panel conducting the site visit.⁵³

The study section's evaluation of each application is typically broken down into two separate steps. After hearing from the primary and secondary reviewers and discussing the proposal, the group first decides whether the application is deemed "worthy" of funding based on the NIH selection criteria. Approximately 90 percent of the applications pass this preliminary test.⁵⁴ If an application is deemed worthy, the study section next assigns it a priority rating from which the NIH staff computes a priority score. A "summary statement," which is prepared by the Scientific Review Administrator from the two pre-meeting written reviews and his or her notes of the meeting, relates the application's score and articulates the group's reasons for assigning it that score.⁵⁵ The application files are then sent to the Program Directors for the relevant Programs in the Institutes. Only the summary statement accompanies the application to the next stage of the review process—review by the Advisory Council for that Institute.⁵⁶

Each Institute has an Advisory Council composed of scientists and lay persons appointed by the Secretary of Health and Human Services or, in some cases, by the President. Membership on some Advisory Councils is regarded as a political plum; for example, the lay members of the National Cancer Advisory Board (the Advisory Council for NCI) are usually prominent supporters of the party in power that have an active interest in cancer.⁵⁷ In addition to providing broad advice on how the Institute should allocate funds among programs, the Advisory Councils review the summary statements, and recommendations of the study sections for scientific merit and for consistency with nontechnical programmatic goals.⁵⁸

Although it would probably not be accurate to describe Advisory Council review as perfunctory, the Councils are highly deferential to the study section recommendations.⁵⁹ Only about ten percent of the applications are singled out for review by the Advisory Councils, and a much smaller proportion result in any special action by the Councils.⁶⁰ The Councils almost never involve themselves in minor adjustments to the budget, and they tend to avoid detailed involvement in the nitty gritty of detailed scientific evaluation. Their purpose is to evaluate the overall output of the study section meetings, not to second guess the study sections on individual applications. If a Council is dissatisfied with a study section's output, it can remand one or more matters to the study section for

⁵²*Id.*, at 9.

⁵³Telephone Interview with Dr. Bernard Talbot, *supra* note 34.

⁵⁴Chubin & Hackett, *supra* note 3.

⁵⁵The summary statement, "while not necessarily exhaustive, should be complete and represent a group evaluation of each application." It must contain "objective factual information, carefully documented and well justified." It must also include "pertinent material from the meeting discussions." NIH Manual 4510, *supra* note 51, at 13.

⁵⁶See NIH Manual 4510, *supra* note 51, at 9; Chubin & Hackett, *supra* note 3, at 20-21; 1987 GAO Report, *supra* note 45, at 11-13.

⁵⁷Past members of the National Cancer Advisory Board include Ann Landers, Richard Block of H & R Block, and former United States Senator Tim Lee Carter.

⁵⁸The Secretary chooses Advisory Council members from among nominees from NIH, members of Congress, special interest groups, other entities within HHS and the general public. 1987 GAO Report, *supra* note 45, at 16. For example, the Advisory Council for the General Clinical Research Center Program has 18 members. Six are public members who are individuals with other expertise in law, economics, math, and public policy. Twelve are scientists selected on basis of scientific expertise. All are appointed by HHS headquarters.

⁵⁹Chubin and Hackett conclude that: "The NIH awards process is hardly one of "dual review" for the second stage rarely considers the merits of individual proposal (or, if they do so their consideration makes essentially no difference in the final rankings)." Chubin & Hackett, *supra* note 3.

⁶⁰1987 GAO Report, *supra* note 45, at 13; Chubin & Hackett, *supra* note 3, at 22.

reconsideration. This limited Advisory Council involvement is, in any event, an inevitable consequence of the program's workload. For example, in the National Cancer Institute, the agency staff mail about 1400-1500 summary statements out to Advisory Committee members 2-3 weeks before the triennial meetings. Even the most conscientious Council member cannot realistically examine all of the evaluations in detail prior to the meetings.

From the Advisory Councils' comments, the applications, and accompanying summary statements, the Institute's Program Director ranks the "fundable" applications. Because scientific merit is not the only criterion, the staff is permitted to depart from the ranking suggested by the study sections and approved by the Advisory Councils. Yet this happens only extremely rarely (less than three percent of the time),⁶¹ because it requires the Program Director to draft a special petition and pursue the matter through the Institute's hierarchy. Some, but not all, Program Directors typically set aside some funds to allow the directors the discretion to fund the projects that fall very close to the cut-off line, a process that is referred to internally as "funding by exception."⁶²

NIH has always interpreted the Privacy Act to require that its peer review files for individual grant applications be made available for examination and correction by the applicants but otherwise shielded from public disclosure. Portions of panel and Advisory Committee meetings that discuss the merits of individual proposals are also closed to the public.⁶³ Panelists are instructed that all materials related to the review of grant applications are strictly confidential, and no written materials may be removed from the conference room. Reviewers may not share with applicants or their institutions the content of the panel deliberations.⁶⁴ No particular sanctions are specified, however, for breaches of confidentiality. In practice, the only sanction is the stigma that accompanies removal from the panel.

NIH makes grant applications for funded projects and a general description of the awards available to the public after each funding round has been completed. Interim and final progress reports and the results of any audits or reviews of the grant are also routinely made public. Pending or disapproved applications for new grants, memoranda and transcripts from panel meetings, and other written communications from reviewers are not automatically made public, but information contained therein may be released upon a request pursuant to the Freedom of Information Act (FOIA).⁶⁵ Although the D.C. Circuit Court of Appeals held in *Washington Research Project, Inc. v. Dept. of Health, Education and Welfare*⁶⁶ that the contents of *all* grant applications were generally releasable under FOIA at the end of the funding cycle, NIH has recently taken a very broad view of the applicability of exemption 4 of that statute to information contained in grant files. Exemption 4 allows agencies to withhold information that would disclose "trade secrets and commercial or financial information obtained from a person and privileged or confidential."⁶⁷ NIH believes that, given the recent trend toward commercialization of government-sponsored research, a good case can usually be made for withholding much of the contents of a grant application under this exemption. The validity of this argument has yet to be tested in the courts.⁶⁸ NIH further takes the position that information contained in summary sheets (including priority scores), transcripts and summaries of

⁶¹1987 GAO Report, *supra* note 45, at 13.

⁶²Telephone interview with Dr. Iris O Abrams, Branch Chief for Extramural Programs, Epidemiology and Biostatistics Division, NIH, Friday, November 2, 1990.

⁶³NIH Manual 4513 (1982), at 2.

⁶⁴NIH Manual 4510, *supra* note 51, at 7.

⁶⁵United States Public Health Service, PHS Grants Policy Statement 15 (1987).

⁶⁶504 F.2d 238 (D.C. Cir. 1974), cert. denied, 421 U.S. 963 (1975).

⁶⁷5 U.S.C. §552(b)(4).

⁶⁸The argument has a surface implausibility. If the applicants are willing to have the information in grant applications viewed by peer reviewers, some of whom may be direct competitors, it is hard to see how it could seriously be maintained that the information is "trade secret." See generally McGarity and Shapiro, *The Trade Secret Status of Health and Safety Testing Information: Reforming Agency Disclosure Policies*, 93 Harv. L. Rev. 837 (1980).

peer review meetings and outside reviews that constitutes opinion, rather than purely factual information, comes within exemption 5 of FOIA, which applies to internal agency communications.⁶⁹

The printed forms for initial applications inform all potential applicants of their Privacy Act rights. Pursuant to that statute, NIH routinely provides all applicants with staff-prepared summaries of both written reviews and panel minutes (with priority scores attached) after the completion of the panel review process and prior to submittal of the application to the relevant Advisory Council.⁷⁰ NIH regards this as an important source of feedback for future applications and resubmittals of declined applications.⁷¹ If an applicant requests copies of the actual reviews (called pink sheets because of their historical color) and minutes, they are sent with certain information (e.g., the identities of the reviewers and panelists) redacted.⁷² Transcripts of panel meetings and the actual minutes of the meetings are not made available. For the most part, applicants seem willing to trust the staff summaries and do not request original documents.⁷³ The applicants have an opportunity to rebut the conclusions reached by the study sections in submissions to the Advisory Councils, but these result in changes only rarely and only in cases of factual errors critical to the decision.⁷⁴ Applicants are informed of the identities of peer review group members on their pink sheets, but the identities of the panelists who wrote the primary and secondary written reports to the study section and the identities of the authors are not made available to the Program Directors or the applicants, and their written and oral comments are not otherwise revealed to applicants or the public.⁷⁵

Each potential reviewer must fill out a financial disclosure statement that reveals the extent of that person's financial interests in various institutions and companies. NIH conflict of interest regulations and guidelines prevent a panel on which a reviewer sits from considering the reviewer's application or an application from the reviewer's "spouse, parent, child, partner, or close professional associate." In addition, a panelist must leave the meeting when the panel is considering an application from his or her own organization or an organization with which he or she is negotiating for future employment.⁷⁶ The guidelines urge all reviewers to avoid the "appearance" of a conflict of interest by refraining from participating in the evaluation of applications involving a recent student, a recent teacher or a close personal friend. Finally, reviewers "should not participate in the review of an application from a scientist with whom the reviewer has had long-standing differences which could reasonably be viewed as affecting objectivity."⁷⁷ The Director of NIH may waive these guidelines and prohibitions "if he or she determines that there is no other practical means for securing appropriate expert advice on a particular grant application"⁷⁸ Except for a terse, but foreboding reference to "relevant provisions of Title 18 of the United States Code, relating to

⁶⁹5 U.S.C. §552(b)(5) (exemption for "inter-agency or intra-agency memorandums or letters which would not be available by law to a party other than an agency in litigation with the agency").

⁷⁰NIH Manual 4512 (1982) as superseded by NIH Instruction and Information Memorandum OERT 83-4, December 21, 1984. See also Memorandum to Distributees from Associate Director for Extramural Research and Training, NIH, dated August 24, 1978 re: Routine Release of Summary Statements following National Advisory Councils and Boards; When the Advisory Council takes a position different from that recommended by the review panel, the package to the applicant must include a letter indicating the Council's decision and a supporting rationale. *Id.*

⁷¹NIH Manual 4512 (1982), at 4.

⁷²United States General Accounting Office, Peer Review: Compliance With the Privacy Act and Federal Advisory Committee Act 7 (1991) [hereinafter cited as 1991 GAO Report].

⁷³*Id.*, at 7. NIH receives fewer than 10 Privacy Act requests per year. *Id.*

⁷⁴For example, reviewers of a recent application were favorably impressed by the project, but were concerned that the principal investigator had conducted research for four years without a single publication resulting. After the committee recommended that the grant not be funded, the applicant wrote a rebuttal letter explaining that he had had been in medical school during the relevant time period had had actually conducted research only in the summers. The application was later funded.

⁷⁵NIH Manual 4514 (1982), at 6.

⁷⁶42 C.F.R. §52h.5(b). See also NIH Manual 1805 6-7 (1982).

⁷⁷NIH Manual 4510, *supra* note 51, at 7; NIH Manual 1805 at 6-7.

⁷⁸42 C.F.R. §52h.5(c) (1990).

criminal activity," the regulations and guidelines do not provide any sanctions for breach of their provisions.⁷⁹

Applicants have a limited right to request reconsideration of panel determinations prior to consideration by the Advisory Councils.⁸⁰ Staff-prepared review summaries (the pink sheets), with priority scores attached, are sent to all applicants after the panel meetings. Pursuant to the Privacy Act, applicants may demand that the agency correct any information that is not accurate, relevant, complete or timely prior to submitting the applications to the Advisory Council. The rejected applicant first consults with the Program Director in charge of the application who refers any written rebuttals to the primary and secondary reviewers to correct any factual errors in their evaluations of the proposal. Obvious factual errors can be corrected before the group of applications goes to the Advisory Council. Rejected applicants may also argue that the study section did not contain any scientist with sufficient expertise in the relevant scientific field. NIH takes the position, however, that "[m]atters of expert opinion are not subject to amendment" in light of Privacy Act responses.

When the Program Director is persuaded that the study section made a mistake on a matter of opinion, such as the overall importance of the project, the staffer will urge the applicant to resubmit the application to a different study section or request a referral officer in Division of Research Grants to appoint an ad hoc study section, rather than continue to resubmit to the same committee. If the staffer is not convinced that a mistake was made but thinks that the project deserves funding, he or she will usually advise the rejected applicant on ways that the application can be improved for submission in a future funding cycle. For example, the staffer might suggest a collaborator whose inclusion in the project might enhance its chances for funding in the future.

The staff makes the Advisory Councils aware of any rebuttals that applicants file. Rebuttal letters can have an impact on the Council's rankings in cases of miscalculations or misinterpretations of a researcher's qualifications, but the Councils do not normally pay attention to differences of scientific opinion. Unless requested in advance, the Advisory Councils only have the summary statements before them, and they are disinclined to second guess the experts who have spent more time evaluating the merits of the proposals. Most of the scientist members on the Advisory Councils were previously members of study sections, and they know that too many reversals could have an impact on the willingness of study section members to serve in the future.

After the relevant Advisory Council has completed its review of the proposals, mid-level NIH staffers (usually Branch Chiefs) ascertain from the agency's budget office the rough percentage of proposals that may be funded and meet together to draft final recommendations to the Institute's Director. At these meetings, the Branch Chiefs can compete with one another for additional funding "by exception" from the previously mentioned pool of funds set aside at the outset. The Branch Chiefs can change the ranking of proposals at the margins. The goal of these meetings is to look at the broad picture and present the Director with a recommendation that is defensible to the outside world, which includes rejected applicants and sometimes interested congresspersons. The final decisions are usually made by executive committees composed of the Institute's Director and the directors of the various divisions within the Institute.

NIH has promulgated procedures for challenging initial review recommendations. The agency recognizes that applicants may appeal decisions not to fund for several reasons, including "perceived insufficient expertise on the initial review group . . . or conflict of interest on the part of one or more of its members; apparent factual or scientific errors, oversights, or bias associated with the review of an application at the initial or advisory council review; and possibly inappropriate handling of the

⁷⁹42 C.F.R. §52h.5(a) (1991).

⁸⁰Applicants must follow formal rebuttal procedures. They are not allowed to communicate with Council members concerning funding matters. Council members are provided a standard form to fill out if applicants ever attempt to communicate with them about funding matters. This sort of contact almost never happens in NIH.

review or of the application."⁸¹ The appeals process, however, "is not intended to resolve purely scientific disputes between peer reviewers and the investigator; to provide a mechanism for allowing investigators to submit information that should have been presented in the original proposal; or to provide a forum for disputing priority score determinations in the absence of specific and substantive evidence pointing to a flawed review."⁸² In practice, appeals are usually only taken in cases of terminations of ongoing grants. Appeals must be taken to the Review Officer in the Office of the Director, but initial review panels and Advisory Councils will usually be asked to participate in the resolution of the appeal. Actions that may be taken in the case of valid appeals include "rereview by the same or another initial review group; special consideration by the advisory council; or administrative action authorized by the Institute Director or staff."⁸³ There is no procedure for appealing final funding decisions.

D. The Process in Operation

The peer review process at NIH is often held out as a model of how peer review ought to be carried out in awarding discretionary grants. Yet although the NIH peer review process is generally highly successful, problems occasionally arise. The following discussion addresses some of the issues that NIH staffers, applicants, reviewers and outside commentators have identified. While the following discussion necessarily tends to focus on criticisms of the programs, support for the NIH peer review system as a whole is both broad and deep among those who deal with it on a regular basis.

1. Feedback and Rebuttal

Unlike some research granting institutions, NIH provides applicants with a statement of reasons in the form of a pink copy of the evaluation of the peer review committee. This can be especially useful to researchers who are not funded, because researchers can use the pink sheets to identify improvements that can be made in future applications. Applicants cannot, however, gain access to the actual minutes or transcripts of the panel meetings. Indeed, the pink sheets have been sanitized to a limited extent by the Program Directors who typically return to the Scientific Review Administrators any summary statements containing derogatory statements and obvious factual errors. Even after sanitization, the pink sheets can sometimes reveal indications of bias among one or more members of the panel.

Rejected applicants can take the pink sheets to the Program Directors and explore the possibility of preparing a grant application for a different program where it will have a higher probability of success. If the Program Director is persuaded, he or she will "lobby" the staff of the Division of Research Grants to assign the next proposal to a different study section. Most of the researchers interviewed for this report were of the opinion that the agency staff was very helpful in explaining why applications were rejected and in making suggestions for improvement or for sending proposals to different study sections.⁸⁴ On the other hand, there is a sense among some applicants that the explanations that the peer reviewers provide are post hoc rationalizations. Sometimes rejected applicants perceive that the real reasons for poor reviews are not provided on the pink sheets and may

⁸¹ NIH Instruction and Information Memorandum OERT 85-2, dated March 19, 1985; see also NIH Guide for Grants and Contracts, Vol. 14, No. 4, March 29, 1985.

⁸² NIH Instruction and Information Memorandum OERT 85-2, *supra* note 81; see also NIH Guide for Grants and Contracts, *supra* note 81.

⁸³ NIH Instruction and Information Memorandum, *supra* note 81.

⁸⁴ One researcher related that after his first application was not funded, he called the scientific review administrator for the committee that reviewed his application, and they went over the pink sheet on the telephone. The scientific review administrator also read the minutes of the study section meeting and told the researcher that the panelists were interested in funding the proposal if some improvements were made. He resubmitted the proposal in the next funding cycle, and it was funded. As a result of this experience the researcher learned to ask NIH staffers: "Was the proposal appropriate? Did it go to the right committee? Were they interested?" Telephone interview with Dr. Raymond Novak Director of Institute of Chemistry & Toxicology and Professor of Pharmacology, School of Medicine, Wayne State University, March 3, 1991 - 4:35 p.m., 313-577-0100.

in fact be relatively trivial. One applicant interviewed for this report was persuaded that the comments on his pink sheet were designed to steer his research in more conventional directions that the committee believed were more consistent with their own research perspectives.

Ironically, because it is willing to share summary statements with the applicants, NIH invites challenges based upon factual inaccuracies that inevitably creep into the written reviews. An applicant justifiably feels unfairly treated when the Institute's explanation contains factual errors, even if the project probably would not have been funded in the absence of the errors. NIH provides applicants an opportunity to cure any errors on the pink sheets prior to submission to the Advisory Councils, but given the limited substantive role that the Advisory Councils play, it is highly unlikely that rebuttals will affect the rankings at that level. One researcher interviewed for this project suggested that applicants be given an opportunity to correct obvious errors on the pink sheets before the peer review sections make their final recommendations. This would not necessarily require an additional meeting of the study section. Like motions for rehearing in court, the rebuttals could be circulated to members of the study sections by mail. If more than a predetermined number of the study section members voted to rerank the applications in light of the rebuttal, this could be accomplished via a conference telephone call.

NIH staffers argue that much the same result is accomplished through the informal process that has evolved whereby a disappointed applicant may submit a written rebuttal to the Program Director for presentation to the Advisory Council. Even though the Advisory Council will not likely change the priority scores, it can note its opinion that a mistake was made, and the Program Director can cite that fact at the Branch Chief level in arguing that the proposal should be funded by exception. NIH staffers further observed that even if rejected applicants are only given a relatively brief period in which to submit rebuttals, the process could easily become bogged down if a significant percentage of the more than 30,000 annual applicants exercised a rebuttal right.

2. Favoritism

The NIH staffers interviewed for this report were generally confident that scientists could put aside personal friendships and vote on the merits of the applications before them. Nevertheless, NIH attempts to avoid even the appearance of personal favoritism by excluding from study sections applicants, family of applicants, and their co-workers both at their institutions and at other institutions. In addition, although NIH's conflict of interest regulations allow a person to sit on a panel that considers applications from the panelist's institution, the panelist must leave the meeting when the panel is considering an application from his or her own organization or an organization with which he or she is negotiating for future employment. Unlike a similar provision in the National Endowment for the Arts' regulations,⁸⁵ this aspect of the NIH conflict of interest regulations has been relatively uncontroversial.

3. Old Boy Network

Like virtually all peer review-based granting organizations, rejected applicants frequently characterize the NIH process as an "old boy" network in which those who are already in the process dominate the peer review panels and parcel out the awards among themselves. For example, when one frequently funded researcher decided to shift his research interests to a slightly different area, he was told by friends high up in NIH that the field in which he proposed to conduct research was a "club" and he was not a member of the club. They subtly suggested to him that he would enhance his chances of receiving a grant in the new field if he hired a member of the club as a consultant on his project.⁸⁶ Another suggested technique is to offer to make a member of the committee (preferably

⁸⁵See Part 5, *infra*.

⁸⁶One NIH staffer suggested that recommendations that established applicants find collaborators when they desire to enter new fields is less a matter of "old boyism" than a fear that the proposal will otherwise lack sufficient expertise.

the chairman) a co-author of a paper as an introduction into the old boy network.⁸⁷ Still another technique for new researchers is to circulate drafts of the grant proposal to prominent scientists in the field who are likely to be members of the study sections for comments prior to submitting the proposal to NIH. The recipients will feel flattered that their advice was requested, and they will obtain a familiarity with the subject matter of the proposed research quite apart from their status as members of the panel.⁸⁸

While recognizing the fact that it is often hard for a young or inexperienced researcher to break into the system by securing an initial grant, one NIH staffer attributed this to the novice's general lack of familiarity with the procedures and with the evaluative criteria, rather than to any favoritism for the members of the "club." The staffer also noted that NIH committees already contain a fairly large number of Assistant Professors with little prior experience with the NIH grants process, thus reducing the chance that a given committee will be dominated by an "old boy" faction. Finally, NIH staffers observe that many established scientists do not get funded and many newcomers do get funded.

4. Halo Effect

Closely related to the "old boy network" problem is the "halo effect" through which a well-established researcher is funded for projects that are not especially well designed or that are not in a priority area merely because of the principal investigator's reputation as a pillar of the relevant field. NIH staffers generally believe that, like seeding in professional tennis, a scientist should be evaluated on the basis of his or her recent performance, not on the basis of past reputation. But they all recognize that scientists who are regarded as the leaders in their fields get "special consideration" unrelated to the merits of their proposals. One staffer related an experience in which a very prominent investigator submitted an application for a continuation of an existing grant that reflected major modifications in the identity of the researchers and in the project's scope with little explanation for the changes. The Program Director was upset by the investigator's implicit assumption that he had an entitlement to funding, and he arranged a meeting with the investigator to "sort of haul him over the coals." Before the meeting, the investigator won a Nobel prize "and let me tell you, the meeting was immediately canceled." Another staffer noted that it is very difficult to refuse funding to a scientist who has won a Nobel prize, even when his applications are "kooky" and everyone involved recognizes that he is past his prime.

Although the halo effect may have distorted the process in the past, it is not clear how large a role it plays in the current age of very tight budgets. One interviewee explained that reviewers are increasingly unwilling to keep an old timer afloat with funds that could be spent on more relevant or productive projects. Another suggested that NIH staffers are disappointed when an established scientist submits a poor proposal, and they subtly suggest that the proposal be withdrawn and amended. If a peer review panel knows that an application from a very highly regarded researcher is below par, the panel can limit the duration of the grant as a "slap on the wrist."

5. Personal Animus

When research support monies are in short supply, the animus of a single member of a study section can deprive a good project of support. Since the scores of the panel members are typically averaged together, an especially low score from one panel member can be outcome-determinative. One frequently funded researcher interviewed for this project was convinced that one of his projects failed to obtain funding because the review panel contained a "wild man" who "ranted and raved" about the proposal and gave it a low score. Although panel members are supposed to be anonymous, this researcher found out that the panel member had done some parallel work in the past that had

⁸⁷According to NIH staffers, this strategy would be of only limited utility, because co-authors are not eligible to review the application of a collaborator for a period of time after publication of a co-authored paper.

⁸⁸NIH staffers also questioned this strategy, because the agency's informal rules of practice require a reviewer to excuse himself if he has been asked to review a proposal outside of the formal NIH process.

reached results that varied from those of the applicant's recent research. The project was later recommended for funding by a section with a different membership.

The fact that rankings are made in meetings in which as many as 25 scientists are present helps shield against animus on the part of any single committee member. Each participant knows that the other panel members are also experts and will probably detect attempts to grind any axes. One frequent panelist noted that, given the experience of the other members of the committee, it is very difficult credibly to downgrade a worthy proposal.

6. Mavericks

It is difficult in NIH for "mavericks" who advocate unorthodox research proposals to get funded, unless they already have a reputation for success. One NIH staffer observed, with an obvious reference to the work of Thomas Kuhn,⁸⁹ that each scientific field has its own "paradigm, world view, or set of coordinates" through which researchers see the universe. Several researchers and members of the NIH staff observed that projects well within the "mainstream" of previously funded research have a much better chance of being funded during any given year than research that rejects the conventional wisdom. In fact, in many programs, most funded research consists simply of incremental extensions of existing research into slightly different areas. One scientist interviewed for this report observed that the existing funding system strongly encourages this sort of cautious incrementalism, which he referred to as "me too" science. The result is "a big fraternity of scientists all reaching the same conclusions and not testing each others' hypotheses."

When the scientists from the mainstream control the purse strings, it can be difficult for the mavericks to obtain the resources necessary to prove or disprove their out-of-the-ordinary theories. One investigator observed that advocates of new or different approaches face a "Catch 22" in the peer review process, because the reviewers often criticize proposals on the ground that the kind of research outlined in those proposals lacks a sufficient predicate in previously published research. Another researcher complained that although his group had published many papers in peer reviewed journals, it had difficulty getting NIH grants "because the panels are representative of the opposite school of [thought], and it's very threatening for a scientist to see a new idea. It's automatically shot down." Several scientists and agency staffers noted that a decision to fund a maverick proposal is to some extent an admission that the dominant paradigm may be wrong. If the maverick is right, then the case for continued funding of existing grants is weakened.⁹⁰

One investigator interviewed for this Report was associated with a prominent cancer research institute, but held to an unorthodox theory for the mechanism of chemical carcinogenesis. His applications to NCI were reviewed by panels composed of adherents to the traditional theories, and they were predictably rejected. Rather than opt out of the federal funding system as many mavericks do, this researcher complained to the Director of NCI and the Director of the Research Grants Division that his projects were being reviewed by biased panelists, and he demanded that his projects be reviewed by panels in which adherents to the traditional theories composed less than one-half of the panel. After the Research Grants Director acquiesced in this request and appointed a special study section, the researcher's applications started to get funded. Another researcher reported that after his applications were rejected several times, he strongly suggested the names of people who would, in his opinion, objectively evaluate his proposal. Since one of these persons was already on an existing study section, the NIH staff allowed the proposal to be resubmitted to that section, and it received better scores.

⁸⁹Kuhn, *supra* note 13. Kuhn observed that advocates of paradigm shifts in a field are not well received by their peers who adhere to the old paradigm.

⁹⁰Although a scientist may not sit on a panel that reviews his own grant application, the scientists who agree to sit on peer review panels do so partly on the understanding that their grant applications will have a good chance of being funded by the panel that reviews them. The members of the panel are always made aware of the fact that an applicant sits on one of the NIH panels when his application comes up for consideration.

A maverick's chances of getting funded are substantially enhanced if an NIH staffer can be persuaded to take up his or her cause before the Advisory Council. Although the resistance to the maverick proposal is still high, the staffer can argue persuasively that Einstein would probably not have been funded by a panel of his peers in the early twentieth century.

7. Tunnel Vision

Even when the applicant is not clearly a maverick challenging the dominant paradigm, study sections can become afflicted with "tunnel vision." One NCI staffer offered as an example a proposal for a novel technique for detecting the presence of certain toxic chemicals in the environment cheaply and accurately. The study section that reviewed the proposal did not believe that the project could advance scientific knowledge and gave the study low priority. The members of the study section failed to see the potentially large impact on human health that a cheap and effective exposure-avoidance device could have, despite the fact that it would not provide additional information about the chemical itself.⁹¹ A researcher interviewed for this Report related that his project to determine the effects that various components in diesel fuels have on the general population was not funded by NIH because although the reviewers were interested in the individual components of the fuel, they were not concerned with human population applications. The researcher complained: "They are never interested in projects of this sort that are highly applied in nature, nor are they interested in performing risk assessments."⁹²

8. Applicant Anonymity

NIH makes no attempt to shield the identities of applicants from reviewers, and the NIH staffers interviewed for this report were generally opposed to the idea, arguing that the applicant's experience or "track record" was an important aspect of the evaluation that could not be evaluated anonymously. In NIH programs that manage a small number of very large grants, applicant anonymity is impractical and it is, of course, impossible to do an anonymous site visit. Even for some of the large programs in the National Cancer Institute, agency staffers believe that anonymity would be very difficult to maintain. Reviewers who are generally familiar with the literature should be able to guess the identity of the applicant from the topic of the application.

9. Reviewer Anonymity

NIH shares a great deal of information and analysis with applicants, including the identities of the members of the study sections that review their proposals. Although the identities of the primary and secondary reviewers are not revealed, it is often relatively easily deduced by the applicant from an examination of the areas of expertise of the panel members. As one Program Director observed, "You don't need to be an Einstein to figure out who probably reviewed your proposal."

⁹¹The story, however, has a happy ending. The staffer in charge of the project referred the applicant to the National Institute for Occupational Safety and Health, and the study was later funded.

A similar experience was related by an applicant for NIH funding:

I got funding from EPA in FY86 for [a project] to determine which heavy metals found in the environment are toxic to the human immune system by screening, i.e., by testing the effects of many metals whose effects are not known. . . . My proposal for this work had been unsuccessful at NIH for three years in a row. This research was 'more applied' than the kind of projects that generally receive favorable evaluations at NIH. In addition, many people on NIH Study Sections are not very interested in environmental problems. NIH is interested in more basic research to determine the mechanisms by which human systems are affected by and respond to external factors. . . . EPA tends to want to know what's happening; NIH wants to understand the mechanisms by which it happens.

American Management Systems, Inc., An Evaluation of EPA's Exploratory Research Grant Program E-5 (1988) (statement of David Lawrence, Albany Medical College) [hereinafter cited as 1988 AMS Report].

⁹²1988 AMS Report, *supra* note 91, at E-6 (statement of Dr. Herbert Rosenkranz, Case Western Reserve University School of Medicine). This story also has a happy ending, because the study was ultimately funded by EPA. Because EPA funds a much lower percentage of applications than NIH, however, not all such stories have happy endings.

The contents of panel deliberations are supposed to be kept strictly confidential. In practice, however, there have been several serious breaches of confidentiality in some of the programs. Many NIH staffers and outside researchers interviewed for this project reported instances of breaches of confidentiality. A scientist who engages in a relatively narrow field of research can sometimes guess the identities his or her primary and secondary reviewers and can press study section members at scientific conferences for information about what happened at study section meetings—"Did Dr. X try to deep six my grant?" In addition to breeding ugly confrontations in the hallways at scientific meetings, NIH officials fear that breaches of confidentiality will inspire an applicant to retaliate against (or reward) scientists who provided negative (or positive) reviews of his or her application in the future when the roles are exchanged and the applicant becomes the reviewer and the reviewer the applicant.

One high level NIH official complained that NIH lacks effective sanctions to back up the proscription against revealing the contents of peer review reports and meetings. The offender can be removed from the committee and barred from future committees.⁹³ Since committee membership is hard work, however, this is not necessarily a great penalty, even though committee membership does lend an element of prestige. One official suggested that NIH be empowered to levy fines against peer reviewers who violate their confidentiality promises.

10. Financial Conflict of Interest

Under NIH's conflict of interest regulations, a panelist's proposal may not be reviewed by his panel and he must leave the meeting before the panel considered any proposal from his or her institution. The Division of Research Grants attempts to send panelists' applications to closely related committees, but they receive no special treatment there, and they occasionally suffer from the second committee's lack of technical expertise in the relevant area. Panelists are apparently willing to accept this reduction in the chances that their proposals will be funded during the time that they serve on the panels because of the additional insight into the working of the grant process and the prestige that panel membership entails. Program Directors in the Institutes monitor the results of the peer review process to see if panelists have been unfairly evaluated in the committees to which their proposals are sent, and they occasionally make a case to the relevant Advisory Council and upper level Institute staff for funding such proposals by exception.

Financial conflicts of interest are of special concern in programs, such as the General Clinical Research Centers and Biomedical Research Technology programs and all of the SBIR programs, that are designed to stimulate commercial development. There is an obvious financial conflict of interest when a scientist from a university sits on a peer review committee reviewing the application of a for-profit entity in which the reviewer has an economic interest. There is a less direct conflict of interest when a scientist from a competitor (or a university scientist with financial ties to a competitor) sits on the review committee for a grant proposal from the private sector. In the latter situation, the reviewer will no doubt become privy to commercially valuable information. If that information is conveyed to the competitor, it could receive an unjust commercial advantage. The guidelines do not explicitly address financial conflicts of interest that might arise by virtue of a panel member's financial stake in a private research company; nor do they address the possibility that commercially valuable information could be revealed to commercial competitors.⁹⁴

In programs with a small number of applicants and awardees, like the General Clinical Research Centers and Biomedical Research Technology programs and the SBIR programs, another form of subtle financial conflict of interest can enter the picture. In such programs study panel members are invariably drawn from institutions with existing funded projects. They know that to the extent that the projects from other institutions do not get funding, more money will be available for their own

⁹³This sanction was invoked on one occasion in NIH when a reviewer overheard another reviewer calling applicants and telling them their priority scores on a pay phone. Telephone interview with Dr. Thor Fjellstedt, *supra* note 25.

⁹⁴NIH in fact actively recruits scientists from industry to sit on SBIR review panels, despite the obvious potential for appropriation of commercially valuable information.

institutions. In large programs with many applicants this incentive to downgrade other proposals is probably not very strong, but when only 10 or 15 major centers are funded in the country, "killing off" one center may substantially increase the probability that the remaining centers will receive continued funding.

11. Research Conflict of Interest

NIH staffers attempt to fill the study sections with scientists of the very highest caliber. When a study section is composed of active scientists from a fairly narrow scientific field, it is always possible that a reviewer will use information obtained during the review process to advance his own research agenda. Alternatively, an overly aggressive reviewer may attempt to slow down the research of a competitor by giving its grant application a low ranking. One disgruntled researcher interviewed for this project related an incident in which both tactics were employed. After making a major discovery in research funded by the federal government, he met a prominent scientist at a convention and naively explained his theory to the scientist. The scientist complimented him on the quality of his work. When the young scientist submitted the project for competitive renewal after two years, the older scientist was highly critical of the project, and it was not renewed.⁹⁵ Several years later the young researcher read a paper published by the older scientist "and he did exactly what we did and published it." Another researcher reported that after the wife of one of the most prominent researchers in his field sat on a study section evaluating one of his proposals, the prominent researcher suddenly began to direct his research in the direction indicated by the applicant's research proposal.⁹⁶

NIH staffers recognize the potential for "research conflict of interest" in which the rewards are not so much in coin as in prestige, but they report few instances in which it has been observed. By its very nature, of course, this nonfinancial conflict of interest is difficult to detect. NIH has no formal policy addressing research conflict of interest, and NIH staffers apparently do not address the problem unless an applicant requests that a particular scientist not serve as a reviewer or his or her proposal. In the final analysis, the NIH professional staff relies on the honor of the participants in the review process.

12. Peremptory Challenges

Although NIH regulations do not give applicants the right to object to particular persons as reviewers for their applications, agency staffers often attempt informally to accommodate applicant concerns about potentially biased reviewers. This is especially true in the case of programs involving site visits where anonymity cannot be preserved. If an applicant complains in advance that a potential reviewer is likely to be biased because of past associations, research conflict of interest or even personal animosity, the staffer usually tries to avoid placing the potentially biased reviewer on the site review team. Even in programs using anonymous reviewers, if an applicant suspects that a potential reviewer will be biased against his proposal, the staff will often make an effort to see to it that the application does not go to a panel on which that reviewer sits. There are, of course, limits to which staffers are willing to insulate an application from reviewers that the applicant deems biased; they will not, for example, allow a maverick to exclude every scientist in an entire field of research.

13. Lobbying

Instances of academic applicants' lobbying members of peer review panels and upper level staff are virtually unheard of. Lower level NIH staffers make a conscious effort to be available to

⁹⁵The researcher who related this story is confident that he correctly ascertained the identity of the reviewer who made the negative comments, because the jargon used in the criticism was the same arcane jargon that the researcher had employed in the previous conversation.

⁹⁶This researcher could not be certain that the change in direction was attributable to information gleaned by the competing researcher's wife in the study section, and he is willing to give the competitor the benefit of the doubt. But he noted that the potential for abuse is clearly present.

potential applicants to explain the system and to help guide deserving applications to the right study sections. They attend major scientific meetings and form friendships with scientists who are current or potential grantees, but they do not receive many arm twisting phone calls. In the relatively new area of SBIR grants, where the recipients are small companies rather than university research laboratories, there have been a few attempts to lobby the staff on the merits of particular proposals, but they are generally resisted as inappropriate.⁹⁷ The contacts between applicants and lower level staff that do occur can have little impact on the outcome of the decisionmaking process, because the lower level staff have virtually no input into the initial priority scorings, which are done by peer reviewers in the study sections with minimal staff input. While the staff can have some influence at the margins in briefing the upper level staff prior to Advisory Council meetings, major departures from the rankings of the peer review panels are very rare and difficult to justify.

Occasionally, an applicant will directly contact an Advisory Council member to state his or her case. If an Advisory Council member can be persuaded to champion the cause of a rejected applicant, there is a reasonably good chance that the proposal will be funded. One NCI staffer suggested that to some extent the Advisory Councils operate as "buddy systems"; members of the Council are willing to speak up for their friends. NIH procedures do not expressly prohibit attempts by disappointed applicants to lobby members of the Councils to reverse the recommendations of the peer review sections.

14. Political Pressure

In NIH programs that administer a large number of relatively small grants to individual researchers, there are almost no reports of attempts to use the outside intervention of politically powerful actors, such as congressmen or other officials in the Administration, to pressure the agency staff to award grants to particular researchers. Even in the programs that award very large grants to companies and institutions, there are apparently very few attempts to use politically powerful friends to influence the outcome of the process. Most contacts by congressmen come in the familiar form of a written status inquiry that is easily answered by a polite letter explaining that the proposal did not have the "scientific quality" of the funded proposals and paraphrasing the comments on the pink sheet. The pink sheets themselves and other review information are not made available to congresspersons, unless they are requested in connection with an official congressional investigation of NIH. Some NIH staffers and researchers ventured that applicants might be reluctant to rely upon this kind of influence-peddling out of fear that the strategy might backfire by alienating the staff and members of future study sections. In any event, none of the NIH staffers interviewed for this Report expressed any concern that outside political pressure was a significant factor in the funding process. None of them could remember a single instance in which a funding decision was changed because of outside political pressure.

In more recent years, congressmen and senators who are concerned about channeling funding for large projects into their districts have taken the more direct approach of putting the funding into legislation, often by way of a rider to a different bill or a special clause in an appropriations bill. This technique for avoiding peer review, which has generated much controversy in the scientific community, will be discussed in more detail in Part 3.

15. Efficacy of Appeal Procedures

Although NIH has a comparatively extensive appeals process prior to the final funding decision, the agency staff typically discourages rejected applicants from appealing funding decisions. Instead, applicants are urged to study their "pink sheets" and submit a revised application during the next round of applications. While the Council and the panels are theoretically willing to revisit grant applications in cases in which legitimate concerns are raised, such "rereviews" occur only very

⁹⁷One NIH staffer related the experience of the Vice President of a small oil company who was amazed that his company received a SBIR grant, even though the staff never accepted any of his frequent luncheon invitations.

rarely. As a practical matter, a rewrite and resubmittal can result in the effective reconsideration of the proposal in not much more time than it would take the appeals process to run its course with a proposal that by the end of that process might be outdated. Once the final funding decision is made by the agency, no appeals are allowed. Since the agency's regulations do not specify a vehicle for judicial review, the disappointed applicant is apparently left to his or her remedies under the Administrative Procedure Act.

III. PEER REVIEW IN THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) was created by Congress in 1950 with the broad goal of promoting and advancing science in the United States.⁹⁸ Whereas the National Institutes of Health (NIH) focuses almost exclusively on research related to human health, NSF supports research across many broad areas of the physical, natural and social sciences. Because NSF does not have its own research facilities, nearly all NSF-supported research is conducted in university laboratories and laboratories administered by university consortia. NSF also sponsors a relatively small amount of research in laboratories run by other government agencies (e.g. the Argonne National Laboratory and the Los Alamos Scientific Laboratory) and, more recently, at for profit laboratories. NSF distributes more than \$2 billion annually to more than 17,000 grantees.⁹⁹ During the 1980s, NSF experienced a 40% increase in the number of applications for research grants, while its funding remained relatively flat.¹⁰⁰ Fewer than 45 percent of the principal investigators who apply to NSF for funding are successful.¹⁰¹

The National Science Board (NSB), composed of 25 persons (usually prominent scientists, engineers, and occasionally public figures with an interest in science) appointed for six-year terms by the President with the advice and consent of the Senate, is the primary policymaking organ of the institution. The NSB must approve most new programs and nearly all grants or contracts totaling more than \$6 million or involving annual expenditures of more than \$1.5 million.¹⁰²

A. Discretionary Grant Programs

An application for NSF research can be made to a Program in any one of its eight broad Directorates.¹⁰³ Most grant applications come from educational institutions or consortia of educational institutions, a few come from for profit companies (mostly small businesses), and a smattering come from individuals. In recent years NSF has strongly encouraged small businesses to apply for grants under its Small Business Innovation Research (SBIR) program, and it also encourages university-industry collaborative studies.¹⁰⁴ Project grant funds may be used for paying costs necessary to conduct research or studies such as salaries and wages, permanent equipment, expendable equipment and supplies, travel, publication costs, and other direct and indirect costs. NSF has recently established a procedure under which a Program can award up to 5 percent of its budget in small grants of not more than \$50,000 on an expedited basis without peer review.¹⁰⁵ This report will focus on two of the many NSF programs--the Program on Biotic Systems and Resources in the Directorate of Biological Sciences and the Program on Science and Technology Centers in the Directorate of Major Initiatives and Other Activities.

⁹⁸The National Science Foundation was established by the National Science Foundation Act of 1950, 42 U.S.C. §§1861-1875. Congress provided additional authority in the Science and Engineering Equal Opportunities Act, 42 U.S.C. §§1885-1885d, and title I of the Education for Economic Security Act, 20 U.S.C. §§3911-3922.

⁹⁹National Science Foundation, Guide to Programs FY 1991 (1991) [hereinafter cited as 1991 NSF Program Guide].

¹⁰⁰Merit Review Task Force, National Science Foundation, Report of the Merit Review Task Force (August 23, 1990), at 6.

¹⁰¹Defining a successful principal investigator as one who has received at least one award during a 3-year period, the success rate dropped from 45% to 42% from the 1980-82 to the 1987-89 period. Merit Review Task Force, *supra* note 100, at 12.

¹⁰²See 1991 NSF Program Guide, *supra* note 99, at vii.

¹⁰³The Directorates of NSF are: Biological Sciences; Computer and Information Science and Engineering; Education and Human Resources; Engineering; Geosciences; Mathematical and Physical Sciences; Scientific, Technological, and International Affairs; and Major Initiatives and Other Activities. 1991 NSF Program Guide, *supra* note 99, at v-vi (1991).

¹⁰⁴1991 NSF Program Guide, *supra* note 99, at vii. See also See National Science Foundation, Small Business Innovation Research: Program Solicitation (1990). According to NSF's General Counsel, the idea for Small Business Innovation Research awards originated at NSF. Interview with Mr. Charles Herz, General Counsel, and Mr. Matthew Powell, attorney, National Science Foundation, March 13, 1992, Washington, D.C. [hereinafter cited as Herz & Powell Interview].

¹⁰⁵See David Bjerklie, Fast-track Grants: National Science Foundation's Small Grants for Exploratory Research, 93 Technology Review 19 (1990).

1. Biotic Systems and Resources

The Biotic Systems and Resources Division, which is part of the Biological, Behavioral and Social Sciences Directorate, funds basic research in five different fields of traditional systematics and ecology.¹⁰⁶ Within that Division, the Biological Research Resources Program provides support for the curating, refurbishment, and computerization of systematic research collections of preserved plants, animals and fossils with the goal of conserving essential scientific resources at the national and international level and making those resources available for scientific study. Research in the area of Systematic Biology explores the identities, relationships and distributions of plants, animals, and microorganisms, and through the study of living organisms and fossils, it documents changes in biotic diversity through the earth's history. NSF funded research in ecology provides a framework of concepts on the ecology of land and inland waters and studies outside influences on the distribution and abundance of animals and plant communities. The Ecosystem Studies Program funds field, laboratory, and mathematical modeling research on ecosystems. The program on Population Biology and Physiological Ecology funds, *inter alia*, studies on the mechanisms by which traits in individuals are translated into characteristics of populations.¹⁰⁷

The Division has a budget of around \$65 million.¹⁰⁸ The size of the grants ranges from very small grants of only \$5,000 to very large grants of \$1,000,000. Most of the awards are for less than \$100,000, and the average grant is about \$70,000.¹⁰⁹ Approximately 15 percent of all applications are fully funded; 10 percent are partially funded; and 15% not funded due to lack of funds. The remaining applications are declined for lack of scientific merit or program relevance.¹¹⁰ "Proven producers" have a 35-40 percent chance of receiving funding for any given application.¹¹¹

2. Science and Technology Research Centers

The Program for funding science and technology research centers is a relatively new program aimed at providing "mechanisms to exploit opportunities in science and technology where the complexity of the research problems or the resources needed to solve them require the advantages of scale, duration, facilities, or collaborative relationships that can best be provided by campus-based research centers."¹¹² The goal is to "help maintain U.S. preeminence in science and technology by funding research activities that call for cooperation among a group of scientists, engineers, and their students."¹¹³ The monies, which come in large five-year grants, are used "to fund comprehensive programs where specific problems need center-like funding to ensure world-class quality and competitiveness."¹¹⁴ Although the program focuses primarily upon basic research, most centers address research topics in areas with easily identified technological applications. Examples include funding for centers on "superconductivity," "particle astrophysics," "parallel computation," "microbial ecology," and "polymeric adhesives and composites."¹¹⁵

Since the program was established in 1989, it has gone through two funding cycles in which funds have increased to its current annual level of around \$40 million.¹¹⁶ In its first two

¹⁰⁶CFDA at 798.

¹⁰⁷1991 NSF Program Guide, *supra* note 99, at 3-4 (1991).

¹⁰⁸Comments of Mr. Garth Redfield, Director, Environmental Sciences Division, Research and Evaluation Department, South Florida Water Management District, on an earlier draft of this report, August 14, 1991.

¹⁰⁹CFDA at 799.

¹¹⁰Telephone interview with Dr. Garth Redfield, Former Assoc. Program Manager for Ecology Programs, National Science Foundation, October 17 and 24, 1990.

¹¹¹Comments of Mr. Garth Redfield, *supra* note 108.

¹¹²CFDA at 808.

¹¹³1991 NSF Program Guide, *supra* note 99, at 94 (1991).

¹¹⁴1991 NSF Program Guide, *supra* note 99, at 94 (1991).

¹¹⁵CFDA at 809.

¹¹⁶Herz & Powell Interview, *supra* note 104.

competitions, the program received about 470 applications and awarded a total of 25 grants ranging from \$900,000 to \$4,250,000 per year with an average of around \$1,700,000.¹¹⁷

B. Criteria for Awarding Grants

Grants for most of NSF's programs can be made to public and private colleges and universities, nonprofit, nonacademic research institutions, and private profit organizations. Science and Technology Research Center awards, however, may only be made to public and private academic institutions. The applicant institutions are expected to share in the support of NSF-funded projects, either directly or indirectly by providing facilities, equipment, maintenance, etc.

General criteria for evaluating proposals include: (1) research performance competence—the capability of the investigator, the technical soundness of the proposed approach, and the adequacy of the institutional resources available; (2) intrinsic merit of the research—the likelihood that the research will lead to new discoveries or fundamental advances within its fields; (3) utility or relevance of the research—the likelihood that the research can contribute to the achievement of a goal that is extrinsic or in addition to that of the research field itself, and thereby serve as the basis for new or improved technology or assist in the solution of societal problems; and (4) effect of the research on the infrastructure of science and engineering—the potential of the proposed research to contribute to better understanding or improvement of the quality, distribution, or effectiveness of the Nation's scientific and engineering research, education, and manpower base.¹¹⁸

C. Procedures for Awarding Grants

The NSF peer review process does not rely as heavily upon panels as the NIH system, and it assigns considerably more discretion to the staff. For that reason, the role that peer review plays can vary from program to program within NSF.¹¹⁹ When an application is assigned to a Program Officer with jurisdiction over the relevant subject matter, he or she undertakes a preliminary assessment of the proposal's subject matter and attempts to identify a group of up to ten qualified peer reviewers from among those persons in the country with expertise in the subject matter.¹²⁰ Program Officers use several resources for identifying reviewers, "ranging from lists of reviewers suggested by the applicants or current peer reviewers themselves, to contacts made by NSF staff at professional meetings."¹²¹ The most frequently relied upon source of reviewers is a computerized list compiled and maintained by NSF staff that contains the names of thousands of potential reviewers arranged according to areas of expertise.¹²² Program officers attempt to select reviewers on the basis of their expertise, objectivity, open-mindedness, and (in the case of reviewers who may be assigned to panels) ability to work with others.

Most peer reviews in NSF are "mail reviews" in which the Program Officer sends the ten or so proposed reviewers a copy of the application and a document setting out the review criteria. The letter asks the recipient to provide a written critique of the application and a rating based on the identified criteria. Since each mail reviewer receives only one of the applications in a given pool, the reviewer has no opportunity to compare the application that he or she evaluates with competing applications. Usually about five or six of the ten proposed reviewers respond to the request.

About one-third of the applications also undergo a panel review. Some programs (e.g. biology) rely quite heavily upon panels, whereas others (e.g. chemical and physical sciences) use panels only rarely for especially complicated or expensive proposals. In a panel review, the assembled experts (usually eight-to-fifteen in number) read the mail reviews and attempt to evaluate all proposals in a

¹¹⁷CFDA at 809.

¹¹⁸1991 NSF Program Guide, *supra* note 99, at ix; CFDA at 799.

¹¹⁹Comments of Mr. Garth Redfield, *supra* note 108.

¹²⁰In 1985 NSF asked almost 60,000 persons to serve as external peer reviewers. 1987 GAO Report, *supra* note 45.

¹²¹1987 GAO Report, *supra* note 45, at 14.

¹²²Comments of Mr. Garth Redfield, *supra* note 108.

given pool.¹²³ Programs making very large awards, like the Science and Technology Research Centers program, also require site visits by peer panels. Like NIH, the panels usually allocate the work load by assigning each application to a subcommittee of two or three persons who are primarily responsible for the evaluating that application. The panelists are usually invited to rank the proposals.

After the individual and/or panel reviews have been completed, the Program Officer evaluates and ranks the proposals, taking into account the peer evaluations of the technical merit of the proposals and other factors of a less scientific nature such as "infrastructure"¹²⁴ and "equity"¹²⁵ concerns. When proposals have been submitted to a panel, the Program Officer must provide a written justification for any deviations from the panel's recommendations. In practice there is a high degree of correlation between panel recommendations and funding decisions.¹²⁶ The Program Officer's decisions are in turn reviewed by section heads and in some cases the head of the Directorate before final funding decisions are made. At the upper echelons additional considerations are factored into the decision, including long term political concerns, technological innovation, and potential for practical application in the private sector, geographical equity in the distribution of funds, and (to a somewhat lesser extent than at the Program Officer level) overall scientific merit. On very rare occasions, upper level decisionmakers will appoint advisory committees to provide input into the decision. Decisions to award grants of more than \$1.5 million per year must be reviewed by the National Science Board, the ultimate decisionmaker at NSF.¹²⁷ The entire process normally takes about five to six months for individual research grants¹²⁸ and from 10-12 months for major institutional grants such as grants for centers under the Science and Technology Centers Program.¹²⁹

NSF has prescribed detailed conflict of interest regulations for persons employed by NSF, including members of the National Science Board. These regulations prevent present and past employees from representing anyone in dealing with any federal official in any matter in which they were involved at NSF.¹³⁰ They also prohibit any NSF employee from becoming personally involved in the handling of any proposal or other matter in which he, a member of his immediate family, or an organization of which he is a part or may become a part has a financial conflict of interest.¹³¹ Finally, NSF's regulations provide that persons employed by NSF who have access to information not generally available to the public may not use that information for their private benefit or for the private benefit of others.¹³² A member of the National Science Board may not participate in

¹²³About one-third of all proposals to the NSF are reviewed by mail reviewers alone. Another third are reviewed exclusively by panels of reviewers who gather, usually in Washington, to discuss their advice as well as deliver it. The remaining third are reviewed first by mail reviewers expert in the particular field, then by panels, usually with more diverse expertise, who help the NSF decide among proposals from multiple fields or subfields. Letter to Eric R. Glitzenstein from Charles H. Herz, dated March 12, 1990, at 2-3.

These numbers can vary from Program to Program. For example, in the Biotic Systems and Resources Program, approximately 95 percent of grant applications are reviewed by mail. Telephone interview with Mr. Victor Westbrook, Grants Officer for Biological, Behavioral, and Social Sciences, National Science Foundation, November 2, 1990.

¹²⁴According to one Program Officer interviewed for this Report, if a solid and consistent performer may lose his or her laboratory as a result of a decision not to fund an uninspiring application, the program officer may give it a somewhat higher priority to "save" the laboratory as an infrastructure resource. Telephone interview with Dr. Garth Redfield, *supra* note 110.

¹²⁵Program officers must pay attention to whether minorities, women, and young investigators are fairly represented and to the geographic distribution of the awards. Herz & Powell Interview, *supra* note 104.

¹²⁶Stephen Cole, Jonathan R. Cole and Gary A. Simon, *Chance and Consensus in Peer Review*, 214 *Science* 881 (1981).

¹²⁷1987 GAO Report, *supra* note 45, at 9-11.

¹²⁸CFDA at 799. Herz & Powell Interview, *supra* note 104.

¹²⁹CFDA at 808.

¹³⁰45 C.F.R. §684.14.

¹³¹45 C.F.R. §684.16.

¹³²45 C.F.R. §§684.11(h), 684.17(a).

deliberations and votes that would affect the member's own interests or those of a close relative, or an institution with the member or close relative has any of several designated affiliations.¹³³

A separate set of regulations is directly applicable to outside peer reviewers. All peer reviewers are asked by the relevant Program Officer to reveal any possible conflicts of interest that the reviewer may have.¹³⁴ The regulations define "potentially biasing affiliation or relationship" by reference to several kinds of relationships. "Affiliations with an applicant institution" include current employment or being under consideration for employment with the relevant institution, holding an office or membership on the governing board of the applicant institution, ownership of the institution's stock, current enrollment as a student in the institution (but only with respect to applications from the student's department), and receipt of an honorarium or award within the last twelve months. Relationships with investigators that have a personal interest in the grant include marriage, business partnership, past or present association as a thesis advisor or thesis student, and collaboration on a project within the last 48 months. Other disqualifying relationships include immediate family or relatives living within the same immediate household and "[a]ny other relationship, such as close personal friendship, that [the reviewer] think[s] might tend to affect [his or her] judgments or be seen as doing so by a reasonable person familiar with the relationship."¹³⁵ All such potentially biasing affiliations or relationships must be revealed to the Program Officers.¹³⁶ Most of these relationships are "automatically disqualifying," but some are only "partially disqualifying."

The unique multi-tier peer review process that NSF has developed for awarding grants in the Science and Technology Research Centers Program departs from the typically applied model described above, because the awards in that Program are very large and last for at least five years. The review begins with the appointment of an initial multi-disciplinary 15 member "external peer review committee" to advise the staff during the entire funding cycle. After receiving all of the applications, the agency staff divides them into specific "buckets" (categories) according to discipline. Each bucket is distributed to a separate panel of experts assembled for the purpose of reviewing the applications and the outside reviews of the applications. Each panel is staffed by several Program Directors from the programs that deal with the subject matter of the applications. The Program Directors identify 8-10 outside "mail reviewers" for each proposal and arrange in advance by telephone for the reviews. This assures a large response rate of about 90 percent. One of the outsider reviewers is also a panel member.

After the mail reviews are complete, they are sent to panel members. Two or three panel members are assigned the responsibility for detailed review of each application. The panels then assemble for two days to discuss the proposals. Since the agency cannot realistically attempt more than 30 site visits,¹³⁷ each panel is told to recommend no more than three or four proposals for further consideration. This usually represents only about 10-15 percent of the applications considered by the panel. The staff may add an additional 6-8 proposals to the pool recommended by the panels to make a total of thirty. This latter step is an attempt to provide some flexibility to allow for any unevenness in the quality of the proposals across the six panels. It also gives the staff some discretion to overrule panel decisions. The applications are then forwarded to the original 15 member external peer review committee for discussion and a determination of which facilities will receive site visits.

Since all applicants that do not receive site visits are eliminated from the competition, the agency at this point informs all applicants of the results of the process. Applicants receive verbatim copies of all mail reviews (with reviewers' identities redacted) and copies of the summaries of the panel meetings relevant to their proposals. The panel summaries are intended to give the applicants some

¹³³45 C.F.R. §684.21. The proscribed affiliations include current employment, formal arrangements for future employment, employment as an adjunct professor, etc.

¹³⁴45 C.F.R. §681.25(a).

¹³⁵45 C.F.R. §681.21.

¹³⁶45 C.F.R. §681.25.

¹³⁷This conclusion was based on the experience of the first Science and Technology Center competition. Herz & Powell Interview, *supra* note 104.

idea of how their proposals fared in relation to the others that the panel considered. Typically, the panel summary is drafted by the panel member who presented the proposal to the panel, and it is circulated to the remaining panel members for suggested corrections or additions. The 30 or so applicants that are chosen for site visits receive the above information and a list of questions to be answered in anticipation of the site visit. They are also invited to comment on the mail reviews and panel summaries. Finally, the 30 remaining applicants are asked to provide two-page updates of their proposals to identify any changes that have occurred during the 6-8 months since the original proposals were submitted. Applicants may also make changes in priorities and in their budgets at this point.

Site visits are conducted by teams of around eight members consisting of one or two members of the peer review panel that reviewed the original proposals, one or two staff members, one member of the 15 member external review committee, and other scientists with expertise in the relevant area. The site visit team receives all of the information that is in the file about the proposal, including the institution's response to any questions posed by the external peer review committee. After meeting with officials and researchers at the applicant institution for two days, the site visit team prepares a 5-6 page report discussing the strengths and weaknesses of the proposal with respect to the quality of the researchers, depth of institutional support and overall educational climate at the institution. The site visit team must answer specific questions posed by the external peer review committee and identify the strengths and weaknesses of the application, but it is not supposed to recommend whether the proposal should or should not be funded. Because the agency staff has some fear that site visit teams will become "cheerleaders" for the sites that they visit, they request that the reports be as dispassionate and objective as possible.

The site visit reports are given to the external peer review committee, which has by now been expanded from fifteen to twenty-five members to lend additional expertise to the consideration. Each panel member is given a large binder with an abstract, executive summary, budget and all reviews of each of the 30 proposals, but the work of providing intensive reviews of individual proposals is assigned to subcommittees of three reviewers. The external peer review panel is divided into two groups for the detailed consideration of the proposals. The reason for this further subdivision is the practical impossibility of ensuring that no member of the 25-member committee participates in the evaluation of an application from his or her own institution. Since it is virtually certain that one or more members will be from one or more institutions with proposals before the committee, the staff ensures that no member is on the half of the committee that undertakes the *first* assessment of the proposal from his or her institution, and that person also leaves the room while the second half of the committee considers the first evaluations. Each group is asked to rank all of the proposals and to choose the top 7-10. On the second day of the meeting, the groups exchange rooms and each reviews the work of the previous group to see whether it agrees with the prior group's rankings. On the third day, the committee attempts to arrive at a consensus on about 17-20 proposals that deserve funding. The Director of the Science and Technology Center Directorate then recommends 10-15 from among the proposals recommended by the external peer review committee for presentation to the National Science Board, the ultimate policymaking entity in NSF.

One NSF staffer from another program suggested that the peer review process in place at the Science and Technology Centers Program is "the best in the world."¹³⁸ There can be little doubt that it is one of the most thorough and complex peer review systems in the world. The redundant layers of peer review are justified by the large sums of money that are at stake and the temptation that would otherwise exist to fund centers in a biased fashion on basis of criteria other than scientific merit.

¹³⁸Telephone interview with Dr. Garth Redfield, *supra* note 110

D. The Process in Operation

The procedures in NSF for making information available to applicants and the public and for allowing rebuttals and challenges to nonfunding decisions have been evolving over the last several years from a relatively closed and unresponsive system to a comparatively open one. This evolution was nudged along by a petition from a researcher who (with the support of a Ralph Nader-affiliated public interest organization called Public Citizen) had the persistence to prove that the system had wronged him and the courage to demand that the agency ensure that what happened to him would not happen to future researchers.¹³⁹

1. The Kalb Litigation

In the late 1970s, Jon Kalb applied for an NSF grant to continue his anthropological research in Ethiopia.¹⁴⁰ The research, for which Kalb held an exclusive concession from the Ethiopian government, was the subject of three separate proposals by principal investigators from Southern Methodist University, New York University and Harvard University. He later learned that the NSF staff had informed the peer reviewers for all three of these proposals of rumors that he was associated with the Central Intelligence Agency (CIA) and that his scientific efforts were merely a cover for covert activities in that country. Kalb alleged that one source of the rumors was one of the reviewers assigned to his grant application who in turn learned of them from the head of a rival research group. In fact, one of the reviewers of the Harvard proposal wrote in his review the following: "The qualifications of the senior personnel are beyond question and this reviewer is fully in sympathy with Mr. Kalb's efforts and energy in getting the [project] together. However, his possible involvement with the CIA must, until this has been cleared up, remain a matter of concern for any scientists."¹⁴¹ The scientist who wrote this review had hoped to become a collaborator at Kalb's site, but Kalb declined his overture just a few weeks before the review was written. It is reasonably clear from after-the-fact attempts to reconstruct the meetings of the peer review panels that Kalb's alleged involvement with the CIA was a prominent consideration in the panels' deliberations, even though it was never mentioned in the written minutes of those meetings.¹⁴² After all three applications were rejected and after Kalb and his family were expelled from Ethiopia because of the same rumors, the reviewer who brought the CIA rumors to the attention of one of the panels applied for and received an amendment to an existing grant allowing him to use NSF monies to take over the concession that the Ethiopian government had previously awarded to Kalb.¹⁴³

Kalb attempted to challenge the decision not to fund his project, but he was blocked at every turn by the secrecy that NSF demanded for the peer review process and by the staff's general lack of responsiveness. After ten years of challenges, during which he attempted to demonstrate that the rumors were false and that they had affected the decision on his proposal, Kalb finally sued the agency. The lawsuit resulted in a settlement under which NSF issued a formal apology to Kalb and paid his attorneys' fees of approximately \$20,000.¹⁴⁴

¹³⁹NSF attorneys dispute the conclusions that any significant change was brought about as a result of the Nader-sponsored Kalb rulemaking petition. Noting that the Kalb petition was unique in the history of NSF, they maintain that the agency had already adopted and had been implementing nearly all of the changes that Kalb demanded in his petition. They contend that in many ways (e.g. the ability of the applicant to read the actual written reviews of the reviewers) the NSF system has always been more open than the NIH system. Many NSF staffers believed that the Kalb petition was "making a mountain out of a molehill," because nearly all of the information that Kalb was requesting would have been available to him without his reliance on the Privacy Act. Herz & Powell Interview, *supra* note 104.

¹⁴⁰The proposal was submitted jointly by Kalb and researchers from Southern Methodist University and New York University. The story of the Kalb petition is related in considerably greater detail in Robert Bell, *Impure Science: Fraud, Compromise, and Political Influence in Scientific Research*, ch. 1.

¹⁴¹*Id.* at 21.

¹⁴²*Id.* at 16-20.

¹⁴³*Id.* at 22-23.

¹⁴⁴*Kalb v. CIA*, CIV. No. AE6-3557 (D.D.C. Dec. 8, 1987). See NSF Admits Spreading Spy Rumor: Agency Apologizes To Grant Applicant, *Washington Post*, December 4, 1987, A25.

Not long after the settlement, Kalb and Public Citizen organization filed a petition with NSF asking the agency to write new procedures, pursuant to the Privacy Act¹⁴⁵ and the Federal Advisory Committee Act,¹⁴⁶ for providing applicants with access to information concerning their applications and for giving them a realistic opportunity to rebut any false allegations made during the review process. Unlike NIH, NSF had not officially maintained a "system of records" capable of retrieving information about an individual by name or personal identification number, and it therefore had not subjected its peer review proceedings to the Privacy Act. Kalb's attorneys argued that the agency had nevertheless maintained a de facto "system of records" in violation of the Privacy Act.

The petition demanded that NSF correct four alleged basic flaws in its peer review system:

- (1) applicants are being deprived the right to gain access to, and the opportunity to amend, vital information considered in the peer review process;
- (2) applicants are not afforded advance notice of, and an opportunity to rebut non-scientific derogatory information prior to final decision-making;
- (3) applicants do not have the opportunity to prevent conflicts of interest by those involved in the review and evaluation process; and
- (4) the appeals process is woefully inadequate.¹⁴⁷

Acknowledging that the peer review system must be kept confidential from grant applicants to ensure frank and candid options and that peer reviewers must therefore remain anonymous, the petition maintained that NSF had gone far beyond what was reasonably necessary to ensure the confidentiality of the review process. Kalb demanded that NSF "amend its procedures to ensure that grant applicants have sufficient access to and the opportunity to amend, records regarding the consideration of the grant proposals."¹⁴⁸

The petition first urged NSF to acknowledge its Privacy Act obligations to make information in review files available to applicants along the lines of the NIH model and to inform applicants of their Privacy Act rights. Second, the petition demanded that applicants be given access to the contents of all outside reviews prior to any final decisions on their applications. Third, it asked NSF to comply with its Federal Advisory Committee Act obligation to make complete minutes, rather than staff summaries, of peer review panel meetings available to applicants. Fourth, the petition insisted that NSF adopt special procedures to give applicants an opportunity to learn about and rebut derogatory, harmful or non-scientific information and allegations of misconduct before the final decision regarding a grant proposal. Fifth, the petition requested NSF to adopt a procedure for allowing applicants to play a role in guarding against research conflicts of interest.¹⁴⁹ Acknowledging that

NSF attorneys maintain that the payment of attorneys' fees was solely for the purpose of eliminating the "nuisance value" of the lawsuit and in no way constituted an admission that the agency had wronged Kalb in any way. In particular, NSF attorneys maintain that the rumors did not affect the outcome of the agency's treatment of Kalb's proposal. Herz & Powell Interview, *supra* note 104.

¹⁴⁵ 5 U.S.C. §552b. The Privacy Act requires federal agencies to protect personal information in agency files from unauthorized disclosure, to publish descriptions of the existence and nature of the records containing personal information about people, and to give individuals access to review a copy of information about themselves and to demand that the agency correct any information that is not accurate, relevant, complete or timely. The Act, however, only applies to "systems of records" from which records are retrieved by the name of an individual or other personal identifier. This latter qualification has proven controversial and difficult to interpret.

¹⁴⁶ 5 U.S.C., App. 2. The Federal Advisory Committee Act requires federal agencies that rely upon recommendations of advisory committees to charter those committees. The charter must set out the committee's objectives, duties, number and frequency of meetings, and termination date. The agency must prepare minutes for advisory committee meetings and make those minutes available to the public, subject to the exemptions in the Freedom of Information Act.

¹⁴⁷ Petition for Rulemaking by Public Citizen and Jon Ervin Kalb, July 13, 1989, at 4.

¹⁴⁸ *Id.*

¹⁴⁹ The petitioners pointed out that: "While NSF's rules recognize the need to guard against traditional, financial, institutional, and personal conflicts of interest, they say nothing about the kinds of conflicts that may be of even greater concern to scientists—direct conflicts of interest regarding the specific research covered by a particular proposal." *Id.* at 26. The petitioners noted that "[t]here is obviously a

allowing applicants to play a role in identifying potential conflicts of interest might threaten the confidentiality of the reviewers' identities, the petition suggested that NSF could make available a list of potential reviewer to applicants in advance and allow applicants to object to any listed scientists that might have a research conflict of interest. Kalb hoped that such a procedure would help avoid conflicts in which a researcher could potentially affect the prospect of funding for a major competitor. Finally, the petitioners asked NSF to amend its appeals process to make it more accessible to rejected applicants.¹⁵⁰ Once again, the petitioners suggested the NIH appeals process as a model.¹⁵¹

On March 12, 1990, NSF responded to the petition. Rejecting most of the petition's allegations, the agency noted that it had already adopted most of the petitioners' suggestions.¹⁵² Without conceding that it had maintained a de facto "system of records" the agency agreed to continue making all reviews, notes of telephone conversations with reviewers, and summaries of the contents of any panel meetings available to applicants after the agency's final decision. Only the names of reviewers and the contents of competing proposals would be redacted. Written reviews and summaries of panel meetings would be mailed automatically to applicants. NSF further agreed to make greater efforts to inform applicants of their Privacy Act rights.

The agency rejected the proposal that it establish an additional process for allowing applicants to rebut nonscientific statements and innuendo prior to making final awards decisions. Noting that it had already adopted a policy prohibiting the consideration of reviews demonstrating bias or containing personal attacks, NSF determined that it would be too burdensome to allow a formal rebuttal to all applicants who desired to challenge the process.¹⁵³ The agency raised the difficulty of distinguishing rebuttals based upon alleged bias from rebuttals attacking the scientific merits of the reviews and rankings. NSF noted that declined applicants could submit petitions for reconsideration after-the-fact if they believed that they had been the objects of animus.

On the question of research conflict of interest, NSF agreed to provide computerized rosters of all potential reviewers to applicants, to invite applicants to suggest the names of persons who might be biased against their proposals, and to give this invitation prominence by making it part of the agency's acknowledgment letters. Although the agency made no commitments to follow the principal investigators' suggestions, it anticipated that most would be honored.¹⁵⁴ It declined to make public the names of potential reviewers that it decided to disqualify.

great potential for bias if a scientist that is asked to review a grant application is already conducting the same or very similar research to that being proposed by the grant applicant, particularly if the reviewer believes that the proposed research may, if funded, somehow preempt or hinder his own work." *Id.*

¹⁵⁰The petitioners noted that NSF's office of the Deputy Director had recently concluded that only a total of five proposals were successfully appealed during the five-year period preceding 1985. *Id.* at 32.

¹⁵¹The petitioners asked NSF to adopt rules amending its appeals systems to provide that (1) principal investigators have an opportunity to examine and seek amendment of all non-exempt portions of records considered or generated by NSF in the course of denying a grant application; and (2) grounds for appealing a denial of a grant include a demonstration that "(a) any records relied on in the decision are incomplete, inaccurate, untimely, or irrelevant; (b) a conflict of interest or bias influenced the adverse decision; and (c) there was substantive or procedural error in the process of peer review, including violations of the Privacy Act, the Federal Advisory Committee Act, or other applicable federal statutes or any NSF regulations or guidelines." *Id.* at 36.

¹⁵²Letter to Eric R. Glitzenstein from Charles H. Herz, *supra* note 123. For example, with the exception of telephone notes, all of the listed procedures had been followed in the Directorate of Biological Sciences for almost a decade prior to the Kalb petition. Comments of Mr. Garth Redfield, *supra* note 108.

¹⁵³The committee explained:

[W]e concluded that the costs of such a formal and automatic process would outweigh the benefits. Among the costs would be weeks or months of delay in the review of every proposal, thousands of hours of effort by principal investigators, similar demands on the time and energy of already stressed NSF program staff (with consequent sacrifice of other services to the scientific community and the public), and frustration all around when little changes as a result.

Letter to Eric R. Glitzenstein from Charles H. Herz, *supra* note 123, at 9-10.

¹⁵⁴*Id.* at 13.

With respect to appeals, NSF noted that its recently implemented Privacy Act procedures would provide all applicants an opportunity to correct any errors in their application jackets after-the-fact by way of asking for reconsideration. The agency agreed, however, to amend its regulations to clarify that motions reconsideration would not be restricted to procedural grounds, but could also address bias, conflict of interest, and the scientific merits of the decision.¹⁵⁵

The NFS response to the Public Citizen petition describes a system that is very similar to the system in effect at NIH with the notable exception that NSF allows rebuttal only after the final rankings and funding decisions have been made. The discussion below, which focuses on the same issues that have arisen in the context of NIH peer review, suggests that the changes have not been cost-free, nor have they been entirely effective. Nevertheless, they go a considerable distance toward eliminating the preexisting potential for bias that gave rise to the Kalb controversy.

2. Feedback and Rebuttal

Even before the recent procedural changes, NSF staff wrote a letter to rejected applicants explaining in greater or lesser detail (depending on how close the application was to the margin) the reasons for the rejection. The letters encouraged applicants who were nearly funded to apply during the next funding cycle and offered suggestions for improvement. Applicants who were far from the margin were subtly encouraged not to try again. In the past, a rejected applicant was limited to telephoning the Program Officer or perhaps the upper level program director. These sometimes impassioned encounters could take their toll on the morale of the Program Officers, especially when they could not share the peer reviewers' reports with the rejected applicants. NSF's policy of making redacted versions of all reviews, notes of telephone conversations with reviewers, and summaries of the contents of any panel meetings available to applicants after the agency's final decision should help alleviate this situation. NSF applicants will now be have access to 6-8 individual reviews, as compared to the comments of two council members that are included in NIH "pink sheets." Rejected applicants are generally appreciative of the feedback that these informational requirements provide.

The agency still does not provide a rejected applicant an opportunity for rebuttal. NIH provides a limited rebuttal opportunity by circulating the "pink sheets" containing reviewers' comments to applicants in sufficient time for the applicants to prepare written rebuttals for the relevant Advisory Council prior to its consideration of the application. NSF could implement an effective opportunity for rebuttal by allowing applicants to submit written rebuttals to their Program Officers prior to their ranking of the proposals for submission to the section and Directorate directors. NSF took the position in response to the Kalb petition that this would be too burdensome, but it is no more burdensome than the process that has already been effectively implemented at NIH. One former NSF program officer suggested that comparing NIH with NSF is inappropriate, because individual program officers in NSF have much higher workloads than their equivalents in NIH.¹⁵⁶ While it is true that NSF program officers are overworked, sometimes handling as many as 200 actions per year,¹⁵⁷ they are generally available for questions and requests for status reports from applicants and potential applicants. The additional burden of the few rejected applicants that are likely to take advantage of the rebuttal opportunity should not be excessive. If the additional burden is too great, the answer may lie in reducing the workload on the program officers, rather than running a system that is perceived to be unfair. The NIH experience suggests that rebuttals are extremely rare and therefore do not consume many staff resources. Indeed, NSF's implementation of a formal

¹⁵⁵Id. at 15. This change was implemented in July 1990. National Science Foundation, Important Notice to Presidents of Colleges and Universities and Heads of Other National Science Foundation Grantee Organizations, Notice No. 109, July 17, 1990.

¹⁵⁶Comments of Mr. Garth Redfield, *supra* note 108.

¹⁵⁷Comments of Mr. Garth Redfield, *Id.*

reconsideration process in response to the Kalb petition did not generate the predicted "wave of reconsideration requests."¹⁵⁸

NSF also alluded to the difficulty of distinguishing rebuttals based upon alleged bias from rebuttals attacking the scientific merits of the reviews or ranking, a distinction that has not frustrated the rebuttal process at NIH. In any event, some additional burden may well be outweighed by the additional sense of fairness that should accompany a process that allows rejected applicants to cure clear factual errors.

3. Favoritism

The mail review system in place for most grant programs at NSF is susceptible to favoritism on the part of Program Officers. The Program Officers, who select the mail reviewers, are generally familiar with their outlooks and biases. By assiduously or unintentionally selecting reviewers who are likely to look favorably upon a particular researcher or kind of research, a Program Officer can subtly "stack the deck" in a way that increases the likelihood of favorable reviews and decreases the likelihood of unfavorable reviews. Two procedures in place at NSF help ensure against "stacking" the reviews. First, Division Directors monitor the peer review selections of the Program Officers serving under them, and they keep an eye out to ensure that selection is not biased.¹⁵⁹ Second, many Program Officers rotate from program to program every 1-2 years, thereby ensuring that any bias is not perpetuated.¹⁶⁰

4. Old Boy Network

Just as in NIH, an old boy network can dominate the NSF peer review process. One NSF Program Officer candidly observed:

There really is a conservative bias. This is a closed community of people and they all know each other. It is real peer review and can be incestuous, making it hard for a new university to break into a field unless the peer reviewer will let them in. The peer reviewer has incentive not to because it would often be his/her own institution that would lose out because they are competitive with the applicant. . . . It is really a closed club where only certain schools can get funded for the most part.

This suggests that the old boy syndrome can sometimes be so strong, especially in very small programs that award a few very large grants, that the reviewers almost have a financial conflict of interest. On a broader level, a study sponsored by the Los Angeles Times under the direction of California Institute of Technology political science professor Bruce Cain determined that prior to 1982, 20 academic research institutions received 41 percent of all federal research money allocated to universities. The remaining 59 percent was distributed among the 570 institutions.¹⁶¹

The power of the old boy network is revealed by a rare public outcry against an NSF decision to fund a large research facility at the Florida State University instead of the Massachusetts Institute of Technology. Although the peer review panel seemed to favor the MIT proposal, the State of Florida and the local business community rallied around the Florida proposal with promises of additional

¹⁵⁸Memorandum to Members of the National Science Board from Walter E. Massey, Director re: Annual Report on the NSF Proposal Review System, April 24, 1991, Attachment I, at 3. See also Memorandum to Members of the National Science Board from Walter E. Massey, Director re: FY 1991 Annual Report on the NSF Proposal Review System, March 1992, Attachment I, at 2.

¹⁵⁹Comments of Mr. Garth Redfield, *supra* note 108.

¹⁶⁰It is, of course, also possible to "stack" review panels, but it would probably be difficult for the Program Officer to protect the identities of panel members from public disclosure. In addition, the panelists themselves can detect and report instances of apparently biased selection. Comments of Mr. Garth Redfield, *supra* note 108.

¹⁶¹Frank Clifford, *Worrisome Trend; Research Funds: Not so Scientific*, Los Angeles Times, 11/27/87, Part One, pg. 1, col. 1.

financial support that were unmatched by the MIT proposal.¹⁶² When MIT officials and Massachusetts representatives complained that the peer review panel had indicated that the Florida group was not as highly qualified from a scientific standpoint,¹⁶³ southern representatives responded that NSF panels were generally biased toward the Northeast and Pacific Coasts.¹⁶⁴ NSF staffers are quick to point out that the Florida-MIT controversy is very unusual, because the agency nearly always goes along with the peer reviewers, even when the staff suspects that an exclusionary old boy's club is at work.¹⁶⁵ They also maintain that the staff usually goes to great lengths to ensure against regional biases. The Florida award over the contrary advice of the peer review panel may in fact reflect that very concern.¹⁶⁶

5. Halo Effect

The extent to which the halo effect affects rankings in NSF depends upon the program. In some programs, proposals from highly regarded researchers are routinely funded even though they are sometimes of uneven quality. Other programs take pride in their refusal to look beyond the last funded grant in evaluating an individual's application. One Program Officer reported that when "famous people jot down notes and throw them at us, we'll turn them down and love doing it." As a consequence, research careers in programs that do not give much credit for past performance tend to end relatively quickly. Forty-five year-old researchers close down their laboratories after twenty years, because they cannot compete with twenty-five year-old "hot shots" who put in 20 hour days. The cycle repeats itself as the younger researchers acquire additional responsibilities and begin to burn out.

6. Personal Animus

Although NSF receives very few complaints of personal animus on the part of mail reviewers, they are not unheard of. One researcher interviewed for this report maintained that the mail review of one of her applications consisted largely of a personal attack on her. NSF's new procedures (which were generally followed in the past in most NSF programs) allow an applicant to suggest "a brief list of persons who should not be asked to review a particular proposal,"¹⁶⁷ and NSF generally honors such requests. Although the staffers and researchers interviewed for this report did not report any instances of animus on the part of NSF staff, the outside reviewer system would allow a Program Officer to "stack the deck" against a particular person or point of view, just as the deck can be stacked to favor an applicant. As previously discussed, Division Directors keep an eye out for this possibility as part of their general oversight functions.

¹⁶²Charles A. Radin, *New Forces Drew Lab From MIT*, *Boston Globe*, 9/21/90, *Metro/Region* p. 1. The Florida legislature appropriated \$28 million for construction and a \$5 million per year operating subsidy. MIT proposed only to renovate an existing laboratory that was located in an old bakery. MIT made no special effort in the state legislature or in Washington, D.C.

¹⁶³David L. Chandler, *Kennedy, Kerry Query Science Award*, *Boston Globe*, 10/6/90, p. 48; John Wilford, *MIT Sales Panel Choice of Florida for Magnet Center*, *New York Times*, 9/7/90, A16, Col. 5; William Booth, *MIT Indignant Over Contract Award by NSF*, *Washington Post*, 9/7/90, A13.

¹⁶⁴The Chancellor of the University of Florida System responded to the criticism of NSF's award as follows: "The South has been getting cheated. If you look and count the money, you'll see where the money goes. I've been around long enough to know that all the wisest people in the world do not live in California and the Northeast."

Representative Michael Andrews of Texas stated: "There is what we call 'brother-in-lawing' going on. Many of the boards continue to be filled with academicians from the Northeast and West, and we never have the votes to direct some of these dollars back to the Sun Belt." Naftali Bendavid, *untitled*, *States News Service*, 9/30/88.

¹⁶⁵Telephone interview with Mr. Victor Westbrook, *supra* note 123.

¹⁶⁶Frank Press, the President of the National Academy of Sciences offers a different explanation for the Florida State award. He suggests that it reflects a fundamental shift in the reasons for funding scientific research at the national level from national defense to economic development. "[T]his shift from national security to economic growth guarantees that science funding becomes more a function of politicking than dispassionate peer review as states decide that they're entitled to their fair share." Michael Schrage, *Blurring the Line Between Funding Science and Funding Economic Growth*, *Washington Post*, 10/5/90, F3.

¹⁶⁷NSF Notice, *supra* note 155.

One researcher observed that it is not uncommon for mail reviewers to vary dramatically in their evaluations of the same proposal. For example, sometimes a single proposal will be assigned a rating of "1" from one reviewer and a rating of "5" from another. It is possible to interpret instances in which a single proposal receives rankings at both extreme ends of the ranking system as evidence of animus, but it is more likely evidence of inconsistency due to the inability to articulate and apply precise criteria for scientific merit.¹⁶⁸

The multi-tier review process in place at the Science and Technology Research Centers Program very effectively shields proposals from animus, once the proposals have made the 30-application cutoff. The site visit teams are not asked to evaluate the proposal numerically, and they are pressed toward a consensus answer to each of the specific questions that the agency staff poses to them in writing. It would be very difficult for animus to infect the exceedingly diligent review that the proposals receive at the four-day meeting of the external peer review panel. The great care that the agency took to shield the process from favoritism also effectively shields it from animus.

7. Mavericks

Like NIH, NSF has struggled with how to respond to "mavericks" who submit proposals that are outside of the dominant paradigm. NSF peer reviewers have difficulty distinguishing the potentially brilliant paradigm-shifting proposal from the hare-brained idea. According to one NSF staffer, it is always easy to fund the principal investigator with an excellent reputation and a perfectly designed study on a topic that is not very interesting. An NSF-funded researcher who has also conducted many mail reviews and participated in site visits, observed that there is a definite "conservative" bias in the peer review system in favor of "trendy" approaches and against proposals that suggest new or innovative approaches to uncovering scientific truths.

Especially in times of tight funding, peer reviewers are very reluctant to take a chance with an unproven investigator who offers up a potentially fascinating project with a high probability of failure. The agency is more likely to fund an unorthodox proposal from an established investigator. Mail reviewers tend to view out-of-the-ordinary proposals very critically. Some Program Officers therefore believe that they have a responsibility to keep an eye out for mavericks who deserve funding and to shield them from negative peer reviews. According to one Program Officer, peer review panels should be instructed to look kindly upon proposals that are innovative and interesting, even if they have a few technical problems. Given their very heavy work load, however, Program Officers do not have much extra time to monitor the peer review process for bias against innovative proposals.

NSF's unique program for awarding small seed grants for novel proposals outside of the formal peer review channels is an attractive vehicle for avoiding the tendency of peer review to ignore mavericks. A Program Director may set aside up to 5 percent of the Program's funds for these expedited awards of up to \$50,000. Because it vests complete discretion in the Program Director, it can be used to fund pet projects of little scientific value, but the \$50,000 cap ensures that not too much money is devoted to any single project before it is forced to prove itself in the formal peer review process. According to one Program Director, NSF is funding some "really neat stuff" through this very limited program.

8. Tunnel Vision

Sometimes peer reviewers in a narrow scientific field fail to see the relevance of proposals to the overall scientific enterprise or to the general welfare. For example, one researcher who applied to both NSF and EPA for grants reported:

The success of a proposal often depends on the reviewers' perceptions of what constitutes technical merit. In 1982, my proposal received a very high rating from

¹⁶⁸While this should provide some comfort to those who fear that the system might be irrationally biased against them, it does not speak especially well of peer review as a vehicle for choosing projects with the greatest potential for success.

the EPA review panel. The very same proposal was not funded at NSF, despite generally good reviews. One reviewer in the biological program didn't like it, possibly because it had an engineering perspective. This negative vote was the kiss of death.¹⁶⁹

While it is fortunate that another funding agency was available to support the project, NSF's review was apparently affected by one reviewer's tunnel vision.

9. Applicant Anonymity

NSF makes no attempts to shield the identity of the applicant from the reviewers. One advantage of letting the reviewers know the identities of the applicants is that it greatly facilitates the ability of the reviewers to uncover plagiarism or stolen ideas on the part of applicants. On two or three occasions instances of plagiarism have been detected in this way in the Biotic Systems and Resources Program. These cases were referred to NSF's Inspector General.¹⁷⁰

10. Reviewer Anonymity

Some observers have argued that NSF'S reforms should go farther to reveal the identities of peer reviewers in addition to the contents of their reviews.¹⁷¹ Although this issue is fairly debatable, the vast majority of scientists involved in the peer review process oppose it on the convincing ground that candor would suffer dramatically if this reform were introduced. One NSF-funded researcher commented that excessive curiosity about who is on one's review panel is a "sign of paranoia," and predicted that revealing the identity of reviewers could be "debilitating" to the system.

Public Citizen's less radical suggestion that applicants be allowed to review lists of potential reviewers of panelists and to raise objections prior to the consideration of his or her proposal should go a long way toward reducing the potential for research conflict of interest. The proposal would be far more useful, however, if the agency made an effort to provide more narrowly focused lists of potential reviewers to applicants who requested them.

11. Financial Conflict of Interest

There appears to be less concern among NSF staff and NSF-funded researchers about financial conflict of interest than in NIH. The biotechnology boom hit NIH earlier than NSF, and not as many NSF-funded researchers have private positions or consultantships with private companies. Concern in NSF will no doubt grow as university-industry ties spread into other areas of scientific research such as computer sciences.

12. Research Conflict of Interest

The Kalb story relates how a researcher with an interest in a limited resource can use his or her position as a reviewer of a competitor's grant application to enhance his or her own prospects for success. The potential for this sort of research conflict of interest is difficult to avoid in programs,

¹⁶⁹1988 AMS Report, *supra* note 91, at E-2 (quoting Joseph DePinto, Clarkson University).

¹⁷⁰Telephone interview with Mr. Victor Westbrook, *supra* note 123.

¹⁷¹See Chubin & Hackett, *supra* note 3, at 203-04. Chubin and Hackett argue:

Reviewers and referees should sign their reviews and should be openly associated with the work they approve or disapprove. This would hold reviewers publicly accountable for their decisions and would take a step toward acknowledging the value of reviewers' work. No longer would it be convenient for a reviewer to trash another's work. Nor would it be advisable to endorse unexamined work. . . . [W]e understand that removing the shield of anonymity may reduce reviewers' candor and put them at risk of reprisals. But the current practice is semi-open, with authors and proposers free to speculate about their critics' identities and, inappropriately, to reply in kind. To the extent that some of these reprisals are certain to be in error, our proposal will eliminate such mistakes. Better still, by making open review the usual practice, all would live in glass houses, not just those with tell-tale points of view, writing styles, or typefaces. Most importantly, the communal character of science would be openly recognized and reinforced, the tide of covert careerism would be stemmed (or brought into the open), and the opportunities for communication among scientists would be improved. *Id.*

like the Science and Technology Centers Program, that make very large grants to a small number of applicants. One researcher observed that virtually every major research institution in the country either has or is applying for one of these large awards. It is therefore difficult to find qualified scientists for mail reviews who are not associated with a competing institution. Every outside reviewer from a competing institution knows that the chances of his or her institution receiving one of the 10-15 annual awards are higher if proposals from the other institutions are downgraded. The fact that the reviewer may not participate in the consideration of the reviewer's institution's proposal does not prevent the reviewer from commenting adversely on remaining proposals. To some extent, this potential conflict of interest can be avoided by seeking out scientists from industry, and by carefully monitoring the meetings of the multiple panels.

As in NIH, it is possible for an application to be downgraded by a reviewer who feels threatened by the proposed research. One NSF-funded researcher noted:

Sometimes your proposal is an alternative hypothesis to someone's work. If they don't like it or it threatens their work, they'll strike it down. Program directors usually oversee this, but they are too busy and sometimes this bias leads to rejected proposals.

Even after implementation of the promised changes, it is not clear that NSF's conflict of interest policies will prevent research rivals and colleagues of research rivals from reviewing proposals.

None of the NSF officials or researchers interviewed for this report knew of any instances in which an applicant claimed that his or her ideas were appropriated by a reviewer. They suggested that, like cases of plagiarism, instances of stolen ideas would be referred to the agency's Inspector General.

13. Peremptory Challenges

The typical project grant program in NSF allows two forms of peremptory challenges. First, applicants may request the long list of potential reviewers that each Program prepares and request that his or her proposals not be sent to specific persons on that list. If the applicant provides good reasons for the request, the Program Officer usually honors it. Second, after a rejected applicant reads the comments of the reviewers, he or she may request that a particular reviewer not be allowed to review his or her applications in the future. Once again, reasonable requests are usually honored. Thus, peremptory challenges are allowed in the context of a system in which reviewer anonymity is preserved.

14. Lobbying

Like NIH, NSF encourages applicants to stay in frequent contact with the NSF staffer assigned to his or her proposal. Most successful applicants believe that this is very sound advice. The staff can offer valuable suggestions to enhance a proposal's chances of success. The primary difference between NSF and NIH lies in the power of the lower level staff to affect the outcome of the decisionmaking process. Whereas NIH staffers have very little influence over substantive outcomes, lower level NSF staffers are quite influential, because they make the initial rankings. On the other hand, the discretion of the NSF staff is considerably limited by the quantitative nature of the scoring by the outside peer reviewers. As in NIH, it is difficult to justify departures from the ranking determined by averaging the reviews. None of the NSF staffers and researchers interviewed for this report reported instances of rejected applicants' lobbying upper level officials at NSF to overturn funding decisions made by Program Officers on the basis of mail reviews. Since the identities of mail reviewers are kept strictly confidential, especially during the time that the actual review is being carried out, it is virtually impossible for an applicant to bend the ear of a peer reviewer.

15. Political Pressure

As with NIH, outside overtures to NSF usually come in the form of easily answered status inquiries from congresspersons. Lower level NSF staffers did not report any overt attempts to pressure the agency to fund individual applicants. The practice is, in fact very much frowned upon in the research community. According to one NSF-funded researcher, "This is a touchy subject. Generally, applicants don't want outside pressure, even if it's for them because it's looked down upon." Applicants who might be tempted to bring outside pressure to bear on the process know that the tactic may backfire as future panels place proposals from such pushy researchers at the bottom of their lists. Even in the Science and Technology Research Centers Program, in which very large five-year grants are made to less than fifteen institutions per year, there is very little outside political pressure. In any event, the reviewers, who have the primary responsibility for evaluating the proposals, are shielded from outside pressure by upper level NSF staff. For example, the staff does not even allow applicants to have fancy receptions for site visit teams.

16. Efficacy of Appeal Procedures

Since a proposal can usually be resubmitted within months of the first rejection, researchers are far more likely to accept the agency's standing offer to revise and resubmit declined applications than they are to invoke the possibly lengthy appeal process. The NSF response to the Public Citizen petition noted that the appeals process was rarely used in the past; its refusal to allow an opportunity for rebuttal prior to the grant awards will ensure that it will continue to be rarely invoked.

17. Program Evaluation

In 1989, NSF established a program for peer review of its peer review process. Each Directorate NSF appoints a "Committee of Visitors" to examine the agency's files and evaluate the peer review process in operation at three-year intervals. The Committees must be "balanced in terms of its views on programmatic issues and in regards to the institutional, geographic and personal characteristics of its members."¹⁷² At least two members may not be serving on any NSF advisory committee and may not have been applicants to the program under review for at least five years.¹⁷³ Each review must address: "(a) the integrity and efficiency of processes used to solicit, review, recommend and document proposal actions; (b) the relationship between award decisions and program goals; and (c) program support of Foundation-wide initiatives." Other topics that should be addressed where relevant include whether "an adequate number of high quality reviewers with technical competence and freedom from bias" were selected for each proposal and whether the program demonstrated a "balance of awards in terms of subject matter, size versus number of awards, and age, experience and geographic distribution of principal investigators."¹⁷⁴ Although the reviews are generally positive,¹⁷⁵ these systematic "audits" have the potential to detect instances of bias in the grantmaking process. The certainty that the records will be audited every three years should also serve as a prophylaxis against bias.

¹⁷²NSF Manual 1, "Administrative Information Manual (ADM)," ch. VIII, §340, updated January 31, 1991.

¹⁷³*Id.*

¹⁷⁴*Id.* §350.

¹⁷⁵Interview with Mr. James McCullough, Program Evaluation Staff Director, National Science Foundation, Washington, D.C., April 3, 1992.

IV. PEER REVIEW IN THE ENVIRONMENTAL PROTECTION AGENCY'S OFFICE OF EXPLORATORY RESEARCH

The United States Environmental Protection Agency (EPA) is one of the largest regulatory agencies in the United States with more than 19,000 employees located in its Washington, D.C. Headquarters, its ten regional offices and several research laboratories throughout the country.¹⁷⁶ Unlike NIH and NSF, EPA's functions are primarily regulatory in nature; it writes and enforces standards aimed at protecting and enhancing environmental quality. EPA does, however, have a research mission to learn more about the impacts of human activities on the environment, and it has particular needs for research on issues that arise during its standard-setting activities. Although it can never hope to conduct or fund all of the research necessary to provide an adequate scientific basis for its rules and regulations, it attempts to identify in advance particular scientific questions that may arise in future rulemaking initiatives and to conduct research on aspects of those questions to help the regulatory staff decide how to write supportable standards. Most of EPA's research budget is spent on research carried out in its own laboratories, but the agency does have a substantial budget for supporting outside research in universities, corporate laboratories and private consulting companies.¹⁷⁷

A. Discretionary Grant Programs

Most external EPA-funded research is administered through the agency's Office of Research and Development (ORD), which is headed by an Assistant Administrator who is appointed by the President with the advice and consent of the Senate.¹⁷⁸ That Office is in turn divided into eight Offices, each of which is headed by a career official in the Senior Executive Service.¹⁷⁹ Each of these Offices administers some investigator-initiated discretionary grants, and ORD as a whole funds approximately \$40,000,000 per year in research grants.¹⁸⁰ This Report will focus on the Office of Exploratory Research (EPA/OER), because it "is the primary contact between the Environmental Protection Agency and the environmental research community" and because it has traditionally relied heavily upon peer review in awarding research grants.¹⁸¹

The Office of Exploratory Research (OER) was created "to support research aimed at developing a better basic scientific understanding of the environment and its inherent problems." Its primary objectives are:

To have the environmental research community aware of and working on problems of interest to EPA;

¹⁷⁶The primary EPA research laboratories are located in Cincinnati, Ohio and Research Triangle Park, North Carolina. It has smaller laboratories in Las Vegas, Nevada, Ada, Oklahoma, Athens Georgia, Corvallis, Oregon, Duluth Minnesota, Gulf Breeze, Florida, and Narragansett, Rhode Island. See United States Environmental Protection Agency, FY-1991 EPA Research Program Guide 127-29 (1991) [hereinafter cited as 1991 Program Guide].

¹⁷⁷In 1986, for example, EPA awarded \$10.6 million for investigator initiated research out of a total extramural budget of \$217 million for environmental and related research. 1988 AMS Report, *supra* note 91, at D-1.

¹⁷⁸40 C.F.R. §1.45. See Government Manual at 556.

¹⁷⁹The eight offices in the Office of Research and Development are: the Office of Technology Transfer and Regulatory Support; the Office of Exploratory Research; the Office of Environmental Engineering and Technology Demonstration; the Office of Health Research; the Office of Environmental Processes and Effects Research; the Office of Modelling, Monitoring Systems and Quality Assurance; and the Office of Health Environmental Assessment and the Office of Research and Program Management. See 40 C.F.R. §1.45.

¹⁸⁰CFDA at 877.

¹⁸¹Steven Smith & Steven Klein, Management Study of the Office of Exploratory Research 1 (1990) [hereinafter cited as OER Management Study]. See also United States Environmental Protection Agency, Orientation Handbook for Members of Research Grants Science Review Panels 3 (1991) [hereinafter cited as Orientation Handbook]. OER's niche is defined by research objectives and priorities different from those of other federal programs supporting investigator-initiated environmental research. The grant program is interested in research which holds some promise for improving EPA's ability to detect and reduce the impact of environmental pollutants on human health and the environment. The scope of this interest encompasses the transport, transformation, fate, effects, and control of these pollutants. 1988 AMS, *supra* note 91, Report at 15.

To have the environmental research community aware of and working on problems of interest to EPA;

To promote close interaction and mutual awareness between EPA researchers and the environmental research community; and

To provide general support to the research community for work on fundamental environmental research, thereby promoting a solid foundation of knowledge and a cadre of scientific and technical personnel in the environmental sciences.¹⁸²

Most OER-supported research is fundamental, long-range research aimed at emerging environmental problems or cutting edge research exploring advanced concepts and techniques in the environmental sciences and engineering.¹⁸³ OER administers several "core programs," including a Competitive Research Grants (CRG) Program, an Environmental Research Centers Program, a Hazardous Substance Research Centers Program, a Visiting Scientists Program and a Small Business Innovation Research (SBIR) Program.¹⁸⁴ This Report will concentrate on the CRG Program and the SBIR Program.

The major functions of the CRG Program are "to manage a program of long-range research through grants to qualified investigators and to operate a system of peer review for competitively selecting and awarding projects."¹⁸⁵ The CRG Program funds research in a broad range of areas including identification and characterization of hazardous substances, intermedia transport of pollutants, pollutant fate in all media, human and ecological risk assessment, incineration, waste reduction, and wastewater treatment.¹⁸⁶ Examples of CRG Program-funded research include studies aimed at exploring the relationship between solar ultra-violet radiation and skin melanomas, determining the effects of environmental stressors, and studying the pathology of trees exposed to air pollution.¹⁸⁷

There are two vehicles for funding investigator-initiated research in the CRG Program: (1) researchers can respond to a general annual solicitation for research proposals in six broad areas of environmental research; and (2) researchers can respond to special solicitations for highly defined research in particular areas called "Requests for Applications" (RFAs).¹⁸⁸ The RFA is a vehicle for soliciting "a one-time competition in a well defined high priority research area."¹⁸⁹ In FY 1989, CGR Program funded 62 new grants and administered 152 active grants for a total of about \$18,000,000. An average grant award was for 2 1/2 years at a level of about \$100,000 per year.¹⁹⁰ The program has sufficient funds for only about one-sixth of the applications that it receives.¹⁹¹

The SBIR Program supports innovative research with potential practical applications. EPA's SBIR awards are made through contracts, rather than grants, but the agency uses the same procedural approach to peer review in both programs. EPA devotes about \$3 million per year to about 25 Phase

¹⁸²United States Environmental Protection Agency, FY 1989 Annual Report of the Research Grants Program 1 (1990) [hereinafter cited as 1989 Annual Report].

¹⁸³OER Management Study, *supra* note 181, at 2.

¹⁸⁴1991 Program Guide, *supra* note 176, at 112-13. OER also administers a manpower training program and a workforce development program that are not directly related to funded research. See OER Management Study, *supra* note 181, at 1.

¹⁸⁵United States Environmental Protection Agency, Research Grants Program Annual Report FY 1988 (1989).

¹⁸⁶1989 Annual Report, *supra* note 182, at 1; AMS, *supra* note 91, Report at 15 ("Some academic scientists interviewed for this evaluation think of OER's program as the midway point on a continuum between basic science and applied science—between NSF and NIH on one hand and the EPA labs on the other.")

¹⁸⁷OER Management Study, *supra* note 181, at 2.

¹⁸⁸1989 Annual Report, *supra* note 182, at 1; OER Management Study, *supra* note 181, at 2.

¹⁸⁹1989 Annual Report, *supra* note 182, at 1.

¹⁹⁰1989 Annual Report, *supra* note 182, at 1-5.

¹⁹¹OER Management Study, *supra* note 181, at 2-3. The AMS Report suggests that the funding rate is closer to one-third. AMS Report, *supra* note 177, at 22. If this is true, the competition is not unusually stiff.

Phase II funding.¹⁹³ Phase I awards are limited to the statutory maximum of \$50,000; phase II awards are limited by EPA to \$150,000.¹⁹⁴ Competition is very stiff; in FY 1990, only 32 out of 435 Phase I applications were funded. The program currently focuses primarily upon pollution control technology and instrumentation research.¹⁹⁵ Examples of SBIR-funded research include a project on innovative incineration technology for the fiberglass industry; a study of microbial removal of organic sulfur from coal; and an examination of novel sensors for metal-ion detection and quantification.¹⁹⁶

B. Criteria for Awarding Grants

The broad criteria for evaluating research proposals are as follows:

A proposal is judged for (a) scientific merit in terms of: (1) strengths and weaknesses of the project; (2) adequacy of overall project design; (3) competency of proposed staff; (4) suitability of applicant's available resources; (5) appropriateness of the proposed project period and budget; and (6) probability that the project will accomplish stated objectives; and for (b) program interest in terms of: (1) the need for the proposed research; and (2) relationship to objective(s) in an approved work plan.¹⁹⁷

These criteria do not vary greatly from those used to evaluate the scientific merit of proposals in NIH.

C. Procedures for Awarding Grants

The grants selection process at EPA/OER consists of a "dual system of review" that relies heavily upon six "Science Review Panels" established on an ad hoc basis in each of the program's six principal areas of interest.¹⁹⁸ EPA/OER enters into a cooperative agreement with each Panel Chairperson, an outside scientist or engineer appointed to a single three-year term by the Assistant Administrator for Research and Development, to supervise the peer review process. The chairperson is responsible for selecting the members of the Panel, overseeing the Panel's scientific review of the applications assigned to it, and providing EPA/OER staff with a Summary Statement of the Panel's recommendations for each application. With the approval of the EPA/OER staff, the chairperson chooses 20-60 members for the Panel from among recognized experts in the relevant field. Panelists are compensated at the rate of \$200 per day or fraction of a day plus transportation and per diem expenses. An EPA/OER staffer called a "Science Review Administrator" (SRA), is an ex-officio member of the panel. The SRA's functions are to provide policy and procedural guidance and managerial assistance.¹⁹⁹

All grant applications are initially referred to the agency's Grants Administration Division where they are reviewed for legal and administrative acceptability. They are then given to the Research Grants Program for assignment to the appropriate peer review panel. Once assigned to a panel, the Chairperson reviews them with the assistance of the SRA and assigns each one to at least three Panel

¹⁹³United States Environmental Protection Agency, Small Business Innovation Research Program 2 (1990) [hereinafter cited as SBIR Program].

¹⁹⁴*Id.* at 2.

¹⁹⁵*Id.* at 6-7; OER Management Study, *supra* note 181, at 6.

¹⁹⁶SBIR Program, Abstracts of Phase I and Phase II Awards (1989).

¹⁹⁷CFDA at 878. The agency's guide for peer reviewers provides that reviewers should "focus attention on the scientific merits and utility or potential utility of research proposals, the competence of the principal investigator and the adequacy of institutional facilities." Orientation Handbook, *supra* note 181, at 2.

¹⁹⁸The six principle areas of interest are: chemistry and physics of water, chemistry and physics of air, engineering, biology, health, and socio/economic studies.

¹⁹⁹Orientation Handbook, *supra* note 181, at 1. The Chairperson is supposed to make every effort to provide for representative geographic distribution and minority group representation on the panels.

All grant applications are initially referred to the agency's Grants Administration Division where they are reviewed for legal and administrative acceptability. They are then given to the Research Grants Program for assignment to the appropriate peer review panel. Once assigned to a panel, the Chairperson reviews them with the assistance of the SRA and assigns each one to at least three Panel members who serve as "primary reviewers" of that application. The Chairperson attempts to ensure that no panel member is the primary reviewer for more than five applications per cycle. If a reviewer believes that an application has been inappropriately assigned to him or her, it may be returned to the Chairperson and reassigned. Each primary reviewer evaluates the applications in accordance with the listed criteria and prepares a written evaluation with an accompanying recommendation to approve, disapprove or defer the proposal.²⁰⁰ All panelists are sent the cover sheets and abstracts of all applications that will be considered at the upcoming meeting, and any member may request a copy of the full proposal for any application in advance of the meeting.

Depending upon the workload and the availability of funds, Panel meetings are scheduled two or three times per year. The Panel's consideration of each application begins with a review of the written evaluations and recommendations prepared by the three primary reviewers. A full Panel discussion follows until the proposal's strengths and weaknesses have been fully aired. After the discussion on an application is completed, each panelist "independently and privately" records a numerical priority score ranging from 0 to 100 that reflects the level of scientific merit of the application.²⁰¹ The staff then ranks the proposals according to score. The Panel may not recommend for funding any proposal with an average score of less than 60, and all proposals with an average score of greater than 60 receive an automatic recommendation. The Chairman, with the assistance of the SRA, prepares a "Summary Statement" setting out the Panel's recommendation and the reasons therefore. EPA/OER staff give the "highest consideration" to the top two to four applications for each Panel. The remainder are "selected in part, on criteria other than technical merit and utility, such as program balance and budget."²⁰²

Because of the very high volume of Phase I SBIR proposals, EPA/OER has developed a procedure for pre-screening applications to cull out clearly substandard proposals and to reduce the volume of proposals to a manageable level. After sorting out the incoming proposals, the SBIR Program Manager calls in other EPA/OER staffers and 10 outside reviewers from the relevant Panel for two days of culling. The SBIR Program Manager reads all of the proposals, and each outside reviewer reads a large group of proposals assigned to him or her. Each outside reviewer assigns scores and writes up brief explanations for all of the proposals assigned to that reviewer, but the reviewer does not read or discuss the proposals assigned to the other reviewers. Thus, instead of considering all of the incoming applications, each of the 10 outside reviewers only considers about 10 percent. The SBIR Program Manager writes Summary Statements for all of the incoming proposals. On the basis of the scores, the SRA selects 50-70 proposals for the full three-person and full committee review described above.

Grant applications, review materials, and proceedings of Panel meetings are considered confidential. EPA/OER's procedures strictly forbid any communications concerning an application between members of the panel and applicants. All communications and inquiries must be channeled through the SRA or the SBIR Program Manager. In addition, the agency's Orientation Handbook for panelists speaks particularly to the issue of trade secrecy, providing that:

Panel members are also bound by the confidentiality of all proprietary parts of the proposals they read under this guidance; no Panelists will disclose or use to their own advantage any data, concept, research protocol, or any other idea included in the applications.²⁰³

²⁰⁰Id. at 2-3.

²⁰¹Id. at 3.

²⁰²Id. at 3-4. See also 1988 AMS Report, *supra* note 91.

²⁰³Orientation Handbook, *supra* note 181 at 5.

Although the Orientation Handbook is curiously silent about the confidentiality of the reviewers' identities, EPA/OER's policy is to never divulge the names of primary reviewers to anyone, including rejected applicants. No attempt is made, however, to keep the attendance list for particular panel meetings secret.²⁰⁴ Thus, while a rejected applicant cannot ascertain the identities of the three persons who reviewed his or her proposal, a persistent applicant can find out who probably sat on the Panel that evaluated the proposal.

The Orientation Handbook also speaks to the agency's Privacy Act obligations.²⁰⁵ Immediately following a Panel meeting, all applicants who "failed" the review receive a rejection letter. Those whose applications "passed" the technical review receive a letter informing them of that fact and telling them that their applications are under consideration by the EPA/OER staff. After the final funding decisions have been made, those candidates not selected receive a second letter informing them of that fact. Five or six weeks after this, every applicant receives the Summary Statement that consists of the Chairman's summary of the Panel's technical review of the application.²⁰⁶ The Summary Statement is regarded as confidential and is provided only to the applicant. Applicants are later allowed access to all documents generated during the review of their grant applications, including the reviewers' written comments, if available. "Reviewers' written comments and scores, however, are not retained after their substance has been incorporated into Summary Statements."²⁰⁷

EPA/OER's conflict of interest requirements provide that no panelist may attend a panel meeting in which his or her own grant application or the application of a close relative, friend or close professional associate is evaluated. A panelist may attend a meeting at which an application from his or her own institution is considered, but must leave the room during the consideration of that application.²⁰⁸

Although EPA/OER has no formal procedures for challenging the agency's funding decision, it has established a formal appeals process under which rejected applicants may appeal the failure to correct any factual errors manifested in the Summary Statements or other documents in the applicant's file.²⁰⁹ According to EPA/OER staffers, disgruntled applicants are rare. When a rejected applicant asks the relevant SRA why his or her proposal was rejected or attempts to challenge the agency's decision, the SRA typically suggests that the proposal be resubmitted for consideration during the next funding cycle. The resubmittal will be considered by the same panel, which normally contains about 50-60 percent of the people who reviewed the original panel.

D. The Process in Operation

EPA/OER's research grant process relies heavily upon peer review. Outsiders choose the peer reviewers, manage the peer review meetings, and evaluate and rank the proposals. Although the ultimate funding decisions are made by EPA/OER staffers, they rarely depart from the Panel recommendations. According to one outside management review of EPA/OER's funding process, "[a] combination of tailored review groups, longer-than-average discussion time, and stringent criteria produces a very rigorous screening of proposals on the basis of scientific merit."²¹⁰ As with the other programs examined in this report, however, the process in EPA/OER does not always operate in practice exactly as described on paper.

²⁰⁴Comments of Mr. Robert A. Papetti, Director, Research Grants Staff, Office of Research and Development, EPA on an earlier draft of this Report, August 28, 1991.

²⁰⁵EPA also has promulgated procedural regulations implementing the Privacy Act. 40 C.F.R. pt. 16.

²⁰⁶Comments of Mr. Robert A. Papetti, *supra* note 204.

²⁰⁷Orientation Handbook, *supra* note 181, at 5.

²⁰⁸*Id.* at 1.

²⁰⁹40 C.F.R. §16.9.

²¹⁰1988 AMS Report, *supra* note 91, at 22.

1. Feedback and Rebuttal

EPA's Privacy Act regulations appear on the surface to provide quite a bit of feedback to rejected applicants. In theory, applicants may see all documents generated during the review of their grant applications, including site visit reports, Summary Statements, and reviewers' written comments, but only if they are still available when the request is made. Since the all written documentation is discarded after the Summary Statement is drafted, as a practical matter applicants cannot secure verbatim copies of reviewers' written comments, and they never see their scores.²¹¹

2. Favoritism

EPA/OER attempts to avoid favoritism, animus and conflicts of interest by setting aside a period of time at the first of each Panel session to a discussion among the panelists of these issues with respect to the pending applications. Since the panelists tend to be well-established university research scientists with substantial teaching careers, the discussion often focuses on proposals from their former students. The agency has adopted a rough rule of thumb that a panelist need not recuse himself from the consideration of proposals from former undergraduate students or from former graduate students who have not graduated within the last five years.

3. Old Boy Network

EPA/OER officials acknowledge that the history of discretionary research grants in EPA is not inspiring. Prior to the establishment of the Office of Exploratory Research in 1980, research grants were awarded by EPA staff in an ad hoc fashion.²¹² The system was a prototypical good old boy network in which agency staffers awarded grants to their favorite principal investigators with little regard to the peer review that was conducted and little threat of subsequent evaluation. As a consequence, the agency's reputation as a research institution suffered, and a task force within ORD was created to establish a more effective peer review system for awarding grants.

The peer review system was barely underway, however, when the recently appointed Assistant Administrator for Research and Development began to abuse it. In one of the lower profile contretemps of the Gorsuch Administration at EPA, Assistant Administrator Andrew Jovanovich was accused of steering grants to one of his former business associates outside of the peer review process. According to a report by the agency's Inspector General, a Massachusetts Institute of Technology researcher, Ronald Probst, met personally with Jovanovich after his grant proposal to study water treatment technology was rejected by one of the recently formed peer review panels. Jovanovich had previously supervised Probst's work at a private research institute. After Probst angrily denounced the Panel's decision and complained that he would have to lay off several graduate students, Jovanovich interceded with the lower level staff and demanded that Probst's proposal be reviewed by another peer review panel containing only two members, one of which would be selected by Jovanovich and the other by Probst. Not surprisingly, the new panel was effusive in its praise of the proposal, and a \$77,000 grant was awarded. Jovanovich explained that lower level EPA grants officials were "very poor at selecting the right work," but the Inspector General found that "allowing a scientist to select his own peer reviewer, especially one he has previously worked with, lacks any appearance of independence or objectivity . . . and would leave EPA open to charges of cronyism."²¹³ Later, Jovanovich's appointment as Assistant Administrator for Research and Development was withdrawn, and he was reassigned to a low-level agency post.

In the intervening years since the Jovanovich incident, there have been no further charges of impropriety at high levels in the Office of Research and Development, and the extensive peer review process for awarding grants in OER has apparently proceeded without substantial interruptions from high levels. Although the program is no longer criticized for cronyism, it is still possible for the

²¹¹Comments of Dr. Robert A. Papetti, *supra* note 204.

²¹²See M. Landy, M. Roberts & S. Thomas, *The Environmental Protection Agency 50* (1990).

²¹³Howie Kurtz, EPA Research Chief Violated Contract Award Rules, Probe Finds, *Washington Post*, April 10, 1982, A3.

Panel Chairperson to select panel members from among a fairly narrow cut of researchers who are familiar with one another's work and who have similar views about how research ought to be done. The Director of the Research Grants Staff, however, reported that he had no reason to believe that the Chairpersons behave this way, and he pointed out that one of the functions of the SRA is to ensure that they do not function as old boy networks. SRAs are told to insist that panel membership reflect a diversity of specializations, talents, and points of view. Since the SRA must ultimately concur in the Chairperson's selection of Panel members, they have the power to police the system against "old boyism."²¹⁴

A further hedge against old boyism is inherent in the very nature of the program. Because of budgetary and personnel limitations, EPA/OER can only assemble six panels to review proposals coming from all areas of environmental research.²¹⁵ Since EPA must of necessity recruit experts from widely divergent fields, there is less risk of any particular panel becoming dominated by a group of panelists hewing to a narrow view of proper science and legitimate scientific subjects.

4. Halo Effect

EPA/OER staffers are ambivalent about the "halo effect." One SRA said that he did not believe that the halo effect seriously affected the process at EPA/OER, noting that: "We've shot down many big names." Another SRA noted that many successfully funded applicants are funded very frequently, and suggested that: "There are some applicants with more clout than others." He opined that "a former [Panel] chairman may pull some weight." Yet the fact that during the years 1986-90 a total of 281 awards were made to a total of 135 institutions, no one of which received more than 4.5 percent of the total funds awarded suggests that the money is spread around fairly evenly.²¹⁶

Established researchers have a much better chance of obtaining funding from EPA/OER than "youngsters" who are new to the system. One EPA/OER staffer noted that because of the intense competition for grants, it is often very difficult for a new researcher to obtain funding. Given a very limited pool of resources, the senior scientists on the Panels no doubt tend to recommend funding for proposals from other well-established researchers, because they are more likely to yield useful results than those of novices. No special effort is made to direct resources to younger researchers just entering the field. The overall result may be that discouraged newcomers opt out of the system and pursue research in other areas or with other funding agencies.

5. Personal Animus

At the first of every Panel meeting, panelists are provided an opportunity to identify proposals from researchers about whom the panelists have strongly negative views. On one occasion early in the history of the program, a panelist expressed a strong personal dislike of an applicant, and he was happy to be relieved of the obligation of participating in the consideration of that applicant's proposal. This approach, of course, relies entirely upon the candor of the panelists in identifying any animus that they might harbor toward particular applicants. Perhaps not surprisingly, this happens only very rarely.²¹⁷

6. Mavericks

As in NIH and NSF, peer review committees in EPA/OER tend to look unfavorably upon maverick proposals that reject the conventional wisdom of the research community. According to one EPA/OER staffer, "Panels are basically very conservative and want to have some assurance of success. They are not inclined to fund way-out proposals." The staff, however, makes a special

²¹⁴Comments of Mr. Robert A. Papetti, *supra* note 204.

²¹⁵*Id.* By comparison, EPA/OER convenes only one panel on human health, while NIH has over 100 study sections devoted to that topic. *Id.*

²¹⁶*Id.*

²¹⁷*Id.*

effort to ensure that unusual, but innovative proposals are fairly considered. The difficulty, of course, lies in distinguishing an innovative but promising proposal from a quirky idea that has no chance for success. According to the Director of the Research Grants Staff:

It is our impression that many of the proposals received (particularly in the SBIR program) are not the productions of inventive genius not recognized in its time, but inoperable schemes, reinventions of old ideas, and theories which violate basic principles of physics, chemistry, etc. The authors of these proposals may well be viewed as mavericks fighting against the weight of conventional scientific opinion, but they are precisely the reason why we use technical and scientific peer panels to review proposals and recommend for or against support by EPA.²¹⁸

7. Tunnel Vision

Since the Panel Chair is responsible for selecting the panel members, it is entirely possible that the committee will be composed of a homogeneous group of main-line scientists who share the Chairperson's views about the relevant scientific questions. This can lead to tunnel vision. EPA/OER formally attempts to reduce this possibility by insisting that Panel Chairs step down at the end of the three year terms, but in many cases the terms have been extended informally to four or more years.

8. Applicant Anonymity

EPA/OER does not attempt to keep the names and institutions of the applicants from the panel members.

9. Reviewer Anonymity

Although EPA/OER is very careful about maintaining the confidentiality of the Panel proceedings, nothing in EPA/OER's Orientation Handbook for panelists suggests that the names of the panelists should not be revealed to applicants. Although the agency has a strict policy against revealing the names of the three primary reviewers to applicants, the attendance list for particular panel meetings is publicly available. Hence, a persistent applicant can ascertain the identities of the members of the panel that probably considered his or her application, but cannot ascertain the identities of the three panelists who conducted the intensive reviews of his or her proposal.

10. Financial Conflict of Interest

The EPA/OER guidelines parallel the NIH guidelines on financial conflict of interest. No panelist may participate in a panel meeting that evaluates his or her own grant application or the application of a close relative, friend or close professional associate, and Panel members must absent themselves from meetings when applications from their own institutions are considered. There is one significant difference, however, that is inherent in the limited number of panels available for reviewing applications at EPA/OER. In NIH, the proposal of a study section member or close relative or associate will go to an entirely separate panel, and if an appropriate panel with sufficient expertise does not exist, an ad hoc panel will be created. In EPA/OER, a panelist's application goes to his or her panel, but the applicant is not invited to the meeting in which that proposal is considered.

Although this procedure shields the decisionmaking process from overt participation by the panelist/applicant, the remaining panelists know at the time that they evaluate a fellow panelist's proposal that they will have to work with that panelist in the future. This may inspire them to view the proposal favorably. Even though the scores are always kept confidential, a Panel member whose proposal is rejected knows that at least some of the other panelists panned it. Moreover, to the extent

²¹⁸Id.

down, this arrangement does nothing to dispel the suspicion that the granting process is an old boy network in which friends in powerful positions help each other out.²¹⁹

11. Research Conflict of Interest

Like the NIH guidelines, the EPA/OER guidelines do not prevent reviewers from judging the applications of direct competitors. EPA/OER's Orientation Handbook for panelists does, however, speak obliquely to one aspect of research conflict of interest. Addressing the issue of confidentiality, the Handbook provides that "no Panelists will disclose or use to their own advantage any data, concept, research protocol, or any other idea included in the applications."²²⁰ This provision may be broadly construed to prevent a researcher from using information obtained during the review process to his or her own advantage in his or her own research, whether or not there is a potential for financial gain. In both instances, however, the agency has declined to adopt the prophylactic approach that is normally used to address conflicts of interest--viz. recusal from the decisionmaking body in which the conflict of interest might arise.²²¹

12. Peremptory Challenges

EPA/OER makes no provision for challenges from applicants to the participation of certain individuals in the agency's evaluation of their proposals. Since each funding program has only a single very large peer review committee, a true peremptory challenge in which the challenged reviewer plays no role whatsoever in the evaluation of the challenger's proposal or any competing proposals would probably be very difficult to implement. The agency, however, could relatively easily implement a modified peremptory challenge under which the challenged individual would not be allowed to participate in the discussion or scoring of the challenger's application. The potential for animus would, in other words, be treated exactly the same as the potential for favoritism that arises when the Panel considers an application from the reviewer's own institution.²²²

²¹⁹See Part 5. In a response to an earlier draft of this Report, the Director of EPA's Research Grants Staff noted that EPA's panels differ from those of NIH in that they are not standing committees with fixed memberships. Because EPA's panels are assembled ad hoc from an informal list of technically proficient people who have agreed to serve as panelists. In this more fluid context, subtle quids pro quo are not as easily arranged. In addition, because EPA strict division of disciplines among its panels arguably precludes sending a panelist's proposal to another panel. Unlike NIH, there are no closely related panels with the technical capacity to evaluate the proposal of an applicant who is a member of a different panel. Comments of Mr. Robert A. Papetti, *supra* note 204.

One solution to this dilemma is simply to preclude all applicants from sitting on any panels. Since the agency has available to it a list of possible panelists and since a panelist need serve for only a single round of evaluations, it should be easy enough to assemble a panel out of persons who do not have an application currently pending before EPA. Moreover, since each panel draws on expertise in a broad range of disciplines, the universe of potential panelists is no doubt fairly large.

²²⁰Orientation Handbook *supra* note 181, at 5.

²²¹In a response to an earlier draft of this Report, the Director of EPA's Research Grants Staff noted that:

Whenever anybody who is proficient in a technical subject area reviews work of another person proficient in the same or closely allied area then a potential conflict exists since both are competitors for ideas in the same technical field. There is no way out of this short of assigning an unqualified reviewer to judge the proposal.

Comments of Mr. Robert A. Papetti, *supra* note 204. The validity of this argument depends upon how one defines a "qualified" reviewer. If the universe of qualified reviewers consists exclusively of those persons who can understand every technical nuance of a proposal, then the argument may be correct. If, however, the universe includes persons with a strong grounding in science who practice in a related field, then the argument has less validity.

²²²In a response to an earlier draft of this Report, the Director of EPA's Research Grants Staff suggested that even modified peremptory challenges would be inappropriate in EPA's programs for three reasons:

First of all, it appears that such a procedure could provide a way for applicants to influence the review of their own proposals by challenging the most competent and incisive reviewers. Second, we believe that implementing a peremptory challenge procedure would result in challenges from so many applicants that it would be difficult for us to follow through. Finally, our system in which there are three primary reviewers among twenty to forty panel members tends to remove the impact of outlying votes.

13. Lobbying

Despite EPA's history of direct intervention by high level EPA officials, EPA/OER staffers reported no instances in recent years of applicants' lobbying upper level EPA staff. The embarrassing experience of Dr. Jovanovich may still be fresh in the minds of upper level EPA officials and potential "lobbyists."

14. Political Pressure

EPA/OER staffers frequently receive letters from congresspersons in support of particular research applications. These are included in the applicants' files and are considered by the Panels. EPA/OER staffers never overturn panel recommendations on the basis of such letters. In fact, the letters slightly annoy EPA/OER staffers, because EPA/OER procedures require a response within a limited period of time, and this takes time out of their already busy schedules.

15. Efficacy of Appeal Procedures

EPA has established a formal appeals procedure for rejected applicants. Each Project Officer must designate a "Disputes Decision Official," from among senior EPA employees who are knowledgeable about EPA's assistance programs, to review and resolve disputes over grant applications and rejections. After consulting informally with the relevant persons, the Disputes Decision Official issues a written decision from which the applicant may take an appeal to the appropriate EPA Assistant Administrator. Any appeal must be accompanied by documentary evidence and briefs. Applicants may be represented by counsel in such appeals. The Assistant Administrator's written decision constitutes the final agency action, and the applicant may then appeal to a court.²²³

Although a rejected applicant has a right to demand an informal hearing, this happens only very rarely. One staffer asserted that complaints occur only "once in a blue moon," and another reported a "very, very low bitch rate." When complaints do occur, the SRA's typically advise the rejected applicants to revise and resubmit their proposals. None of the staffers interviewed for this report could remember a case in which a rejected applicant successfully went over the head of the SRA to the upper level management in Office of Research and Development or the Office of the Administrator.

Comments of Mr. Robert A. Papetti, *supra* note 204. The first objection is a troubling one, because it suggests that a savvy applicant could "game" the system by exercising peremptory challenges against the most critical reviewers, leaving them available to criticize competing proposals. If the pool of potential reviewers is very small, this could constitute sufficient reason to deny peremptory challenges. The potential for abuse, however, should be greatly reduced by making the applicant explain his or her reasons for challenging a potential reviewer.

The second and objections are of less concern. It would take very limited staff time to follow through on peremptory challenges, even if it involved reading and evaluating two or three challenges from each applicant. In practice, the vast majority of applicants will probably decline to exercise any peremptory challenges, and the others can be evaluated in relatively short order. Assigning the primary reviewing role to three of the twenty or so panelists does not solve the problem that peremptory challenges are supposed to solve, and may in fact exacerbate it. An applicant who is concerned that a panelist might harbor animus against him or his institution is not likely to be assuaged by the assurance that the likelihood is small that that panelist will be among the three primary reviewers. If the panelist really harbors animus, then he or she will attempt to become a primary panelist for that proposal, and if that maneuver is successful, his or her animus could play a very large role indeed in the evaluation of the application.

²²³United States Environmental Protection Agency, Assistance Administration Manual 35-1 (1984). Somewhat more formal procedures are applicable to rejected applicants for SBIR grants, because EPA administers such grants as contracts subject to the Federal Acquisition Regulations. Comments of Mr. Robert A. Papetti, *supra* note 204.

V. PEER REVIEW IN THE NATIONAL ENDOWMENT FOR THE ARTS

The National Endowment for the Arts (NEA) is part of the National Foundation on the Arts and the Humanities, which was created as an independent agency by the National Foundation on the Arts and the Humanities Act of 1965.²²⁴ Its mission is to "foster the excellence, diversity and vitality of the arts in the United States," and to "help broaden the availability and appreciation of such excellence, diversity and vitality," without "impos[ing] a single aesthetic standard or attempt[ing] to direct artistic content."²²⁵ NEA is an essential part of a relatively brief tradition of government patronage of the arts dating back to the New Deal's Works Progress Administration.²²⁶ Since its creation in 1965, NEA's budget has mushroomed from about \$2.5 million to \$174 million in FY 1991.²²⁷ By almost any measure, NEA has been enormously successful in fostering the fine arts in the United States. On its twentieth anniversary in 1985, NEA received an Oscar for "its dedicated commitment to fostering artistic and creative activity and excellence of human genius."²²⁸ The inevitable tensions inherent in its goals, however, have frequently placed the agency in the public spotlight where, perhaps to a greater degree than the scientific agencies, the pros and cons of peer review have been extensively debated.

NEA fulfills its mission primarily by awarding discretionary grants to individual artists and nonprofit artistic organizations through peer reviewed competitions. Since awards to organizations must generally be matched from some other source, the agency can serve as "a catalyst to promote the continuing diversity, vitality and excellence in the arts in America and to provide access to, and appreciation of, such diversity, excellence and vitality."²²⁹ In fiscal year 1989, NEA funded 4,458 of 17,879 grant applications for a total of \$153 million. Individual artists received 7.6 percent of the

²²⁴20 U.S.C. §951, et seq.

²²⁵National Endowment for the Arts, *Guide to the National Endowment for the Arts 2* (1990) [hereinafter cited as NEA Guide]. According to the NEA Statement of Mission, NEA activities are designed to:

Demonstrate national recognition of the importance of artistic excellence;

Provide opportunities for artists to develop their talents;

Assist in the creation, production, presentation/exhibition of innovative and diverse work that has potential to affect the art form and directly or indirectly result over time in new art of permanent value;

Assure the preservation of our cultural heritage;

Increase the performance, exhibition and transmission of art to all people throughout the nation;

Deepen understanding and appreciation of the arts among all people nationwide;

Encourage serious and meaningful art programs as part of basic education;

Stimulate increasing levels of nonfederal support of the arts;

Improve the institutional capacity of the best of our arts organizations to develop, produce, present, and exhibit bold and varied fare; and

Provide information about the arts, their artistic and financial health and the state of their audiences.

²²⁶See William J. Lanquette, *The Federal Government—The Patron Saint of the Arts*, 10 *National Journal* 1288 (Aug. 12, 1978);

²²⁷Comments of Michael McLaughlin, Senior Staff Assistant, Office of the Deputy Chairman for Programs and Ana Steele, Associate Deputy Chairman for Programs on an earlier draft of this report, September 17, 1991. See also Lanquette, *supra* note 226.

²²⁸National Endowments for the Arts is Honored as 20th Birthday Nears, *New York Times*, Sept. 1, 1985, sec. 1, pt. 2, p. 68, col. 1.

²²⁹NEA Guide, *supra* note 225, at 2.

monies, and the remainder went to organizations with matching grants. Almost 90 percent of the grants were for less than \$50,000.²³⁰

The National Council on the Arts, composed of the NEA Chairman and 26 other members appointed by the President with the advice and consent of the Senate, advises the Chairman with respect to policies programs and procedures, reviews applications for financial support, and makes recommendations on funding decisions. Its function is therefore very much like the Advisory Councils in NIH upon which it is apparently modeled. Its members must be citizens who "(a) are widely recognized for their knowledge of, or expertise in, or for their profound interest in, the arts and (b) have established records of distinguished service, or achieved eminence, in the arts."²³¹ As the agency has expanded the range of artistic areas that it is prepared to support, the Council has become less involved in advising the Chairman with respect to individual grants and has played a broader advisory role with respect to more important policy issues.²³²

A. Discretionary Grant Programs

Like NIH and NSF, NEA has major funding programs in several broad areas, including Dance, Design Arts, Folk Arts, Literature, Media Arts (Film/Radio/Television), Museums, Music, Theater and Visual Arts, and Challenge and Advancement Grants. Because the agency is only able to fund about 25 percent of the applications that come before it, the competition in all of the programs is fairly stiff. This report will focus primarily upon the programs in Music, Visual Arts and Challenge Grants.

1. Music

The Music Program awards grants to assist exceptionally talented individuals and a wide range of organizations including professional symphony orchestras, contemporary music ensembles, jazz groups, national service organizations, choruses, chamber music ensembles, music festivals, and others. Funds are not available, however, for capital expenditures such as the construction or rehabilitation of facilities, summer music camps, publication costs, and purchase of musical instruments or uniforms.²³³ The program awards about \$15,500,000 to about 800 successful recipients from a pool of around 1800 applications. Grants for individuals range from \$2,000 to \$25,000; grants for organizations range from \$3,000 to \$286,000. Grants are awarded to support "the creation and performance of music, with an emphasis on assisting the growth of American music and musicians."²³⁴ Examples of such grants include funding for a summer music festival, assisting an orchestra to include contemporary and American works in its repertoire, supporting a fellowship to compose a work for string orchestra and chorus, and supporting regional touring jazz clinics.²³⁵

2. Visual Arts

The Visual Arts Program awards grants to "individuals of exceptional talent working in a wide range of styles and media," including painting, sculpture, photography, crafts, printmaking, drawing, artists books, video, performance art, conceptual art, and new genres. Awards to organizations are intended to "encourage individual visual artists' development and experimentation." The Program also supports "dialogue between visual artists and the public."²³⁶ The Program awards about \$6 million in relatively small fellowships and grants. Individual fellowships and grants are awarded at

²³⁰National Endowment for the Arts, *Facts about the Arts Endowment* (1990).

²³¹NEA Guide, *supra* note 225, at 3.

²³²The Independent Commission on the National Endowment for the Arts, *A Report to Congress on the National Endowment for the Arts* 24 (1990).

²³³CDFA at 746.

²³⁴NEA Guide, *supra* note 225, at 35.

²³⁵CFDA at 747.

²³⁶NEA Guide, *supra* note 225, at 53.

levels of either \$15,000 or \$20,000, and organization matching grants range from \$5000 to \$50,000. Out of about 5500 applicants, the Program makes approximately 450 awards, a success rate of only around 8 percent.²³⁷ The Visual Arts Program is subdivided into three major categories. About \$3 million of the budget is devoted to about 200-250 individual fellowships. Less than 5 percent of the 5000 applications are funded. In the second category, NEA awards about \$2 million per year to visual artists' organizations; about one-half of the 200 applicants are funded. The third category consists of visual artist forums and art in public places. About \$700,000 is devoted to funding about 60 grants out of around 75 applications. Around \$200,000 is left over for special projects. Examples of funded projects include: support for commissions for artists to create a permanent installation at a convention center, support for production of a series of videotapes on fine art lithography, and support for a series of lectures on art practice and critical writing by visual arts professionals from diverse professional and cultural backgrounds²³⁸ Other, more notorious, examples of projects funded by the Visual Arts Program, such as the Mapplethorpe and Serrano exhibitions, will be discussed in more detail in this Part.

3. Challenge Grants

The Challenge Program was created to advance the arts over the long-term and thereby to complement the work of the other programs by "offering major one-time grants for activities that look beyond current needs and programming." The overall goal of stimulating long-term public and private investment in the arts is accomplished by requiring that grants be matched on at least a three-to-one basis. Challenge III grants are intended to assist institutions (including arts institutions, State and local arts agencies, regional organizations and others) to undertake new or substantially augmented projects that meet one or more of the following objectives:

- 1) Artistry: to assist nationally significant artistic achievement of the highest quality in one or more of the art forms;
- 2) Access: to assist improved and broader access to the arts of quality;
- 3) Appreciation: to assist deeper and broader education in and appreciation of the arts of the highest quality;
- 4) Nonfederal support: to assist nonfederal public and private support systems for the arts to address any, or a combination of, the above objectives.

During its earlier history (Challenge I and Challenge II), the Program attempted to increase the financial stability of existing arts institutions. Challenge III has the more ambitious objective of supporting "projects designed to have a lasting impact that can help move the Nation forward in achieving excellence in the arts, access to, and/or appreciation of such excellence."²³⁹

Like the SBIR Programs in the scientific agencies, Challenge III awards have two phases. During the first phase, NEA supports up to 50 arts organizations for an intensive one-year planning process during which NEA provides financial and technical assistance in drafting a long-range plan. Organizations that complete Phase I may apply for large grants to help implement the strategies identified in the long-range plans. With a budget of about \$18 million, the Program supports about 25 out of 120 applications with grants that range from \$50,000 to \$1,000,000 apiece and average around \$400,000.²⁴⁰ One example of a funded project is a \$300,000 Challenge III Grant to the New England Foundation for the Arts to increase support for and provide access to outstanding talent in

²³⁷CFDA at 750-51.

²³⁸CFDA at 751.

²³⁹NEA Guide, *supra* note 225, at 63; CFDA at 754.

²⁴⁰CFDA at 755.

contemporary and folk arts through the creation of two new presenter networks: the Contemporary Arts Network and the Traditional Arts Network.²⁴¹

B. Criteria for Awarding Grants

The agency's statute provides some broad criteria for awarding grants. Grants are to be made to individuals "of exceptional talent engaged in or concerned with the arts" for the purpose of supporting projects and productions with "substantial national or international artistic and cultural significance," and that meet "professional standards or standards of authenticity or tradition, irrespective of origin, which are of significant merit and which, without such assistance, would otherwise be unavailable"²⁴² In awarding grants, the agency is to give emphasis to "American creativity and cultural diversity and to the maintenance and encouragement of professional excellence."²⁴³

Grants in the Music and Visual Arts Programs are made to individuals and nonprofit organizations on the basis of three broad criteria: artistic quality, the project's merit, and the applicant's capacity to accomplish the project. The criteria for awarding Challenge III grants include the above criteria plus "fundraising capability, impact, readiness, and ability to sustain performance."²⁴⁴ Each funding category within each Program has its own detailed "review criteria" that are articulated in annual application guidelines. Although there is a good deal of variance across the categories within a Program, there are also many similarities. For example, the criteria in the Music Program for the "Choruses" category are first, and most importantly, "[t]he quality of the chorus' performance as demonstrated by the sample cassette" that must be submitted with the application. For those applicants that pass this review, the reviewers consider:

- Quality of repertory and commitment to American works.
- Merit of the project and the applicant's ability to accomplish the project.
- Quality of management (including fiscal responsibility and evidence of earned and contributed income where appropriate).
- Educational outreach activities and efforts to involve minorities and special constituencies in regard to audiences, artists, and repertory.²⁴⁵

The criteria for "Visual Artists Organizations" in the Visual Arts Program are:

- Quality of artists' work as demonstrated by visual documentation of recent and proposed programs.
- Quality, innovation, and timeliness of current and proposed activities.
- Evidence that visual artists have an integral role in policy development and programming.

²⁴¹CFDA at 755.

²⁴²45 U.S.C. §954(c)(1), (2).

²⁴³45 U.S.C. §954(c)(1).

In making grants, the chairman, with the advice of the grant advisory panels and the National Council was to consider, among other factors, artistic and cultural significance, standards of professional excellence, and the development of appreciation and enjoyment of the arts by citizens. Congress has also, over time, added other considerations, such as reaching and reflecting the culture of minority, inner city, rural or tribal communities.

The Independent Commission on the National Endowment for the Arts, *supra* note 232.

²⁴⁴CFDA at 755.

²⁴⁵National Endowment for the Arts, Music Ensembles Application Guidelines FY 1991 19 (1990).

- Commitment to payment of professional fees to visual artists.
- Evidence of due consideration of women and individuals of racially and culturally diverse communities.
- Appropriateness and adequacy of facilities and equipment.
- Constituency and community served.
- Evidence of applicant's ability to administer the project, including organizational stability and appropriateness of budget for the proposed activities.
- Evidence of sound management, planning, and development policies.²⁴⁶

Consistent with the greater resources at stake, the review criteria for Challenge III grants are even more detailed and fall under four general headings, each of which contains several subheadings. The general criteria and some of the subheadings are:

Criterion # 1 Quality of the project

A. Artistry: The project's potential for achieving the highest artistic quality of national significance and lasting impact on the art form or excellence in it.

B. Access: The project's potential to develop improved and broadened access, on a long-term basis, to the arts of quality.

C. Appreciation: The project's potential, on a long-term basis for developing deeper and broader education in and appreciation of the arts of highest quality and of cultural significance.

D. Support Systems for the Arts: The project's potential, on a long-term basis, to assist non-Federal support systems (e.g., subgranting, technical assistance) to address any one or a combination of objectives A through C.

Criterion # 2 Ability to complete the project successfully

Criterion # 3 Ability to meet the match [reference to matching grants requirement]

Criterion # 4 Where appropriate, indications that the project can be sustained in the future without Federal support

The foregoing criteria suggest that management ability plays as large a role in Challenge Grants as artistic ability.²⁴⁷

C. Procedures for Awarding Grants

The discretionary grant award process at NEA is very similar to that of NIH, upon which it is modeled.²⁴⁸ As in NIH, an NEA grant application goes through a "dual review" in one of more than 90 review panels and in the National Council on the Arts. Prior to submitting an application, a prospective applicant may telephone or meet with an agency staffer (called a Program Specialist) to discuss the proposed project and obtain feedback on how best to formulate the proposal.²⁴⁹ When an application arrives at NEA, it is "logged in," a process in which basic information from the

²⁴⁶National Endowment for the Arts, Application Guidelines FY 1991 8 (1990).

²⁴⁷One high level official in the Challenge Grant Program suggested: "If an organization is terrific at art but not well managed, then it won't be funded."

²⁴⁸The following discussion of the procedures in place in NEA draws on two primary sources. National Endowment for the Arts, Summary of Steps in the Current Application/Grant Process (manuscript April 3, 1990) [hereinafter cited as NEA Summary]; National Endowment for the Arts, Panel Study Report (1987) [hereinafter cited as Panel Study Report].

²⁴⁹According to one NEA official; "We do a good bit of handholding - the applicants can come in and get help."

application is entered into a computer and an application number assigned. Applications are then forwarded to the appropriate Program Office.²⁵⁰ For applications for which site visits are required, the Program Office selects outside experts to conduct the site visit (e.g., attending live performances, observing facilities, visiting with applicants, etc.) and report back to the staff.²⁵¹ Most applications, however, can be evaluated on the basis of other "artistic evidence," such as manuscripts, slides, and tapes.

When all of the evidence is available, it is forwarded to the relevant Advisory Panel or Panel section.²⁵² Every major NEA Program has a Panel, and some are so large that their Panels are broken down into Panel sections.²⁵³ Each Panel or Panel section is composed of from five to fifteen members appointed by the Chairman of NEA (usually with heavy reliance on the Program Directors) on the basis of "expertise, aesthetic diversity, geographic dispersion, ethnic and gender representativeness, ability to serve, etc."²⁵⁴ Panels are assembled from long lists of nominees from the council, staff, current panel members, national artist associations, the general public, and the White House.²⁵⁵ The agency attempts to assemble panels that "include wide diversity on many levels appropriate to each program: different artistic and programmatic viewpoints; expertise in different aspects of the art form/field (different types of creative and performing artists, arts administrators, trustees, critics, educators, large and small organizations, traditional and experimental work, etc.); experience with the field in different parts of the country, different ethnic and cultural backgrounds, and a reasonable balance of men and women."²⁵⁶ Virtually all panels include representatives from a State or Local Arts Agency or regional arts organization. As mandated by 1990 amendments to the agency's statute, panels always include a member of the lay public with no particular expertise in any of the artistic areas covered by the panel.²⁵⁷

The peer review panel system that the NEA developed very early in its history "marked the triumph of professional judgment over political patronage."²⁵⁸ All potential panel members "are carefully evaluated on their professional standing as well as their ability to articulate issues confronting their field and their willingness to make the necessary commitment of time and energy to prepare for and to attend panel meetings."²⁵⁹ In addition, "[w]hile no panel section is large enough to accommodate representatives of every conceivable aesthetic viewpoint, care is taken to ensure

²⁵⁰Program Offices are often subdivided into several "areas." Each area usually has a Program Director, an Assistant Program Director, and one or more Program Specialists. Each Program Specialist is responsible for several subcategories of applications. The staff's role is supposed to be purely ministerial; staffers are not to become involved in substantive decisionmaking.

²⁵¹Site visits are always required for Challenge III grants, and NEA has in fact contracted with a consultant to visit applicant institutions, examine their management capabilities, and report back to NEA. The consultants prepare a 3-4 page memorandum analyzing the applicant's fundraising plans, the qualifications of its board of directors and staff, its historical strength and commitment to the future, its debt management, other aspects of its managerial abilities.

²⁵²In addition to the "grant advisory panels" that the agency assembles to review and make recommendations of individual applications, it also empanels "policy advisory panels" to provide advice on "priorities, practices, guidelines and the allocation of resources for individual programs." The Independent Commission on the National Endowment for the Arts, *supra* note 232, at 25-26. Members of policy panels have usually already served on grant panels. *Id.*

²⁵³National Endowment for the Arts, *Arts Endowment Panels* (Mimeo, March 1990) [hereinafter cited as *Arts Endowment Panels*].

²⁵⁴NEA Summary, *supra* note 248, at 2.; The Independent Commission on the National Endowment for the Arts, *supra* note 232, at 28.

²⁵⁵Comment, "Turmoil at the National Endowment For the Arts: Can Federally Funded Art Survive the 'Mapplethorpe Controversy'?", 39 Buffalo L. Rev. 231-254 (1991).

²⁵⁶*Arts Endowment Panels*, *supra* note 253, at 2. The concern for ethnic and cultural backgrounds and balance of men and women came after "the system of deference to establish professionals came under fire for perpetrating elite domination of the cultural spheres." Comment, Standards for Federal Funding of the Arts; Free Expression and Political Control, 103 Harv L. Rev 1969 (1990). In 1985, Congress directed that NEA select panelists "who broadly represent diverse characteristics in terms of aesthetic or humanistic perspective, and geographical factors, and who broadly represent cultural diversity." Page 1974. Arts, Humanities, and Museum Amendments of 1985, Pub. L. No. 99-194, §110 (f) (G), 99 Stat. 1332, 1340 (1985) (Codified at 20 USC Section 960 (A) 1988).

²⁵⁷See text accompanying note 363, *infra*.

²⁵⁸Comment, *supra* note 256, at 1974. See also Comment, *supra* note 255, at 254.

²⁵⁹Panel Study Report, *supra* note 248, at 13.

diversity of opinion."²⁶⁰ New Panels are reconstituted each year. Turnover rates vary from one-third to 100 percent per year.²⁶¹ No panel member may serve for more than three consecutive years.²⁶² In all, about 800 people serve on NEA panels each year.²⁶³

The Program Office staff sends a "Panel book," containing a detailed summary of each application, the grant history of the applicant at NEA, and a brief discussion of any problems that the staff has identified, to each member of the relevant Panel or Panel section two to four weeks in advance of the Panel meeting.²⁶⁴ The Panel meets in Washington, D.C. for from one to six days, depending upon the workload.²⁶⁵ Panelists review all of the applications assigned to the Panel with reference to the review criteria published each year in the Program's guidelines. Some Panels divide up the work by assigning each member the role of "primary reviewer" for 10-15 applications. Other panels do not divide up the work. One NEA staffer related that his program tried the "primary reviewer" approach, but abandoned it after discovering that the remaining panelists did very little to familiarize themselves with the applications.

Panel meetings are taped and the staff always takes notes. The object of the meeting is to make a recommendation to accept or reject each application and to recommend funding amounts for those that are recommended for acceptance. Although each Panel evolves its own procedures for carrying out these evaluations, Panel meetings typically progress in five phases: "(1) presentation of material, (2) discussion of applications, (3) formulation and recording of panel judgments, (4) determination of recommended grant amounts, and (5) final review and adjustment of recommendations."²⁶⁶ In some programs, panelists are provided with ballots broken down in accordance with the review criteria, and panelists are asked to grade each proposal on a scale of 1-10 or 1-100 for each review criterion. The agency staffer responsible for averaging the scores can identify any "outliers" in which vote spreads are very large and ask the Panel to discuss those applications in more detail. The Panel then proceeds down the list of applications in rank order and assigns a funding amount to each application until its monetary resources are exhausted.

The Director or Assistant Director for the relevant Program attends the meetings to ensure that the results are determined solely on the basis of the published criteria, that conflicts of interest are dealt with appropriately, and that the deliberations are carried out in an atmosphere of fairness. The Program Directors can deal with cases of apparent bias subtly during the meetings, or they can raise their concerns privately with the NEA Chairman after the meeting. Program Directors attempt to avoid becoming involved in substantive discussions, because they want to avoid the perception that government employees are interfering with the peer review process. According to one Assistant Program Director: "It is vital that we are perceived to be dealing with the field in an objective fashion and that all recommendations be made by the panels."

After the Panel meetings,²⁶⁷ the Program Director and staff meet with the Deputy Chairman for Programs to review panel recommendations that were particularly controversial or raised special

²⁶⁰Panel Study Report, *supra* note 248, at 13. The Independent Commission on the National Endowment for the Arts, *supra* note 232, at 27. ("Expert knowledge, dedication to the arts, aesthetic diversity, geographic distribution, ethnic and gender representation, ability to serve and to articulate issues in the field are all taken into consideration in this process.")

²⁶¹For some Programs, a 100 percent turnover rate is important for preserving the appearance as well as the reality of objectivity. For example, in the Visual Arts Program, the Panel considering applications for individual fellowships is completely replaced every year.

²⁶²45 U.S.C. §959(c)(6).

²⁶³Facts about the Art Endowment. In 1989, nearly 800 persons served on the 103 panels that NEA convened. The Independent Commission on the National Endowment for the Arts, *supra* note 232, at 25-26.

²⁶⁴Most of the larger programs use more than one Panel. For example, the Music Program uses thirteen Panels. Panel Study Report, *supra* note 248, at 11. A few Panels serve more than one Program. *Id.*

²⁶⁵The Independent Commission on the National Endowment for the Arts, *supra* note 282, at 30.

²⁶⁶Panel Study Report, *supra* note 248, at 21; The Independent Commission on the National Endowment for the Arts, *supra* note 282, at 30.

²⁶⁷Because the Challenge Grants Program cuts across all substantive program areas, it conducts a second review by a "super panel" made up of panelists from the 14 original screening panels to place the projects from all 14 panels in rank order and recommend funding levels.

policy concerns, any significant trends observed, and any issues that might cut across two or more Programs.²⁶⁸ The Chairman may ask to review particular files, and he occasionally convenes additional meetings with the staff to discuss particular applications or issues. When the staff or the Chairman believes that a panel has made a mistake, the panel can be called back to Washington for an additional meeting, but this happens only very rarely. The Chairman rarely reverses a panel outright. As a practical matter, the "advisory panels, through their recommendations, have come to be the determining element in the grant making process."²⁶⁹

The next step in the process is review by the National Council on the Arts. After being sued by two newspapers under the Federal Advisory Committee Act, the agency decided in 1990 to open all Council meetings to the public. Prior to the Council's quarterly meetings, the staff prepares a book for each Council member containing summaries of the applications that were recommended for approval and other materials regarding the panel discussions. These books are not made available to rejected applicants or to the general public. Lists of rejected applications are generally included in the books. Council members may review one or more of the applications if they desire, but they rarely see more than the staff-prepared summaries. The Council usually votes on the recommendations of a panel in a block and only very rarely singles out individual applications for separate votes.²⁷⁰

After the Council meeting, the applications go to the Chairman for final action. The Chairman usually follows the Council recommendations, which in turn are usually based upon the Panel recommendations. The 1990 Amendments to the agency's statute prevent the Chairman from overruling the Council's recommendation not to fund an application.²⁷¹ On occasion, the staff will urge the Chairman to overrule the Council when the Council departs from the recommendation of the panel for reasons that the staff deems to be inappropriate.²⁷² Although the Council is informed of the Chairman's action on each application, the Chairman is not required to provide any explanations. Some Chairmen are very careful to prepare detailed justifications couched in the language of the published criteria. Others provide little, if any, justification for rejecting Council recommendations. The Program officers then prepare acceptance or rejection letters for the applicants. Rejection letters are usually form letters containing only general information and the applicant's score, but occasionally they are more personalized.

NEA's publicly available materials are vague as to how the agency fulfills its Privacy Act obligations. Disappointed applicants may request and receive "information about the panel review of their applications" by calling or writing the Program, but the agency's regulations and guidelines do not say whether the information available to applicants includes any minutes of Panel or Advisory Council meetings or any summaries of any individual peer reviews.²⁷³ It rather clearly does not include a copy of the transcript of the tape recording of the meeting. The Endowment's regulations on information availability speak only to procedural issues,²⁷⁴ and agency practice varies widely. Some Program staffers are willing to discuss the contents of Panel meetings in some detail over the telephone with rejected applicants; others prepare summary statements from staff notes and meeting transcripts; and still others do not undertake to interpret the results but let the scores speak for

²⁶⁸Panel Study Report, *supra* note 248, at 23. For example, on one occasion, the Director of the Visual Arts Program disagreed with a panel recommendation that a choreography group be funded because the Director believed that the particular project did not come within the domain of visual arts. The Program Director there recommended disapproval of the proposal, and the Chairman agreed.

²⁶⁹The Independent Commission on the National Endowment for the Arts, *supra* note 232.

²⁷⁰*Id.* at 30-31 (1990).

²⁷¹20 U.S.C. §955(f).

²⁷²For example, one member of the Council is firmly committed to the proposition that NEA should not fund criticism in any form, despite the fact that nothing in its charter prevents funding such projects. On one occasion, the staff urged the Chairman to overrule the Council's decision to reject two grants related to arts criticism that had been recommended by the respective panels. After the 1990 Amendments to the agency's statute, the Chairman is no longer empowered to overrule a recommendation not to fund a particular project. See note 271, *supra*.

²⁷³45 C.F.R. §1115.

²⁷⁴45 C.F.R. pt. 1100.

themselves. Disappointed applicants may request that the General Counsel correct a record, including presumably errors on a written evaluation. If the General Counsel agrees with the program office that the request should be denied, the matter is referred to the Deputy Chairman for resolution. If the Deputy Chairman agrees, then a letter is sent to the applicant informing him or her of the decision and the reasons therefore. The applicant may then request an informal hearing before the Chairman or Assistant Chairman.²⁷⁵

Reacting to charges that panelists were frequently participating in deliberations on applications from institutions that employed them, Congress in 1990 amended the agency's statute to prohibit individuals who are employees or agents of an organization with an application pending from serving on a panel considering that application.²⁷⁶ The Arts Endowment has amended its "Standards of Conduct for Council Members and Arts Endowment Panelists" to reflect this stricter conflict of interest requirement.²⁷⁷ The standards also address some additional aspects of bias in application review. The standards are "designed to avoid situations which may compromise, or appear to compromise, their objectivity while not preventing their continuing involvement in the arts."²⁷⁸

The standards contain a general direction to every Council member and panelist "to avoid any action which is, or could be interpreted as, a use of Council membership or panel service to further his or her own interests or those of an organization which he or she is affiliated."²⁷⁹ Council members may not submit an application on behalf of themselves or sign an application on behalf of an organization with which they are affiliated, and they may not participate in any way in a decision involving an application from an organization that employs them or with which they are affiliated. Panelists may not submit an application on behalf of themselves or through a fiscal agent or as a collaborator or on behalf of an organization that employs them or for which they are an agent if the application will be evaluated by the subpanel (or Panel, if it is not divided into subpanel) on which they serve.²⁸⁰

The regulations provide that Council members may not participate in the review of an application from an organization with which they are affiliated, and they must "avoid affecting or appearing to affect the decisionmaking process in any way."²⁸¹ If Council members or organizations with which they are affiliated are recommended for funding by a panel, they may not participate in the review of the application. The Council member must physically leave the room during the consideration of such proposals. Panelists may not serve on a panel reviewing an application for an organization that employs them or for which they act as an agent.²⁸² All communications with the Arts Endowment concerning an application or grant must be carried out by personnel who are not Council members or panelists.²⁸³

Council members and panelists may receive remuneration for participation in funded activities, but only if the Council and the Endowment staff know the approximate amount of the remuneration prior to acting on the application. Of course, they may not participate in the consideration of such applications.²⁸⁴ The propriety of receiving remuneration depends on "the nature of the organization,

²⁷⁵45 C.F.R. §1115.5.

²⁷⁶20 U.S.C. §951 et seq. Prior to 1990, the statute prohibited a panelist from submitting an application to his or her panel, but did not speak to organizations with which the panelist was affiliated.

²⁷⁷Memorandum to Members, National Council on the Arts and Arts Endowment Panelists from Amy Sabrin, General Counsel, on "Standards of Conduct for Council Members and Arts Endowment Panelists, dated September 18, 1991 [hereinafter cited as NEA Standards of Conduct].

²⁷⁸NEA Standards of Conduct *supra* note 277, at 2.

²⁷⁹*Id.*

²⁸⁰*Id.* at 3.

²⁸¹*Id.* at 4.

²⁸²*Id.*

²⁸³*Id.* at 3.

²⁸⁴*Id.* at 4.

the amount of Endowment funding in relation to the total budget of the organization, and other relevant factors."²⁸⁵

Council members and panelists may not make use of confidential information acquired as a result of their service "in any manner which would advance their financial interests."²⁸⁶ This prohibition, however, is not intended to prevent Council members and panelists from supporting artistic endeavors with which they become acquainted during their service.²⁸⁷

To aid in the enforcement of these conflict of interest prohibitions, the Standards of Conduct require Council members and panelists to provide timely reports to the Endowment concerning their employment or interests (financial or otherwise) in organizations eligible to receive NEA money. Possible conflicts of interest are also discussed at the beginning of every Council meeting and Panel session.

The Standards of Conduct speak directly to the touchy issue of animus. They provide that when a Council member or panelist or an organization with which he or she is associated is in the midst of an adversarial economic relationship with an applicant, the member or panelist must leave the meeting during which the application is being considered. The Standards of Conduct do not elaborate on the novel concept of adversarial economic relationship. For example, they do not address the question whether being the beneficiary of a competing application constitutes such a relationship. The Standards of Conduct are careful to provide that Council members and panelists may advocate general policies for adoption by the Council, even though the policies might have an adverse impact on competitors, so long as the policies would be implemented in a general way to all applicants.²⁸⁸

NEA has a formal appeals process whereby a program specialist or other agency staffer, but not a rejected applicant, can obtain a reconsideration of a rejected application.²⁸⁹ Within 30 days following a decision not to fund, a Program specialist or other "authorizing official" in one of the programs may request an explanation for the decision not to fund from the relevant Program Director. The Program Director must then provide the requester with an explanation together with "the substance of the advisory panel review comments." The requester must be given an opportunity to "present his or her point of view."²⁹⁰

Beyond this strictly internal review for which the rejected applicant must have a "sponsor" within the agency, a rejected applicant may request reconsideration solely on the following procedural grounds: (1) the panel relied on criteria outside of those listed in the published guidelines; (2) the application was declined "based on influence on advisory panel [sic] of member(s) with undisclosed conflict of interest"; or (3) the application was declined "based on information provided to the advisory panel by staff or panelists that was materially inaccurate or incomplete at the time of review despite the fact that the applicant had provided the Endowment staff with accurate and complete information as part of the regular application process." This process may only be invoked, however, if a program specialist or other authorizing official has sought and received an explanation from the Program Director.²⁹¹ After consulting with the Chairman, the appropriate Deputy Chairman must then reconsider the action and within 45 days provide a written summary of the results of his

²⁸⁵*Id.*

²⁸⁶*Id.* at 9.

²⁸⁷*Id.* at 5.

²⁸⁸*Id.*

²⁸⁹National Foundation on the Arts and the Humanities, Federal Assistance: Reconsideration of Declined Applications, 61 Fed. Reg. 13118 (1983) [hereinafter cited as Reconsideration Regulations]. The statute does not explicitly provide for appeals from denials of grants. Comment, The National Endowment for the Arts: A Search for an Equitable Grant Making Process, 74 Georgetown Law Journal 1491, 1545 (1986).

²⁹⁰Reconsideration Regulations, *supra* note 289, at 13118.

²⁹¹*Id.*

reconsideration. The Deputy may request that surveys or site visits be conducted with respect to applicant organizations requesting reconsideration.²⁹²

From the foregoing description it is clear that while reconsideration is a possibility, it is not within the control of the rejected applicant. If the applicant does not have a sympathetic sponsor within the agency willing to "go to bat" for the project, the opportunity for reconsideration is effectively lost. The agency makes it clear, however, that a new application is welcome in the next funding cycle.

D. The Process in Operation

The extensive peer review-based system at NEA is intended to assume the principal burden of making qualitative judgments on the merits of proposals while at the same time assuring that "Federal assistance does not lead to government dominance or control in the sensitive area of aesthetics, artistic expression, and creativity."²⁹³ The concern for avoiding undue governmental influence on the content of artistic work distinguishes NEA from NIH, NSF, EPA and other scientific funding agencies. In the scientific agencies, there is a general reluctance to allow the government to tell a scientist how to practice science, but the funding agencies have a responsibility to steer research in directions relevant to their missions. In the arts, attempts to steer grantees in particular directions may be construed as government dominance of expression or creativity. Although there are always disputes at the margins between mavericks and adherents to the dominant paradigm, there are generally agreed upon criteria for "good science" in most fields, and the peer review committees are not at all unwilling to downgrade a proposal that does not manifest good science. The distinction between "good art" and "bad art" is much more elusive, and judgments about the quality of the subject matter of a proposal can easily be interpreted as attempts to steer artistic expression in particular directions. Past NEA Administrators have assiduously attempted to avoid invoking the specter of a "cultural ministry" through which the state determines what art and music the public should and should not enjoy.

1. Peer Review Under Fire

Throughout most of its history, NEA's heavy reliance on peer review panels to guide discretionary dollars to promising artists and musicians has shielded the agency from attack by disappointed applicants and irritated taxpayers.²⁹⁴ As recently as 1981, a White House Task Force on the Arts and the Humanities, appointed by President Reagan and chaired by actor Charlton Heston praised NEA's peer review system as an "achievement" of "ongoing and widely accepted effectiveness."²⁹⁵ In recent years, however, NEA's funding decisions have come under intense public scrutiny. Most of the controversy has involved the substantive outcome of the process—critics do not agree with the agency's funding decisions. Some of these criticisms, however, have been directed to the peer review process itself.

The Serrano/Mapplethorpe Controversy and the Helms Amendment—Since its inception NEA has been criticized for funding "frivolous" projects that, in the critics' opinions, wasted taxpayer money. Early in its history, NEA won Senator Proxmire's infamous "golden fleece" award for a \$6000 grant to film the descent from an airplane of a four-mile-long piece of crepe paper.²⁹⁶ But these criticisms

²⁹²Id.

²⁹³Arts Endowment Panels, *supra* note 253, at 2. See Comment, *supra* note 256, at 1972 ("the drafters and early officials turn to professionalism - deference to the judgment of acknowledged art supporters and professional artists and organizations - to serve the goals of both depoliticization and excellence.")

²⁹⁴Grace Glueck, A Federal Benefactor of the Arts Come of Age, *New York Times*, Nov. 10, 1985, sec. 2, p. 1, col. 1 (recounting NEA's successful defense against attacks by a Texas Congressman for supporting allegedly pornographic poetry); McLellan, *supra* note 8 (recounting several failed external attacks on NEA in response to individual funding decisions and quoting the Chairman of NEA to the effect that the peer review system protects him from political pressure).

²⁹⁵Report Alleges NEA Rivalry, *Washington Post*, August 3, 1981, C1.

²⁹⁶Lanquette, *supra* note 226.

were generally considered par for the course for an agency that sometimes took risks in the pursuit of creativity. As with the scientific agencies, which have also received their share of such awards, these attacks were sufficiently few and far between that they posed no real threat to the agency's routine operations.

The recent controversies over NEA's funding of allegedly obscene and indecent art have, by contrast, shaken the agency to the core. In 1988, a leaderless NEA provided funds to the Institution of Contemporary Art of Philadelphia to display an exhibit of the photographs of the recently deceased artist Robert Mapplethorpe.²⁹⁷ Although the vast majority of the photographs were entirely unobjectionable, one part of the exhibit was a series of small photographs, entitled the "x, y, z series," that contained graphic representations of homosexual sexual conduct and sado-masochism.²⁹⁸ At roughly the same time, NEA also funded an exhibition at the Southeastern Center for Contemporary Art in Winston-Salem, North Carolina of photographs by Andres Serrano that included the soon-to-be-infamous "Piss Christ" photograph that featured a crucifix immersed in a jar of the photographer's urine.²⁹⁹ The predictable public outcry against the use of taxpayers' money to support such projects starkly raised the issue of NEA's political accountability and especially the accountability of its peer review panels.³⁰⁰

At the behest of Senator Jesse Helms, the Senate Appropriations Committee in January 1989 voted to prevent NEA from providing any appropriated funds to the offending institutions for a period of five years.³⁰¹ The full Senate, without debate, substituted an appropriations rider, later known as the "Helms Amendment," that prohibited NEA from funding art that would "promote, disseminate, or produce obscene or indecent materials, including but not limited to depictions of sado-masochism, homoeroticism, the exploitation of children, or individuals engaged in sex acts; or material which denigrates the objects or beliefs of the adherents of a particular religion or non-religion."³⁰² This precipitated a pitched battle between arts supporters and NEA critics in the Senate and House, the ultimate outcome of which was a watered down version of the Helms Amendment that prevented NEA from funding art that "may be considered obscene . . . and which, when taken as a

²⁹⁷See [no author], *Chronology of a Controversy*, *The Christian Science Monitor*, July 31, 1990, p. 10.

²⁹⁸For a more detailed description of the Mapplethorpe controversy, see Owen M. Fiss, "State Activism and State Censorship," 100 *Yale L. J.* 2087 (1991) (characterizing the Mapplethorpe exhibit as "a considerable achievement," presenting "an aesthetic vision that is original and in many respects stunning"); Comment, *supra* note 255.

When the Mapplethorpe exhibit was moved to the Contemporary Art Center in Cincinnati, the Center was indicted by a local grand jury. A jury later found the defendants not guilty. See Comment, *supra* note 255, at 241-43.

²⁹⁹For a more detailed description of Serrano's work, see Jeff Lyon, *Point Man*, *Chicago Tribune*, Jan. 27, 1991, *Sunday Magazine*, p. 12. Soon to follow was Serrano's "Piss Pope" and similar denouncements of prominent authority figures. Apparently, Serrano's particular talent is the art of bodily fluids. According to Tony Jones, the President of Chicago's School of Art Institute, Serrano "is commenting on his relationship with the Catholic church and Catholic teaching, and the fluids are to capture the idea of transubstantiation." Lyon, *supra*.

³⁰⁰Congressman Fred Grandy, a former television actor and a supporter of NEA observed: "It's an argument of perception, and you have a lot of people squandering money. I've been telling the artists that they need to come with something that gives the impression of accountability." Richard Bernstein, *The Outlook on Arts: Grants*, *New York Times*, June 26, 1990, sec. C, p. 13, col. 4.

³⁰¹Barbara Gamarekian, *Senate Panel Asks Ban on Grants to Two Arts Groups*, *New York Times*, Jan. 26, 1989, sec. C, p. 19, col. 1. NEA's acting director protested the action, calling it "a dangerous precedent which goes against the long and widely respected system of Federal Support for the Arts through a competitive peer-review process." *Id.*

Ted Potter, the Executive Director for the Southeastern Center for Contemporary Art, complained that his institution was "being punished for doing exactly what are supposed to do: challenge the public to see, think, and discuss critical issues of our culture and society. The role of contemporary arts and the institutions that foster it is to take risks and confront the established dogmas with innovative insights and to offer challenging exhibitions and experiences." *supra* at sec. C, p. 19, col. 1.

³⁰²Comment, *supra* note 255, at 235-39. (describing the process of enacting the Helms Amendment); Michael Oreskes, *Senate Votes to Bar U.S. Support of "Obscene or Indecent" Artwork*, *New York Times*, July 27, 1989, sec. A, p. 1, col. 2.

In some respects, the amendment harked back to an earlier failed attempt by Congressman Biaggi to prohibiting NEA funding of any productions containing "any ethnic or racially offensive material" after the Italian-American community was insulted by an NEA funded modernization of the opera *Rigoletto*. See Comment, *supra* note 289.

whole, does not have serious literary, artistic, political or scientific value."³⁰³ Reacting to the strong political statement contained in the Helms Amendment, NEA Chairman John Frohnmeyer administratively added to grant application forms a "certification" through which grant recipients agreed not to produce "obscene" art with NEA money.³⁰⁴

Senator Helms' efforts inspired other critics of NEA to air their complaints about conflict of interest on the part of members of NEA peer review panels. A study conducted by the *Washington Times* purported to show that at least 130 of approximately 730 peer panelists who assisted NEA in 1988 sat on panels that recommended grants to their own organizations. The survey also reported that "[i]n several cases, . . . grant reviewers were named as principal beneficiary of federal grant awards by their own panels."³⁰⁵ An NEA attorney admitted that it was not unusual for a panelist to sit on a panel that reviewed an application from an institution employing that panelist. NEA regulations at the time allowed this, so long as the panelist left the room during the deliberations on his or her institution's application. One NEA critic was unimpressed with this solution to the conflict of interest problem, arguing that:

It is simply insufficient to say 'I'll leave the room (for debate on my grant)'
 "Your buddies are back there. The NEA knows before they set up the panels whether a person . . . is putting a grant proposal. This looks to me like more than seeming impropriety. This looks like impropriety itself."³⁰⁶

Another NEA critic observed:

The very least that can be said of the system is that it was very much a buddy system. You give me a grant, I give you a grant, that sort of thing. Among professionals, they joke a great deal among themselves about how it works.³⁰⁷

Supporters of publicly funded arts and music responded with a vigorous defense of the peer review process³⁰⁸ and launched a full-scale offensive against broad-brushed government "censorship" that the Helms Amendment allegedly represented.³⁰⁹ Some scholars took the position that such content-based restrictions on government-funded

³⁰³Department of the Interior and Related Agencies Appropriation Act of 1990 Pub. L. No. 101-121, Tit. III, § 304, 1989 US Code Cong. & Admin. News (103 Stat.) 701, 741-42.

³⁰⁴See Owen M. Fiss, *supra* note 298. Comment, *supra* note 255, at 239.

³⁰⁵George Archibald, NEA Review Panelists Run Grant-Giving "Buddy System, *Washington Times*, Aug. 3, 1990, p. A1.

³⁰⁶Allan Paracini, Conflict of Interest Issue in NEA Grants? *Los Angeles Times*, July 27, 1990, pt. F, p. 1, col. 5 (quoting Professor John Agresto, of Santa Fe College).

³⁰⁷Archibald, *supra* note 305 (quoting Mr. Hilton Kramer). Kramer also suggested that the peer-review system was "a corrupt way to make decisions about the best way to spend the agency's money," and that it had "degenerated into a sort of political club in which certain insiders knew well in advance where the money would be going." Jonathan Yardley, In Conclusion, Reason But No Reason D'Eire, *Washington Post*, Sept. 17, 1990, B2.

³⁰⁸In a letter to the editor of the *New York Times*, Harvey Lichtenstein, President and Executive Director of the Brooklyn Academy of Music, gave the following defense of peer review at NEA:

[T]he [peer review] system has worked superbly for almost 25 years of grant making by NEA I have found that the process of considering grant requests by the NEA panels and program directors impressively fair, [and] they have functioned with integrity and generosity of spirit. There has never been a hint of financial scandal or mismanagement, and the range of grants has cut through every ideological boundary.

Harvey Lichtenstein, Where Are We Heading? *New York Times*, July 30, 1989, sec. 2, p. 33, col. 5. See also Editorial, The Helms Process, *New York Times*, July 28, 1989, sec. A, p. 26, col. 1 ("So far, Congress has wisely relied on a peer-review process by which members of the arts community pass on grant applications in their respective fields. Now Senator Helms & Co. insist on what could be called the Congress-as-connoisseur process.").

³⁰⁹John Farrell and Max Benavidez, Let the Arts be Unfettered by Politics of the Moment, *Los Angeles Times*, Aug. 7, 1989, pt. 2, p. 5, col. 1 (characterizing the Helms Amendment as "the most serious and radical assault on freedom of expression to occur in this country since the days of Joe McCarthy and 'black list.'"); Editorial, The Helms Process, *supra* note 308 (arguing that the Helms Amendment

art was unconstitutional under a variation of the doctrine of "unconstitutional conditions."³¹⁰ Even those who did not contend that restrictions on government funding amounted to censorship complained that the Helms Amendment, which had been enacted without congressional debate,³¹¹ represented bad public policy.³¹²

Chairman Frohnmeyer's "certification" requirement, which was likened to a loyalty oath, outraged many grantees,³¹³ precipitated discord within the agency, and generated a rare recommendation from the National Advisory Council on the Arts that it be revoked.³¹⁴ It was eliminated after a federal district court, on January 9, 1991, held that it was unconstitutionally vague and had a unconstitutional chilling effect on the first amendment rights of grant recipients.³¹⁵

The "NEA Four"—Until fairly recently, NEA Chairpersons only very rarely overturned the recommendations of the review panels. Livingston Biddle, NEA Chairman during the Carter Administration, could not recall a single instance in which he overturned a panel recommendation that a project be funded.³¹⁶ President Reagan's first NEA Chairman, Frank Hodsell, adopted a somewhat more proactive role, rejecting twenty applications recommended by review panels within a two year period.³¹⁷ Nearly all of these rejections were uncontroversial, and despite some early concerns, overtly political considerations were apparently absent from NEA funding decisions.³¹⁸ The controversy over the Mapplethorpe/Serrano exhibits and the Helms Amendment, however, subjected Hodsell's successors' actions to more intense public scrutiny.

President Bush's first appointee to head NEA was John Frohnmayer, a former college football star, amateur opera singer, and trial lawyer from Oregon who had little experience in managing large agencies or public controversy.³¹⁹ Almost immediately upon assuming office, he created a stir when he unilaterally withdrew NEA funding for an exhibit entitled "Witnesses" that focused upon the

"would plunge one aesthetic question after another into the boiling bath of politics," a prospect that was "unlikely to be good for politics" and would "surely be fatal to art").

³¹⁰See Fiss, *supra* note 298, at 2096-2102. Comment, *supra* note 256. Rorie Sherman, NEA Grant Provisos Attacked in Courts, *National Law Journal*, Nov. 5, 1990, p. 12 (quoting Professor Nan Hunter).

³¹¹Editorial, More on Arts Funding, *Washington Post*, July 30, 1989, C6 ("The Helms amendment was proposed to a near-empty chamber with little or no advanced warning, and with no examination of its implications for the existing peer-review system of awarding grants.").

³¹²See, e.g., Matthew Gilbert, Writers Blocked? New Rules for Grants Met With Trepidation, *Boston Globe*, Mar. 7, 1990, p. 1; Howard Reich, The Arts Under Assault: Why the NEA is at the Center of a Fierce Morality Play, *Chicago Tribune*, June 24, 1990, p. 4. Interestingly, none of the recipients of NEA grants immediately upon enactment of the Helms Amendment declined the funds, probably because all of them believed that their work at the very least had redeeming artistic or literary value. See William O'Rourke, Protesting NEA: National Endowment for the Arts and Jesse Helms' Obscenity Crusade, *The Nation*, June 25, 1990, vol. 250, no. 25, p. 880 ("All my depictions of sado-masochism and homo-eroticism have literary value, always have and always will.")

³¹³See Dawn Shirley, Dramatist Take Sides in NEA Fight, *Los Angeles Times*, May 17, 1990, pt. F, p. 7, col. 3 (quoting playwright Terrence McNally as saying: "I think it's better to drive a cab or wait tables than sign such a pledge."); Matthew Gilbert, Writers Blocked? New Rules for Grants Met With Trepidation, *Boston Globe*, Mar. 7, 1990, p. 1. The controversy over the certification requirement inspired the creation of a group, headed by author Larry McMurtry, the primary goal of which was "unfettered funding for the arts." *Id.*

³¹⁴The Independent Commission on the National Endowment for the Arts, *supra* note 232, at 88. Comment, *supra* note 255, at 239-40. Kim Masters, Arts Panel Urges End to Grant "Pledge," *Washington Post*, Aug. 4, 1990, p. G1.

³¹⁵*Bella Lewitzky Dance Foundation v. Frohnmayer*, 954 F. Supp. 774 (C.D. Cal. 1991). NEA eliminated the certification requirement as part of the settlement of a second lawsuit pending in New York. Fiss, *supra* note 298, at 2095 n. 25.

³¹⁶Robert Pear, Reagan's Arts Chairman Brings Subtle Changes to the Endowment, *New York Times*, April 10, 1983, sec. 2, p. 1., col. 1. Mr. Biddle took the strong position that the peer-review panels were a "bulwark of strength protecting the endowment from the whims and fancy of one person who is a federal bureaucrat."

³¹⁷*Id.* See also Grace Glueck, *supra* note 294, at sec. 2, p. 1, col. 1.

³¹⁸Grace Glueck, *supra* note 294, at sec. 2, p. 1, col. 1 (noting that NEA during the Reagan Administration funded painter Peter Saul, who was known for his vitriolic portrayals of President Reagan).

³¹⁹Rorie Sherman, Calm Presence in the Middle of Arts Battle, *National Law Journal*, July 2, 1990, p. 8.

AIDS crisis.³²⁰ At one point Frohnmayer explained that he took the action because the exhibit contained a letter from a dying AIDS victim that was harshly critical of Senator Helms, Representative Dannemeyer, and John Cardinal O'Connor, the Roman Catholic Archbishop of New York. Mr. Frohnmayer said that he took the unusual action of withdrawing funding because the exhibit was "political."³²¹ When asked how he was able to distinguish between "political" and "apolitical" art, Mr. Frohnmayer explained: "If you came to us and said, 'I want to create a political polemic,' we would not fund that. If you, on the other hand, said: 'I want to paint a "Guernica" we would fund that. And the difference is we make our decision on the artistic content."³²² While it is easy to see how this subtle distinction was lost on the peer review panel that originally recommended that the project be funded, it is harder to identify the criteria by which the agency's political appointees could draw such distinctions in the future. To make matters worse, Mr. Frohnmayer allowed that "[t]he word "political" means something quite different in Portland, Oregon, than in Washington."³²³

Perhaps unintentionally, Mr. Frohnmayer put his finger on one of the most serious problems with the application of the peer review model to the arts. Much art is in fact "political" when it makes statements, subtle or otherwise, about the allocation of political and economic power in society.³²⁴ Politics is an important and inevitable part of the culture that surrounds and is reflected by literature, the visual arts and music. Art can no more be divorced from politics than it can be divorced from any other important aspect of contemporary life. The concept of "political" cannot adequately distinguish a polemic against Jesse Helms from a "Guernica," a bust of Lenin or a painting of Washington Crossing the Delaware. It can, however, be manipulated to steer art and culture into particular political directions. And this potential for subjecting government funded art to a "political correctness" test is precisely why Congress and early NEA Chairmen created the peer panel process to make the initial funding recommendations.³²⁵

If political art is not necessarily "bad" art, however, it is unclear whether the concept of "artistic excellence" provides criteria for distinguishing the good from the bad that are any more objective and any less subject to political manipulation. Does that concept contain constraining criteria capable of preventing the professionals on the peer review panels from advancing their own hidden political agendas through their funding recommendations? Can the peer review process itself be arranged so as to provide checks against such abuse? If not, must a society that elects to devote significant public resources to art expect more-or-less continuous struggles for political control over this powerful form of public expression?

Questions like these were at the center of the intense public debate that resulted from Frohnmayer's decision on June 29, 1990 to overturn a peer review panel's recommendation that the agency fund projects by performance artists John Fleck, Holly Hughes, Karen Finley, and Tim Miller. Although all of the rejected artists had received NEA funding in the past,³²⁶ none of them could be considered mainstream. Ms. Finley became famous for pouring jello in her bra and

³²⁰Grace Glueck, *Border Skirmish: Art and Politics*, New York Times, Nov. 19, 1989, sec. 2, p. 1, col. 2; John Robinson, *Frohnmayer Weathers Storm at NEA*, Boston Globe, Nov. 18, 1989, p. 9; Editorial, *Mr. Frohnmayer's Fumble*, New York Times, Nov. 17, 1989, sec. A, p. 38, col. 1.

³²¹Glueck, *supra* note 320. Frohnmayer explained that there had been an "erosion of the artistic vision" of this show between the time the grant was awarded and its production. *Id.*

³²²*Id.*

³²³*Id.*

³²⁴Paul Mattick, Jr., *Arts and the State*, 251 *The Nation* 348 (Oct. 1, 1990) ("The problem is that art has been politicized, the existence of state funding shows that the generally political hidden side of the arts has existed all along. The struggle over the NEA is a struggle for control of this political side.").

³²⁵See Fiss, *supra* note 298, at 2093-96; Comment, *supra* note 293.

³²⁶Paula Span and Carla Hall, *Rejected! Portraits of Performance Artists The NEA Did Not See Fit To Fund*, Washington Post National Weekly Edition, July 16-22, 1990, p. 10.

smearing chocolate on her naked body while on stage to symbolize "women being treated like dirt."³²⁷ Ms. Hughes' satiric performances, which she described as "storytelling," "celebrate[ed] her lesbian sensibilities."³²⁸ Tim Miller was a gay performance artist who also performed in the nude.³²⁹ In one NEA-funded performance, John Fleck urinated on the stage,³³⁰ and in another he simulated his male and female halves making love.³³¹

Although sufficient funds were available in the program to fund the applications, a worried Frohnmeyer telephoned the members of the panel privately to ascertain the reasons for their recommendations.³³² Frohnmeyer told a group of arts supporters in Seattle that "certain political realities" made it unlikely that he would decide to fund all of them.³³³ The National Advisory Council on the Arts, in a rare move, put off a final recommendation until its August 1990 meeting. Instead of waiting for the results of that meeting, Frohnmeyer polled its members by telephone and determined that a majority of the Council opposed funding the proposals. Transcripts and notes of these telephone conversations released in subsequent litigation revealed that concerns for the "political" consequences of making the awards permeated the discussions.³³⁴ The fact that this decision came within a month of a strong statement by the White House press secretary against NEA's support of "obscene" art³³⁵ suggested to some that Frohnmeyer's decision may have been affected by pressure from the White House.

The rejected artists did not suffer their defeat quietly. Mr. Miller called Frohnmeyer a "sleaze-ball appointee" of "King George Bush."³³⁶ Ms. Hughes wrote in the *New York Times* that: "[t]he overturning of these grants represent Mr. Frohnmeyer's and President Bush's attempt to appease the

³²⁷Barbara Gamarekian, *Head Of The NEA Is Said To Accept "Political Realities,"* New York Times, June 29, 1990, B1, col. 5 (quoting Karen Finley). Ms. Finley maintains that "[t]here is nothing sexually exciting about my work; if there were I would be doing burlesque shows and centerfolds and making a lot of money." Culture critic Robert Friedman agreed: "Watching her smear her naked body with chocolate, then cover herself with alfalfa sprouts and tinsel, is about as sexual arousing as watching Julia Child bake a cake." Robert Friedman, *From Yams to Chocolate*, Newsday, Aug. 7, 1990, p. 54. Other observers, however, "have found less comfortable parallels between Finley's work and conventional pornography." Hilary DeVries, *All The Rage: Karen Finley Has Become In The Struggle Over Public Art Support*, Los Angeles Times, Oct. 21, 1990, p. 3. Finley acknowledged that her work was often overtly political: "It's about social issues they don't want to hear about. This is their last chance at trying to maintain the power structure of the straight white male." Paula Span and Carla Hall, *Rejected!*, supra note 326.

³²⁸Paula Span and Carla Hall, *Rejected!*, supra note 326. Art critic Cathy Curtis described Hughes' work as follows:

Holly Hughes' work involves a poetic transformation of the everyday activities of women into gestures that reveal the elemental sexual nature shared by all of humanity. She strips away social veneer to uncover the primal essence of her characters. This is art that treats the human condition in a metaphorical way, with lyricism, warmth, and humor.

Cathy Curtis, *Defending the Avant-Garde From the Hysterical Helms of Conservatism*, Los Angeles Times, July 30, 1990, pt. F, p. 3, col. 1.

³²⁹Mr. Miller explained: "In a work called 'Some Golden States,' there is one section right at the beginning of the piece where I tear my clothes off and I'm basically kind of thrown around on a pile of leaves. It's a piece I made about the reality of my hometown, Whittier, being destroyed in the 1987 earthquake." Paula Span and Carla Hall, *Rejected!*, supra note 326.

³³⁰Fleck explained: "Whoopie doopie. Taken out of context is sounds like sensationalism. But there was some social relevance attached. It really wasn't disgusting or rude or crude. I don't think anybody was offended by it. In fact, I think if you look back it's nothing new. It's been done before." Paula Span and Carla Hall, *Rejected!*, supra note 326.

³³¹Paula Span and Carla Hall, *Rejected!*, supra note 326.

³³²George Archibald, *Speculation in Arts World Has Frohnmeyer Quitting*, Washington Times, July 2, 1990, pt. A, p. A3.

³³³Barbara Gamarekian, supra note 327.

³³⁴See U.S. Documents Said to Show Endowment Bowled to Pressure, New York Times, September 18, 1991, A1, Col. 5. The transcripts contain one very revealing interchange that says a lot about the tension between professional values and democratic accountability. At one point, Frohnmeyer queried the panelists: "Let me ask the very crass and difficult political question, what am I going to say when one of our critics comes in . . . and says 'Gees, they funded a guy who whizzes on stage?'" One of the panelists responded: "Who knows? Who cares? They're good." Kim Masters, *Politics of Arts Grants Questioned*, Washington Post, September 18, 1991, B1.

³³⁵Comment, supra note 255, at 249, (quoting Bedard & Archibald, "Bush Has a Change of Art," Washington Times, June 13, 1990, at A1).

³³⁶Allan Paracini, *Cal Arts May Turn Down NEA Money*, Los Angeles Times, July 3, 1990, pt. F, p. 1, col. 6.

homophobic, misogynist and racist agenda of Senator Jesse Helms and company.³³⁷ Some artists who received funding vowed to return their grants to NEA or give portions of them to the rejected artists.³³⁸ Members of the Theater Arts peer panel complained bitterly in public about the Chairman's rejection of the panel's recommendations,³³⁹ and the panel refused to make any more recommendations.³⁴⁰ Even the mayors of Los Angeles, Seattle and New York protested the decision.³⁴¹ In his defense, Frohnmayer explained: "I think we cannot look strictly at artistic excellence in a vacuum, but we have to look at it has how it is going to play with the audience that we're charged with serving—which is the people."³⁴²

The Independent Commission Report—One of the results of the 1989 Mapplethorpe controversy was legislation creating an "Independent Commission" to review NEA's grant making procedures, including the peer review process, and to "consider whether the standard for publicly funded art should be different from the standard for privately funded art."³⁴³ President Bush appointed to the Commission a group of prominent individuals from both sides of the great NEA debate. Within a relatively short time, the Commission produced a unanimous report that adopted a consistent middle-of-the-road posture toward both of the issues that it was assigned to investigate.³⁴⁴

On the question whether publicly funded art should be judged by different standards than privately funded art, the Report concluded:

Publicly funded art must be measured, like privately funded art, against standards of artistic excellence. Publicly funded art must be judged by other standards as well. . . . It should be chosen through a process that is accountable and free of conflicts of interest. It should be selective with an awareness of the geographic and cultural diversity of the United States and with respect for the differing beliefs and values of the American people. . . . Insuring the freedom of expression necessary to nourish the arts while bearing in mind limits of public understanding and tolerance requires unusual wisdom, prudence, and most of all, common sense."³⁴⁵

With respect to NEA's decisionmaking procedures, the Commission noted that Congress had never meant for the National Council and the peer review panels to be the final decisionmakers, and it stressed that only the Chairman was accountable to the public through the political process.³⁴⁶ The Commission went further to recommend that the Chairperson "be given more authority and more

³³⁷Holly Hughes and Richard Elovich, *Homophobia at the NEA*, New York Times, July 28, 1990, A15, col. 3.

³³⁸Paracini, *supra* note 336; William H. Honan, *Anti-Obscenity Pledge for Grants is Modified*, New York Times, July 2, 1990, A13, col. 5.

³³⁹Joyce Price, *NEA's Rejection of Four Grants Riles Advisory Panel*, Washington Times, July 9, 1990, p. A3. Phillip Arnoult, Chairman of the Solo Performance Fellowship Panel said: "I am very concerned about the four artists, and I have an equal concern about the peer-review panel process and how it was dealt with in a very unusual way." *Id.* The panel issued a joint statement deploring the action "and the political manipulations which prompted it." Allan Paracini, *Mayor Blasts NEA Awards \$3 Million In City Funds*, Los Angeles Times, July 12, 1990, pt. F, p. 1, col. 2. Jacob Neusner, a member of the Advisory Council, responded: "This is gobbilydook from self-righteous people who make decisions for their own purposes, not as a result of values and sensitivities that matter to others." Price, *supra*.

³⁴⁰Melinda Bargreen, *The Embattled Arts Agency Finds Itself Surrounded On All Sides As Its Reauthorization Vote Draws Near: Targeting The NEA*, The Seattle Times, July 22, 1990, L1.

³⁴¹Paracini, *supra* note 339.

³⁴²William H. Honan, *Arts Agency Says Public Is Losing Confidence*, New York Times, July 3, 1990, B1, col. 6. As is often the case in such matters, the controversy apparently attracted much greater interest in the performances of the NEA four. Not long after the controversy broke out, Karen Finley performed to sold-out houses at the Lincoln Center. Hilary DeVries, *All The Rage: Karen Finley Has Become In The Struggle Over Public Art Support*, Los Angeles Times, Oct. 21, 1990, p. 3.

³⁴³The Independent Commission on the National Endowment for the Arts, *supra* note 232, at 1.

³⁴⁴The Independent Commission on the National Endowment for the Arts, *supra* note 232.

³⁴⁵*Id.* at 2-3.

³⁴⁶*Id.* at 16.

choices."³⁴⁷ Noting that no other granting agency gave peer review panels such discretion over both whether to award grants and the amounts of those grants,³⁴⁸ the Commission suggested that the panels and the Advisory Council "recommend more grants than funds available for them, thereby giving the Chairperson a genuine choice in awarding grants."³⁴⁹

The Commission also expressed concerns about conflict of interest among panel members, and it recommended that NEA "insure that panelists do not serve as members of panels that consider applications for grants from institutions with which they are affiliated."³⁵⁰ At the same time, the Commission urged the agency to "insure that the membership of panels represents a variety of aesthetic and philosophical views."³⁵¹ The Commission noted that the potential for bias could be reduced by commissioning multiple panels in a single discipline, a solution that "would not only lessen the possibility of conflicts of interest but would reduce the number of applications before a single panel."³⁵² In addition, the pool of potential panelists should be expanded to include "people who do not earn their living in the arts," such as "art critics, collectors, educators, trustees or others with an aesthetic knowledge of a particular discipline and a view of the world outside the arts."³⁵³ Finally, the Commission recommended that panelists' terms be limited to three years.³⁵⁴

Although stressing throughout its report the need to maintain accountability, the Commission recommended that panel meetings remain closed to the public.³⁵⁵ The Commission listed several reasons for this position:

First, panelists are likely to be more candid if they are discussing, behind closed doors, the work of a colleague or prominent competitor. Candor would also be compromised if an applicant were sitting in the room. Second, open panels are an invitation to pressure groups and lobbyists, seeking to influence the decision of panelists. Third, a frank discussion of a particular proposal could damage the reputation of an artist or institution. Finally, and of particular importance, public knowledge of a panel's deliberations prior to the consideration of an application by the National Council and the Chairperson could act as a restraint on their exercise of discretion.³⁵⁶

At the same time, the Commission recommended that the agency maintain careful records of panel deliberations and make them available to rejected applicants if requested so that the applicants would "have access to the reasons their applications were accepted or rejected."³⁵⁷

The 1990 Amendments—The Helms Amendment also appeared in the agency's 1990 appropriations act, but an attempt to include it in the 1991 appropriation died in conference committee.³⁵⁸ Helms and his allies in Congress were not, however, willing to rely entirely upon appropriations riders to ensure that the agency adhered to their policies. When the agency's statute came up for reauthorization in 1990, Senator Helms and others attempted to write the anti-obscenity

³⁴⁷*Id.* at 65. The Commission rejected a suggestion by Stephen Weile, an official at the Hirshorn Museum and Sculpture Garden, that the agency's statute be amended to take away the Chairman's individual veto power and to force the Chairman to approve or reject all of a panel's recommendations en masse. Allan Paracini, NEA Panel Seeks Consensus as Time Pressure Builds, *Los Angeles Times*, Aug. 2, 1990, pt. F, p. 1, col. 5.

³⁴⁸The Independent Commission on the National Endowment for the Arts, *supra* note 232 at 72.

³⁴⁹*Id.* at 65.

³⁵⁰*Id.*

³⁵¹*Id.* at 66.

³⁵²*Id.* at 74. The Commission also suggested that NEA consider awarding multi-year grants. *Id.*

³⁵³*Id.* at 74.

³⁵⁴*Id.*

³⁵⁵*Id.* at 76.

³⁵⁶*Id.*

³⁵⁷*Id.* at 77.

³⁵⁸Comment, *supra* note 255, at 240 n. 48.

language into the agency's authorizing legislation. Supporters of the arts community in Congress struggled to limit the constraints that the statute placed on the agency. The result was a compromise. Relying heavily upon the Independent Commission's report,³⁵⁹ Congress declined to write a broad prohibition against funding "indecent" projects into the statute. Instead, the amendments required any recipient of a grant later determined to be "obscene" by a court to refund the grant to NEA. In addition the requirements for awarding grants were changed somewhat from a preference for projects that "foster excellence," and reflect "significant, literary, scholarly, cultural, or artistic merit" to an injunction that awards be based "solely on ... artistic excellence and artistic merit,"³⁶⁰ taking into consideration "general standards of decency and respect for the diverse beliefs and values of the American public."³⁶¹

The amendments also addressed the grant awarding process. Reacting to charges that panelists sometimes suffered from conflicts-of-interest,³⁶² the amendments required NEA to issue regulations and establish procedures to ensure that "all panels include representation of lay individuals who are knowledgeable about the arts but who are not engaged in the arts as a profession and are not members of either artists' organizations or arts organizations."³⁶³ In addition, the membership of each panel had to "change substantially from year to year" with no member serving more than three consecutive years.³⁶⁴ The agency was also required to ensure that "an individual who has a pending application for financial assistance . . . or who is an employee or agency of an organization with a pending application, does not serve as a member of any panel before which such application is pending."³⁶⁵ As related above, NEA has recently promulgated regulations implementing these changes. Having changed the process of selecting panelists, Congress went on to grant them somewhat more autonomy by providing that the Chairman of NEA may not approve an application with respect to which the National Advisory Council on the Arts has given a negative recommendation.³⁶⁶

Post-1990 Practice--Although many in the arts community were alarmed by the 1990 amendments,³⁶⁷ Chairman Frohnmeyer assured them that he would not become a "decency czar."³⁶⁸

³⁵⁹The Independent Commission on the National Endowment for the Arts, *supra* note 232, at 89 (Commission recommends "against legislative changes to impose specific restrictions on the content of works of art supported by the endowment").

³⁶⁰45 U.S.C. §959(c).

³⁶¹45 U.S.C. §954(d)(1). Professor Fiss fears that this reference to "general standards of decency" allows the NEA Chairman too much discretion to refuse grants that are not obscene, but are nevertheless controversial. Fiss, *supra* note 298, at 2094-95 ("The chairperson is freed from the *Miller* standards and is able to deny funding to a project like Mapplethorpe's, even though it is not within the constitutional definition of obscenity and thus not amenable to criminal prosecution.")

³⁶²See text accompanying notes 305-312, *supra*.

³⁶³45 U.S.C. §959(c)(2).

³⁶⁴45 U.S.C. §959(c)(6).

³⁶⁵45 U.S.C. §959(c).

³⁶⁶45 U.S.C. §955(f). Despite this change, Professor Fiss argues that the net effect of the 1990 amendments is to give the NEA Chairman more power vis-a-vis the panels. Fiss, *supra* note 298, at 2094.

³⁶⁷See William Honan, Symposium Finding Fault With New Arts-Grant Law, *New York Times*, Nov. 10, 1990, A14, col. 1 (reporting of a convocation of arts administrators, public officials and attorneys convened by the National Assembly to evaluate the 1990 amendments). Joseph Papp, the Producer of the New York Shakespeare Festival found the amendments "unacceptable, reprehensible and insidious," and he therefore rejected NEA grants worth \$323,000. Gerald Frasier, Papp Rejects \$323,000 in Endowment Grants, *New York Times*, Nov. 2, 1990, B3, col. 1.

³⁶⁸William H. Honan, Arts Council Turns Down Decency Rules for Advisors, *New York Times*, Dec. 15, 1990, A15, col. 3. During the time that Congress was seriously considering more restrictive versions of the 1990 amendments, Frohnmeyer had accepted the recommendation to the National Council that he reject the recommendation of the Panel on Special Museum Exhibitions that NEA fund an exhibition of the works of controversial artist Mike Kelley. No author, Frohnmeyer Rejects Grant for Boston Show, *New York Times*, Oct. 23, 1990, C16, col. 1. According to the Director of Boston's Institute for Contemporary Art, the location of the proposed exhibition: Mr. Kelley's work "deals with serious and critical issues within our cultural, some of which deal with the pathology of our times, some of which deal with the body and references to sexuality and sociology, some of which deal with nationality and nationalism, some of which deal with madness and particular forms of modern schizophrenic behavior." [No author], NEAs Chief Rejects Grant to Boston Museum, *Los Angeles Times*, Oct. 22, 1990, pt. P, p. 10, col. 3. The Director speculated that "The only reason this grant was turned down after

As if to prove his point, he quickly approved grants to Karen Finley and Holly Hughes, two of the "NEA four," thereby invoking the wrath of the anti-obscenity forces.³⁶⁹ At the same time, the National Advisory Council on the Arts, after meeting with NEA's General Counsel, unanimously declined to promulgate "decency standards" to aid in implementing the 1990 amendments.³⁷⁰ To further assuage the doubts of the arts community, Frohnmeyer made several strong statements in speeches against government control over the content of publicly funded art.³⁷¹ Other observers were skeptical about the ability of the panels and the NEA Chairman to resist playing the censor's role. Professor Owen Fiss suggested that: "The risk remains great that, in the end, Helms will have his way, and grants will be denied by the endowment for projects like Mapplethorpe's on the ground of indecency, even though they cannot constitutionally be prosecuted criminally for obscenity."³⁷² Several artists and arts organizations challenged the "decency" provision of the 1990 amendments, and in 1992 a federal district court in California found it to be unconstitutional.³⁷³

If Frohnmeyer's conciliatory actions failed to persuade NEA's critics in the arts community, they infuriated its detractors at the other end of the spectrum.³⁷⁴ When NEA awarded two more grants to members of the NEA Four, Congressman Dannemeyer publicly called for Frohnmeyer to resign.³⁷⁵ After Presidential Candidate Patrick Buchanan made NEA a campaign issue in the 1992 Republican primaries,³⁷⁶ the White House quickly asked for and received Frohnmeyer's resignation.³⁷⁷

The NEA controversy erupted anew when Frohnmeyer's replacement, Candice Radice, declined to fund two applications that had been approved by the visual arts peer review panel and one that had

unanimous peer-review approval was that the Council and Frohnmeyer feared that the work would be politically unacceptable." [No author], *Politics Cost Gallery Grant, Director Says*, Washington Post, Oct. 23, 1990, D7.

³⁶⁹Judith Reinraub, *NEA Approves Delayed Grants*, Washington Post, Jan. 5, 1991, C1. Frohnmeyer personally reviewed the two applications to satisfy himself that the grants met NEA's criteria. *Id.* Ms. Hughes was not especially grateful for the grant:

I refuse to be surprised by anything the NEA does. It seems to me that the endowment is like a rudderless ship. This might get tossed my way, but I think other artists whose identities are controversial—their race, their gender, their sexual orientation—are just going to be weeded out by the new internal changes in the NEA and the dissolution of the peer panels.

Barbara Gamarekian, *Arts Endowment Reverses a Stand*, New York Times, Jan. 5, 1991, p. 9, col. 4.

³⁷⁰Honan, *supra* note 368.

³⁷¹See David Johnston, *Lightning Bolts from Left and Right Can't Resist Arts Endowment Chief*, New York Times, May 3, 1991, A12, Col. 1.

³⁷²Fiss, *supra* note 298, at 2095-96. See also Owen M. Fiss, *A Decency Czar: National Endowment for the Arts censorship*, The Nation, Vol. 252, No. 14, p. 473, April 15, 1991.

³⁷³Finley v. National Endowment for the Arts, No. CV90-5236AWT, 1992 U.S. Dist. LEXIS 8070 (C.D. Cal., June 9, 1992); William H. Honan, "Judge Overrules Decency Statute for Arts Grants," New York Times, June 10, 1992, A1, col. 2. But see *Advocates for the Arts v. Thompson*, 532 F. 2 (d) 792 (1st Cir.), cert. denied, 429 US 894 (1976) (upholding state's revocation of NEA-sponsored grant to journal after it published a controversial poem).

³⁷⁴Leonard Garment, one of the co-chairmen of the Independent Commission, was critical of Frohnmeyer's lack of political sensitivity:

[A]fter the [1990] funding crisis passed, behavior at the top of the Endowment did not change enough to make a difference. This fall Frohnmeyer received a recommendation from the Endowment's Advisory Council that some of the avant-garde performance artists who had conspicuously angered endowment critics be given funds for more projects. He would not overrule it; the chairman's job—he gave me his principled explanation—was to overrule his council only if a recommendation met a quasi-judicial standard of clear and convincing error. The next day an Endowment staffer privately read me a string of phone messages received from staffers who were calling on behalf of the Endowment's most durable supporters in Congress. They all said more or less the same thing "Has he lost his mind?"

Leonard Garment, "The Feds and the Arts: Where it Went Wrong," Washington Post, February 25, 1992, A17.

³⁷⁵Alan McConagha, *Another Showdown Looms as NEA's Critics Cry "Smut"*, Washington Times, November 6, 1991, A1.

³⁷⁶John W. Mashek, "Buchanan Assails Sutra Nomination: Also Criticizes Arts Subsidies," Boston Globe, February 21, 1992, p. 10.

³⁷⁷Editorial, *Curtains for Mr. Frohnmeyer*, Washington Post, February 25, 1992, A16.

been recommended by the peer review panel for sculpture.³⁷⁸ This prompted both panels to suspend their reviews of pending applications in protest.³⁷⁹ Stephen Sondheim and Wallace Stegner turned down NEA medals of honor to protest the action, a grantee decided to turn his funds over to the rejected applicants,³⁸⁰ and it began to look like there would be a mutiny of peer review panels. Radice argued that her actions should not be viewed as an attack on the peer review system, and she insisted that they were not the result of White House pressure.³⁸¹

2. Feedback and Rebuttal

Although an NEA fellowship or grant may not be as critical to the career of an applicant as an NIH or NSF grant, it is still a significant plum. An NEA fellowship can do a great deal to enhance a musician's or artist's status in the art world, and this can have long-range economic consequences for the artist. Consequently, rejected applicants are very interested to know why their applications were not funded. Although the agency's rejection letter is typically a form letter that contains very little substantive information, NEA encourages rejected applicants to contact the program specialists assigned to their projects for explanations and suggestions for the future. NEA staffer will usually provide reasons to rejected applicants who are considering an appeal, but only if specifically requested. A summary of the relevant panel's deliberations is available to any applicant that requests one,³⁸² but staff notes of panel meetings and minutes of those meetings are not routinely shared with applicants or any other outsiders. Tapes of panel meetings are never shared with applicants or outsiders. Prior to 1990, the portions of the meetings of the Advisory Council that were devoted to discussions of individual applications were closed to the public, but the Council in May 1990 decided to open these sessions to public scrutiny.³⁸³

These efforts at providing feedback do not nearly approach the willingness of NIH and (more recently) NSF to provide reasons to rejected applicants and suggestions for improvement. There is, for example, no equivalent in NEA to the NIH "pink sheet" containing a summary of the panel deliberations that is routinely mailed to all applicants. NEA cites two primary reasons for its reluctance to provide reasons to rejected applicants as a routine matter: (1) the subjective nature of panel determinations in the arts; and (2) the extra workload that it would place on the staff.³⁸⁴ Although the latter explanation may have some merit, the former is unacceptable, and it goes a long way toward explaining recent criticism of NEA's grantmaking process. If the subject matter of a panel's deliberations is so subjective that the panel's reasons for funding one project and rejecting another cannot be articulated in a way that is understandable to the rejected applicants, the value of peer evaluation itself is open to serious question. There is a very fine line between an unexplainable decision and an arbitrary one. Absent an explanation, neither the rejected applicant nor the public that pays for the funded projects can know whether the panel behaved arbitrarily or behaved reasonably in a way that could not be explained. In other words, NEA is demanding that rejected applicants and the public trust the *process* completely. In a time in which NEA comes under yearly attack from determined critics, this may be too much for the agency to expect.

³⁷⁸Maryann French, "Second Arts Panel Walks Out," *Washington Post*, May 21, 1992, D1; Blair Kamin, "In First Week, Acting Chairwoman Starts Steering NEA to the Right," *Chicago Tribune*, May 10, 1992, p. 3. The rock group Aerosmith came to the rescue with a \$10,000 grant to fund the show. Patti Hartigan, "Aerosmith Takes Aim at the NEA," *The Boston Globe*, May 20, 1992, P. 1.

³⁷⁹Patricia C. Johnson, "NEA Sculpture Panel Suspends Work," *Houston Chronicle*, May 16, 1992, p. 3.

³⁸⁰Jon Robin Baitz, a thirty-year-old playwright, accepted a \$15,000 grant from NEA and announced that he would make two donations to two institutions that were denied \$10,000 grants. Alex Witchel, "Arts Grant Winner Donates to Losers," *New York Times*, June 2, 1992, B1, Col. 1. See also, George F. Will, "Moral Preening as an Art Form," *Washington Post*, June 7, 1992, C7 (criticizing the action).

³⁸¹Kim Masters, "NEA Chief Defends Grant Vetoes," *Washington Post*, May 29, 1992, D1.

³⁸²Comments of Michael McLaughlin, *supra* note 227.

³⁸³The Independent Commission on the National Endowment for the Arts, *supra* note 232.

³⁸⁴Comments of Michael McLaughlin, *supra* note 227.

3. Favoritism

As with all peer review programs, an NEA reviewer can play favorites by assigning a very high score to a particular proposal. In one NEA program, for example, a single panelist can guarantee that an application makes it to the third round of consideration by casting a "passion vote" for an artist for which he or she has a special fondness. Each panelist is informally given a limited number of such votes, and some use them more than others. Although these "passion votes" are intended to allow panelists to express especially well-formed opinions on the merits of the artist's work, they likewise offer an opportunity to enhance a particular artist's probability of success. Since an applicant must still garner the support of five out of seven or more panelists in the final round of voting, however, there is a relatively low probability that a proposal lacking artistic merit will be recommended for funding.

4. Old Boy Network

Throughout much of its history, the NEA panel system has been criticized by outsiders for being an "old boy" network in which insiders impose their own arbitrary constraints on the art and artists who get funded.³⁸⁵ Interestingly, unlike much of the criticism of NIH and NSF, this criticism does not come so much from rejected applicants, as from outside observers who are generally critical of the substance of NEA funding decisions. These criticisms reached a fever pitch during the recent Mapplethorpe/Serrano and NEA Four controversies.³⁸⁶

One NEA staffer interviewed for this Report agreed with the contention of some outside critics that the agency is a "captive" of the Panels. If the Panels want to "look out for their own," there is little that the staff (or even the Chairman) can do about it. The high turnover rate of the Panels that is now required by the 1990 amendments, however, helps reduce the probability that a coterie of "old boys" will effectively control the Panel's decisions. Each panelist is chosen for only a one-year term and may not be appointed for more than three consecutive terms. Some panels have a 100 percent turnover rate. As one NEA staffer put it: "No matter who you are you are going to run out of your friends sooner or later." Another shield against "old boyism" is the agency's attempt to select panels that reflect geographic and cultural diversity.³⁸⁷ Finally, the nature of the subject matter can help

³⁸⁵See Allan Paracini, *National Endowment: Arts Agency: Living Up To Its Billing?* Los Angeles Times, Sept. 9, 1989, pt. 1, p. 1, col. 1 (citing Professor Kevin Mulcahy, Professor of Political Science at Louisiana State University for the proposition that the peer review system at NEA "has often tended to operate as a network serving the interests of well-connected artists that is hard for other artists to penetrate."); McLellan, *supra* note 8 ("There are cliques and friendships in the Arts and questions of artistic merit often overlap with questions of personal taste."); National Endowments for the Arts is Honored as 20th Birthday News, New York Times, Sept. 1, 1985, sec. 1, pt. 2, p. 68, col. 1 ("The endowment has an insider-outsider working system. In a time of no expansion in the arts, younger artists are coming up against a middle-aged generation of arts administrators who make up the grant-giving panels.") (quoting Mr. Derek Guthrie, publisher of The New Art Examiner); Can the Government Promote Creativity—Or Only Artists? New York Times, April 25, 1982, sec. 4, pg. 6, col. 1 ("Decisions . . . about what's good and worthy of support are made centrally by people who sit on peer review panels who do represent one segment of the society. They are almost 99% previous or current grantees.") (quoting Ms. Arlene Goldbard, Co-director of the Baltimore-based Neighborhood Arts Programs National Organizing Committee); Lanquette, *supra* note 226 ("[T]he charge most often heard today is that these panels, rather than acting as government arbiters can work instead as 'old-boy' networks—passing out plums to friends and colleagues."); Richard Netzer, *The Subsidized Muse* (Cambridge University Press, 1978) ("Consciously or not, some [peer review] panels amount to 'old boy' networks that respond favorably to applicants who are part of that network.").

³⁸⁶See, e.g., Robert H. Knight and John M. Slye, *The National Endowment for the Arts: Misusing Taxpayer's Money*, Heritage Foundation Reports, Jan. 18, 1991, Backgrounder number 3 ("The peer-review process is a tightly-knit buddy system, with artists taking turns giving each other grants"); Jonathan Yardley, *Helms and the Art of Pragmatism*, Washington Post, July 31, 1989, C2 ("Rather than represent the public's interest, too many of these panels represent those of their own artistic and scholarly cliques, they dole out money to allies and proteges, feather their own nests and keep it all in the family.").

³⁸⁷Attempts to reflect geographic diversity stem from a rather consistent and strong perception among educated outsiders that the National Institutes for the Arts and Humanities are biased in favor of East Coast cities and schools. See, e.g., Paracini, *supra* note 385 (citing several prominent supporters of NEA who nevertheless believed that the Northeast has dominated in the competitions and for the proposition that NEA has not achieved broad ethnic representation). One especially strong adherent to this view was nominated, but not confirmed to be the Chairman of the National Endowment for the Humanities. He vowed that if confirmed, he would ensure that "[n]ot everything would go to Harvard, Yale, Princeton, and Chicago" and that "more grants [would go] to Texas and Oklahoma." Carla Hall, *Bradford Speaks Out: NEH Chair Candidate on His Program Plans*; Bradford on the NEH, Washington Post, October 28, 1981, B1.

prevent old boy networks from arising. Unlike scientists, artists and musicians are not so narrowly specialized that only twenty or thirty people in the country are qualified to judge the merits of all the proposals in a given field. For example, the available pool of experts to judge a saxophone ensemble probably includes saxophone professors from most of the major and many minor universities, as well as most professional saxophonists.

Despite the changes, critics maintain that NEA continues to administer an old boy network that sends public monies to avant guard projects.³⁸⁸ The nub of their criticism is that the NEA *staff* is responsible for selecting peer reviewers who will predictably reach predetermined results. In other words, the critics accuse the NEA staff of "stacking" the peer review committees with advocates of a single point of view.³⁸⁹ While it is difficult to evaluate the validity of this claim, there are few built-in constraints against such manipulation of the peer review process.

5. Halo Effect

The "halo effect" identified at some of the scientific agencies seems to be less pronounced at NEA. In part, this is attributable to the very large number of applicants and the absence of a tradition of continuously funding any single individual applicant's grants. Only a very small number of individual grantees are funded for a second consecutive year. It also may stem from the fact that well-known artists are often much more highly paid in the private market and therefore do not stake a claim to NEA funds or do not vigorously devote themselves to the application process. According to one NEA staffer: "I have witnessed extremely well-known artists' work rejected because they had sent in slides of old work." Although panels are not supposed to consider the applicant's financial need in evaluating the quality of proposals, there is an unwritten rule that artists who do not really need the money should not ask for NEA's limited fellowship funds. The halo effect may, however, play a larger role in programs involved in funding large organizations, such as orchestras and museums.

6. Personal Animus

NEA has received frequent complaints that the Chairman or the Council has rejected applications because of a dislike for the applicant or some aspect of the applicant's lifestyle. During the NEA Four controversy, for example, applicants alleged that several actions taken by the Council and the chairman were motivated by animus against their homosexual life styles. Similar complaints have not, however, been lodged against the peer review panels.

7. Mavericks

NEA does not appear to have a problem with refusal to fund mavericks. Highly original projects are routinely funded, and creativity is perceived as a great virtue in the panels. The agency suffers considerably more criticism from the avant garde nature of some of its funding decisions. Indeed, some panel actions, such as the recommendation to fund a former prostitute named "Scarlet O" who decided that she would rather be known as a performance artist,³⁹⁰ call into serious question the very professionalism upon which the peer review process critically depends.³⁹¹

³⁸⁸See text accompanying notes 305-307, *supra*.

³⁸⁹Frequent NEA critic, Richard Grenier claims that "Peer review panels' . . . are stacked, a joke." Richard Grenier, *A Vote to Bring Back Guillotine at NEA*, Washington Times, April 4, 1991, pt. G, p. 61. Grenier offers no empirical support for this proposition, but it seems to be widely held by culturally conservative critics of NEA.

³⁹⁰Todd Allan Yasui, *Defending NEA's Vetos*, Washington Post, February 10, 1992, B7 (in a videotape of one of her performances, Ms. O discussed gender, stripped, and invited members of the audience to rub lotion on her body).

³⁹¹See Walter Berns, *Saving the NEA*, National Review, Vol. 42, no. 22, p. 34, Nov. 19, 1990 (complaining that "the Arts community insists that everything produced by someone claiming to be an artist is in fact a work of art.").

8. Applicant Anonymity

Some programs at NEA attempt to maintain applicant anonymity to some degree. In some fields that have a tradition of "blind judging" and in which applicant anonymity is practicable, that technique is often used to provide an additional element of objectivity to the grants process. For example, peer review panels for some music program typically rely upon tapes of applicants' performances in which the identities of the performers are not revealed until after all of the tapes have been evaluated and compared. According to one NEA staffer, the pendulum appears to be swinging toward more blind judging in all of the programs where it is feasible.

In other areas, the panelists resist blind judging. For example, applications in the area of paintings could probably be evaluated blindly. The quality of submitted examples of the artists' works could be evaluated without necessarily knowing the name of the author. The panelists, however, believe that since most artists who apply for grants are not known by name to the panelists, the evaluation is essentially anonymous in any event. In addition, blind evaluation could work mischievous results in cases of highly derivative works in which the student's works may be mistaken for the teacher's. Finally, blind evaluations do not allow Panels to take into account subtle timing questions involving the impact that support might have on the artist's work at some particular stage in the applicant's career.

9. Reviewer Anonymity

The names of each year's group of around 800 panelists are made public at the time the panelists are appointed, but NEA does not otherwise routinely publicize the identities of the Panel reviewers. The agency will, however, make the identities of panelists available upon request after the reviews are completed. Panels that use "primary reviewers" to conduct intense reviews and report back to the panel, however, do not reveal the identities of primary reviewers to applicants. All panel meetings and, until recently, portions of meetings of the National Council on the Arts were held in private. This secrecy has always engendered criticism from rejected applicants.³⁹² But is vigorously defended by the professionals that sit on the panels.³⁹³

10. Financial Conflict of Interest

Prior to the 1990 amendments, NEA received a great deal of criticism about the extent to which panelists encountered at least indirect conflicts of interest.³⁹⁴ NEA's regulations prohibited an applicant from sitting on a panel that considered the applicant's proposal, but they did not prevent the a panelist from sitting on a panel that considered an application from his or her institution, so long as the panelist left the room during the consideration of that application.³⁹⁵ NEA revised its conflict of interest regulations in light of the 1990 amendments to prevent any person who is an applicant or a representative of an organizational applicant from serving on a panel that considers that application. In addition, persons who are employed or associated with an organizational applicant may not serve on the panel that evaluates its application. Panelists may receive remuneration from activities supported by NEA only to the extent specified in the application prior to its consideration, and they may not participate in decisions with respect to that application.

³⁹²Glueck, *supra* note 294 ("Endowment applicants have long complained about the secrecy of the panels.").

³⁹³See Beeb Salzer, *Politicians Need Maturity, Tolerance, and Strength in Nurturing Art*, Los Angeles Times, July 24, 1988, pt. 2, p. 2, col. 1 (Ms. Salzer is a Professor of Drama at San Diego State University) ("All of the ranting, pleading, negotiating, and evaluations that are part of the selection for art's grants are best handled by experts away from the spotlight.")

³⁹⁴See Knight and Slye, *supra* note 386; Joyce Price, *NEA Grant Procedures Need Fixing, Says Panel*, Washington Times, Sept. 11, 1990, A5; Paracini, *supra* note 306. Similar conflicts have been noted in state arts councils. See Chris Pasles and Herman Wong, *Arts Council Doling Out Funds Today*, Los Angeles Times, Aug. 28, 1987, pt. 6, p. 1, col. 2.

³⁹⁵NEA Standards of Conduct, *supra* note 277, at 6.

11. Research Conflict of Interest

Prior to the 1990 Amendments to its statute, NEA's regulations did not prevent a person employed by an applicant from judging the application of competing organizations. Even though not present when the application from his or her organization was being considered, the panelist still knew that a low rating for the competitor would leave the competing organizations in a relatively better position overall. According to one high level NEA staffer, NEA received applications from "dire competitors," and although the panelists attempted to police themselves, the appearance of impropriety was hard to avoid when the organization whose employee was on the panel received a large grant, and the competitor was not funded.

The agency staff attempted to deal with such conflicts informally. For example, on one occasion when the Assistant Program Director observed a panelist intensely criticizing a proposal from a competitor organization, the Assistant Director attempted to steer the discussion away from the criticisms. When this failed, the Assistant Director suggested an early lunch. After lunch, the Program Director joined the panel and said nice things about the proposal to offset the previous negative comments, and the proposal was recommended for approval.

The 1990 Amendments met the problem of research conflict of interest head-on by flatly prohibiting a person from sitting on a panel that evaluates the applicant's proposals or those from the institution that employs the applicant. Although this necessarily reduces the supply of qualified experts for panels, Congress correctly concluded that it was a necessary step to preserve the public perception that the programs were being run fairly. The informal approach depended upon the ability of the panelist to detect the threat to impartiality posed by his or her consideration of a proposal from an organizational competitor and upon the applicant's willingness to do something about it. The staff attempted to repair in an ad hoc and informal way the damage to the process caused by panelist improprieties, but this depended too heavily upon the ability of the staff to identify the conflicts, and it was not always be feasible to offset the effects of the prior bias.

The other aspect of research conflict of interest, (appropriation of ideas) may not be as fully applicable to the arts as to the sciences. It is, of course, possible for an artist or musician to steal an idea from another and use it to his or her own advantage.³⁹⁶ But it would be difficult to arrange such a theft in the context of the NEA grant application process, because the projects are either simply fellowships to pursue a broad activity or discrete projects that are described with such generality that the kernel of the underlying idea usually cannot effectively be appropriated.

12. Peremptory Challenges

NEA does not currently let applicants review lists of potential panelists to identify persons with a potential bias. One very high level NEA official interviewed for this Report, however, expressed the belief that "peremptory challenges" could go a long way toward ensuring against bias in the NEA peer review system. The concept could be relatively easily implemented in most NEA panels, because they are chosen from a large number of prospective panelists. With a large number from which to choose, the quality of the resulting panels should not suffer significantly from the implementation of a process allowing peremptory challenges.

13. Lobbying

Most institutional applicants place many of the Council members on their mailing lists to receive promotional literature, newsletters, etc., but they do not often make direct overtures to Council members with respect to pending grant applications. Rejected applicants occasionally communicate

³⁹⁶When asked why prominent scholars would voluntarily devote so much time to serving on NEH panels, one scholar volunteered: "I find this an excellent way of finding out what's going on in research. Even if a proposal isn't good, I learn something about that field from the discussions with the other panelists. And serving is part of my professional responsibility to other scholars." Felicity Barringer, *Scholars Weigh the Allocation of Billions*, Washington Post, September 11, 1981, A17. Although the quoted panelist did not suggest that he would attempt to steal another's ideas, it does suggest that the potential is there, even in less commercial world of the arts.

with panelists after-the-fact, though rarely before the application is considered. The staff prefers that disappointed applicants deal directly with the staff, and not "go over their heads" to Council members. Applicants respect this wish for the most part.

14. Political Pressure

NEA receives many letters from congresspersons and others in support of particular projects, but the staff does not immediately share these with the panelists or Council members. They are usually placed in the applicant's file and answered with a polite reply describing NEA's peer review process. Because the challenge grants are much larger, outsiders attempt to communicate with the Challenge Grants Program Director more than with other Program Directors. They do not, however, use arm twisting tactics. Any letters received from outsiders, including congresspersons, and memoranda of telephone conversations are placed in the applicant's file, and they may be read by panelists and members of the Advisory Council. In practice, they rarely are consulted in the vast majority of NEA programs. On the other hand, the NEA Four controversy clearly demonstrated that political considerations do play an important role in decisions about controversial applications that may be considered indecent or offensive.

15. Efficacy of Appeal Procedures

Rejected applicants may formally appeal to a Deputy Chairman of NEA, but only on relatively narrow grounds.³⁹⁷ Appeals based on artistic merit are not entertained. In practice, most appeals are of the latter variety, and are therefore given short shrift. Tapes of panel meetings are preserved for two years for use in possible appeals. From the tapes, the staff can glean whether the criteria that guided the Panel were within those detailed criteria that the agency published in advance.³⁹⁸ It is not clear, however, how the applicant can directly ascertain whether irrelevant criteria were used.

In cases where the applicant does discover that irrelevant criteria were used, the Chairman can reverse the Panel. For example, an applicant for a music performance grant for a saxophone ensemble obtained a summary statement of the panel's deliberations and ascertained that a primary reason for rejection was the panel's belief that the ensemble should only play music that was originally written for the saxophone, and not transcribed from music written for other instruments. Since this was not a relevant consideration under the Program's published criteria, the Deputy Director sent the application back to the panel for reconsideration at its next meeting. One irrelevant criteria that occur with some frequency is whether the applicant organization has a "need" for the money.

Apparently, there is an additional informal appeals procedure for decisions by the Chairman not to fund a project that has received the endorsement of both the relevant peer review panel and the National Council on the Arts. In the first case in which the Chairman took this action, vetoing a proposal to use plants that absorb toxic metals to clean a hazardous waste site,³⁹⁹ Chairman Frohnmayer agreed to meet with the rejected artist to discuss the reasons for his action. After the meeting, Frohnmayer reversed his decision, explaining that he had been persuaded that the project, which initially seemed more appropriate for EPA funding, had artistic value.⁴⁰⁰

16. Conclusions

It seems reasonably clear that the controversy over NEA is not over. The tension between the inevitably elitist concept of artistic excellence and constant demands for democratic accountability is

³⁹⁷See text accompanying notes 289-292, *supra* (description of formal appeals process).

³⁹⁸Probably the most frequently relied upon irrelevant criterion is need. It is not for the panels to decide whether the applicant really needs the money or is already wealthy enough.

³⁹⁹William Honan, U. S. Arts Chief Overturns an Approval, *New York Times*, Nov. 27, 1990, B3, col. 1.

⁴⁰⁰Kim Masters, NEA Grant Reversal Scene: Chairman Set to Approve Project He Rejected, *Washington Post*, Dec. 21, 1990, D2.

likely to continue as long as the agency remains willing to fund grants in controversial areas. The peer review model is at the heart of the decisionmaking process and will therefore no doubt remain at the center of the controversy. More than any other agency studied for this Report, NEA's peer review procedures have been criticized in the press and in other public forums such as congressional hearings. Yet past and present NEA officials continue to defend the peer review process that has evolved within that agency. Former NEA Chairman Frank Hodsell noted: "We may not have a perfect balance, but we have several checks. Program directors submit two, three, or four names for every slot; we look at them from the point of view of geographical distribution, we try to ask all the right questions. But we never do a perfect job."⁴⁰¹ One high level staffer argued that although the agency has an elitist image in the popular press, it in fact serves a very broad public primarily at the local level: "In fact, our grants touch everything and everyone. A grant to an artistic program of any type in a community spreads and affects the whole community, becomes part of the educational system."

⁴⁰¹Glueck, *supra* note 294.

VI. THE POTENTIAL FOR BIAS IN PEER REVIEW

Although the funding decisions of the scientific and artistic granting agencies in the United States are theoretically bound by objective criteria, the preceding chapters have demonstrated that there is room for bias in the process. The extent to which bias actually affects individual outcomes is a difficult empirical question that has been examined periodically, but has never been resolved. While this Part does not purport to answer that question definitively, it will draw upon the existing literature and the experiences of the four agencies related in Parts 2-5 to explore the *potential* for bias in the peer review process and to suggest the ways in which bias in the system can yield undesirable outcomes from a societal perspective.

Nearly all of the researchers and grants administrators interviewed in connection with this Report agreed that bias was not a pervasive problem in NIH, NSF, and EPA.⁴⁰² The evidence of bias in NEA is somewhat stronger. For a long period of time that agency allowed panelists to sit on panels that reviewed applications from their own institutions and from their friends and close associates, and some outside critics discerned a strong pattern of "old boyism" in the outcome of the granting process.⁴⁰³ Yet most complaints of bias in the peer review system at NEA have come more from outside critics who are dissatisfied with the results and may have their own axes to grind.

The lack of direct empirical evidence of actual bias in the granting agencies studied here is not especially surprising, because bias is not especially susceptible to empirical validation. Even the potential for bias, however, bears careful examination, because the public perception that a grants process in which public funds are at stake is biased can erode public support for the program and ultimately result in its decline or demise. The following discussion reviews the categories of bias that were developed in Parts 2-5 and suggest how bias can detract from sound decisionmaking and reduce public support for federal grant programs.

A. Animus

In a grants program that is able to fund only a small number of meritorious applications, a single bad review can prove fatal to a grant proposal.⁴⁰⁴ The person who is the object of personal animus on the part of a peer reviewer is obviously adversely affected, because his or her chances of receiving the discretionary grant are thereby reduced or eliminated. That person can legitimately complain that he or she has been treated unfairly. In a broader sense, animus runs counter to the public interest in

⁴⁰²After an intensive investigation into the peer review process at NSF in 1976, a House investigatory subcommittee concluded:

No method superior to peer review has been found for judging the scientific competence of proposers. Scientific peers are better able than others to judge the design of proposed work, the importance of proposed work to the scientific field, and the past performance of the proposer. Appropriate peer review procedures generally lead to the support of proposals in a high quality range. Using peer review procedures the Foundation has successfully fostered significant advances in basic science over the past 25 years.

1976 House Hearings Report *supra* note 3. A more recent report of a "Merit Review Task Force" assembled by NSF concluded: "The system is remarkably fair and is an effective mechanism for identifying and funding high-quality proposals in every discipline the Foundation supports. Many consider it to be the best system in the world." Report of the Merit Review Task Force *supra* note 100, at 1.

Two perceptive observers of the peer review process in the scientific agencies, Chubin and Hackett, accurately complain that the criticisms of peer review that periodically surface in the popular media are both frustrating and unsatisfying:

They are frustrating because they reflect limited view points or special interests that do not provide a comprehensive perspective. They are dissatisfying because, in their brevity, they address issues selectively and often offer scant empirical or logical support. Even the best of them are but a lone scientist explaining how he or she has been mistreated, then generalizing from that experience to a set of universal principles.

Chubin & Hackett, *supra* note 2, at 33-34.

⁴⁰³See Part 5, at n. 162.

⁴⁰⁴As one very successful NSF applicant observed, "[a]ll one needs is one unsubstantiated or emotional comment by one reviewer to significantly lower one's chances." Chubin & Hackett, *supra* note 1, at 78. Another close observer of the peer review process noted that "in the present climate of opinion, a colleague who knows that he or she has the certain power to doom [a] proposal by a checkmark in the 'Fair' or 'Good' category - even if accompanied, albeit inconsistently, by written praise - might well be inclined to use it." R. Roy, *Alternatives to Review by Peers: A Contribution to the Theory of Scientific Choice*, 22 *Minerva* 316, 319 (1984). Many other applicants and reviewers interviewed for this report expressed similar views.

awarding grants to the most deserving applicants through an objective application of the statutory or regulatory criteria. A single, isolated case of animus will probably not prove very damaging to programs in which many qualified applicants contend for a limited supply of discretionary funds. But if the bias is manifested against whole groups of people or if a significant number of those in the potential pool of applicants perceive that the system could be unfairly abused to discriminate irrationally against them, potential applicants may be discouraged from applying for grants in the future. More subtly, in order to avoid a single negative assessment, proposal writers may begin to submit bland proposals for inoffensive studies that do not advance scientific knowledge or artistic creativity to any significant degree.⁴⁰⁵ Similarly, public support for a system that consistently blackballs qualified applicants for reasons unrelated to the statutory or regulatory criteria will probably erode over time. Fortunately, the description of the peer review process in Parts 2-5 revealed very little evidence of personal animus in the agencies studied here.⁴⁰⁶

There is an animus of a less personal sort that seems to pervade the peer review process in the scientific agencies. Peer review panels in NIH and NSF are often accused of being biased against "maverick" proposals that reject the conventional wisdom of the mainstream scientific community.⁴⁰⁷ Thomas Kuhn has observed that scientific revolutions occur when a few scientists begin to reject the dominant "paradigm" or conventional wisdom of the scientists who work in the field. The conventional paradigm is accepted in the literature and in the classroom, and it produces the background assumptions that facilitate scientific dialogue. As bits and pieces of data are reported that cannot be explained by the conventional paradigm, however, a few practitioners are forced to re-examine the background assumptions and some begin to reject the paradigm, at least in some contexts. Adherents to the old world view invariably resist challenges to the conventional paradigm, but sooner or later the mounting evidence produces a scientific revolution in which the dominant paradigm is rejected and a new paradigm takes its place.⁴⁰⁸

An important battleground in the war between the paradigms is the discretionary grants process. The most frequently identified bias among the scientists interviewed for this report was the subtle bias that the scientific peer review bodies exert against "mavericks" who reject assumptions and approaches of the dominant paradigm.⁴⁰⁹ Nearly all observers of the process agreed that mavericks have a much lower probability of receiving funding than those who submit proposals well within the bounds of conventional wisdom. This is not so much a matter of personal animus against particular applicants as it is a matter of ideological self-defense. People who have spent their careers

⁴⁰⁵Chubin & Hackett, *supra* note 3, at 76 ("The lesson is clear, . . . a writer must please all of the reviewers all of the time, and be especially careful never to offend any of them.").

⁴⁰⁶Congressional hearings into the peer review process at NSF conducted in the summer of 1976 produced some limited testimony of the existence of "bias against someone a reviewer knew and disliked or disagreed with." 1976 House Hearings Report, *supra* note 3, at 33. NEA has received some complaints that the NEA Chairman or the Advisory Council on the Arts has rejected applications because of a dislike for the applicant or some aspect of the applicant's lifestyle, but these accusations are virtually never directed at the peer review panels.

⁴⁰⁷In a 1986 survey conducted by NSF of nearly 10,000 academic scientists, almost two-thirds agreed with the statement that "NSF is not likely to fund high-risk exploratory research because the likelihood of obtaining favorable reviews is slim." National Science Foundation, Final Report: NSF Advisory Committee on Merit Review (1986). See also Bjerklie, *supra* note 105. In a survey successful and unsuccessful applicants at the National Cancer Institute, 60.8% agreed with the proposition that reviewers were reluctant to support unorthodox or high-risk research, while 17.7% disagreed and 21.4% were neutral. Chubin & Hackett, *supra* note 1, at 66, Table 3. A former Vice-President for Research at the Massachusetts Institute of Technology testified in 1979 that the peer review process discriminates against new interdisciplinary science and scientific thinking that is not "au courant" even though creative and ripe with "unusual possibilities for breakthroughs." L. Carter, A New and Searching Look at NSF, 204 Science 1064 (1979) (quoting testimony of Dr. Thomas F. Jones, Vice President for Research at MIT). See also 1976 House Hearings Report, *supra* note 3, at 27 ("If a proposal challenges the mainstream of scientific thought, the expert peer reviewer who is in the mainstream will tend to see the proposal as wrong on the face of it.").

⁴⁰⁸Kuhn, *supra* note 13.

⁴⁰⁹By contrast, persons interviewed in connection with this Report and outside observers of NEA reported no dissatisfaction whatsoever with NEA's treatment of mavericks. Indeed, many complaints went in precisely the opposite direction—that the agency funded too many "off-the-wall" proposals with little chance of success.

conducting research aimed at bolstering and extending the dominant paradigm are reluctant to direct resources toward research aimed at destroying that paradigm.

B. Tunnel Vision

Just as peer review panels tend to be biased against mavericks, they often exhibit tunnel vision with respect to whole categories of proposals that appear to lack relevance to professionals trained in a particular discipline or subdiscipline. This "tunnel vision" problem is partially a function of the composition of the peer review committees and partially a problem of ambiguity as to any particular panel's proper substantive bailiwick. The discussion in Parts 2-4 indicated that tunnel vision does appear to exist in the scientific agencies studied for this report.

C. Favoritism

Favoritism adversely affects the public interest in several important ways. First, if favoritism plays a significant role in overall proposal ranking, the awards will not go to the most deserving applicants, thereby undermining the policies underlying the grant program. Second, if the perception grows that a grant program plays favorites, future applicants may be discouraged from applying. Finally, as the perception of favoritism spreads from the participants in the process to the public at large, public support for the program will no doubt dwindle.

1. Old Boyism and the Halo Effect

One of the most common complaints raised by participants in the peer review grants system is that it fosters an "old boy network" that subtly conspires to dominate the agency's evaluations. The closely related "halo effect" exists when peer reviewers fund poorly conceived projects by well-known scientists or scientists from highly regarded institutions purely out of regard for their past reputations, and not on the merits of their current proposals. Although complaints about "old boy" networks and the halo effect are frequently heard,⁴¹⁰ the empirical basis for such claims is relatively weak.⁴¹¹

⁴¹⁰A summary of the testimony presented at extensive 1976 congressional hearings on the granting process at NSF concluded that: "The most common objection to the use of peer review is that it is subject to 'backrubbing' or 'old boys clubs,' in which mutual friends unduly praise each other's proposals." 1976 House Hearings Report, *supra* note 3, at 22. In a 1986 survey of about four thousand scientists conducted by a national science fraternity, 63 percent agreed with the statement: "Procurement procedure for grants to do governmentally sponsored research depends on 'who you know.' Many requests seem to be funded primarily because the researchers are already known to and supported by the granting organizations." Sigma Xi, *A New Agenda for Science* (preliminary report) (1986), reported in United States General Accounting Office, *University Funding: Information on the Role of Peer Review at NSF and NIH* 7 (March, 1987). In a survey of successful and unsuccessful applicants for National Cancer Institute grants, 39.5% of the respondents agreed with the proposition that "old boys networks" controlled the study sections, while only 32.7% disagreed and 27.8% were neutral. Chubin & Hackett, at 66, Table 3. The most strident critics of the peer review system characterize it as "an incestuous 'buddy system' that frequently stifles new ideas and scientific breakthroughs, while carving up the multimillion dollar Federal research and education pie in a monopoly game of grantsmanship." 1976 House Hearings Report, *supra* note 3 (testimony of Rep. John Conlan). Similar complaints are directed at funding in NEA, but mostly from critics who are not participants in the peer review system.

⁴¹¹A 1988 NSF study of 9500 principle investigators found some slightly suggestive evidence of a perception of favoritism among NSF grantees. Consistently successful applicants were "more likely than the average applicant to be male, older . . . , and much more likely to be associated with a [prestigious research] institution," and 97% of them had served as reviewers or panelists, an indication of high status in the relevant research community. National Science Foundation, *Proposal Review at NSF: Perceptions of Principal Investigators* 10 (1988) [hereinafter cited as *NSF Perceptions Report*]. See also J. McCullough, *First Comprehensive Survey of NSF Applicants Focuses on Their Concerns About Proposal Review*, 14 *Science, Technology, & Human Values* 78, 81 (1989). At the same time, consistently successful awardees "were more likely to have known the program officer and to have made some personal contact before submitting a proposal." McCullough, *supra*, at 81; *NSF Perceptions Report*, *supra*, at 12. When the respondents who indicated dissatisfaction with the process (38% of all respondents) were asked to give reasons, they were somewhat more inclined to attribute any failure in the process to incompetent reviewers (18%) than to any cronyism, politics or an old boy's network (12%). *NSF Perceptions Report*, *supra*, at 14-16; McCullough, *supra*, at 82. In an independent survey of 719 applicants for NIH grants in fiscal years 1980-1981, 17.9% strongly agreed and 23.5% agreed with the proposition that "old boy networks control the RIGs or study sections," while only 23.1% disagreed and 9.7% strongly disagreed. G. Gillespie, Jr., D. Chubin & G. Kurzon, *Researchers' Cynicism and Desire For Change*, 10 *Science, Technology & Human Values* 44, 45 (Summer 1985).

A granting system run by a coterie of old boys discourages innovative proposals from bright applicants who have not found their way into the network. In the extreme, science and art are reduced to schmoozing. Old boy networks do not give all applicants a fair opportunity to secure funding, and a system that is not fairly run will gradually lose public support. It is less clear that the halo effect is counterproductive or unfair. To the extent that her halo has been earned by the production of excellent work over many years, the beneficiary of the halo effect is being given an opportunity to continue her productivity despite the fact that her most recent proposal is not well written or is poorly conceived. Some critics of the peer review system complain that it rewards the ability to write good proposals, rather than the ability to produce good research or art.⁴¹² These critics believe that limited governmental funds should be dispersed in large multi-year grants to a very few scientists or artists who have the very best reputations in the relevant fields. They would, in other words, elevate the halo effect to a matter of principle. Others argue that an applicant's reputation should play a role in the process, but the dominant considerations should still be quality of his or her most recent efforts and the content of the current proposal.⁴¹³ To do otherwise is to give hallowed elders an unfair advantage. In sum, whether agencies should take steps to reduce or eliminate the halo effect is a fairly debatable point.

2. Stacking the Deck

The agency staff can play favorites by "stacking the deck" with reviewers who will predictably fund the staff's favorites.⁴¹⁴ The extent to which staff discretion in choosing panelists is a good or bad thing is, like the halo effect, a matter about which reasonable minds can differ. Most would agree that a panel that is a stacked deck will not necessarily make objective funding decisions and will be perceived as unfair. The staff has an obligation to ensure that panels are balanced, and indeed this may even rise to the level of a legal duty under the Federal Advisory Committee Act.⁴¹⁵ But one person's attempt to achieve balance may be another person's plot to stack the deck. It is, in other words, very difficult to know whether particular appointments are aimed at ensuring funding for favorites or for remedying imbalance in a committee already wedded to a particular point of view.

D. Conflict of Interest

1. Financial Conflict of interest

The scientific and arts communities apparently recognize the judicial principle that no person should be the judge of his or her own case, and regulations in all of the agencies studied in this

The empirical basis for the halo effect is also weak. A five-year study of NSF grants conducted during the late 1970s found no evidence that reviewers at "major" research institutions treated proposals from applicants at major institutions more favorably than did reviewers from lesser institutions. In fact, there was "a tendency in the opposite direction." Cole, Cole and Simon, *supra* note 126. The same study found only "low or moderate" correlations between actual funding at NSF and other indicators of the halo effect including academic rank, locus of Ph.D training, and previous NSF funding history.

⁴¹²See Roy, *supra* note 6, at 73-81; Roy, *supra* note 404.

⁴¹³This was the position taken by most of the agency staffers questioned on this issue.

⁴¹⁴Several witnesses at the 1976 House subcommittee hearings on peer review in NSF agreed that agency staffers could achieve rough ranking outcomes by choosing particular reviewers with known predispositions, but there was little agreement on the extent to which this was in fact happening at NSF. 1976 House Hearings Report, *supra* note 3, at 31. According to one critic of peer review: "[t]he system is susceptible to manipulation by managers who operate under the emotional cover of the 'peer review' rubric so that individual proposals may be favored or disfavored simply by appropriate selection of the reviewers." Roy, *supra* note 6, at 73-81.

In agencies like EPA in which the chairman of the peer review committee chooses the panel members, the staff do not have an opportunity to stack the deck. The person that chooses the panel members, however, may still stack the deck with persons who are likely to fund his or her favorites. This may be more disturbing from a public policy perspective, because the entity exercising the most discretion is not an accountable government employee. Indeed, at the extreme, such delegation of governmental power to private institutions may raise constitutional concerns under the delegation doctrine. See *Carter v. Carter Coal Co.*, 298 U.S. 238 (1936).

⁴¹⁵See Part 7, *infra* (discussion of applicability of Federal Advisory Committee Act to peer review panels).

report preclude applicants from participating on panels in which their own proposals are evaluated.⁴¹⁶ Like animus and favoritism, financial conflict of interest can damage the public interest by discouraging qualified applicants from entering what appears to be a "rigged" system. A public perception that researchers are feathering their own nests with federal research dollars would almost certainly lead to reduced public support of government-funded research. Finally, it is simply immoral (and perhaps illegal) for an individual to appropriate another's ideas through the peer review process for private gain. Theft is theft, whether it takes place in the streets or in a committee room.

Most granting agencies are very sensitive to the financial conflict of interest problem, and they have promulgated regulations to shield against it.⁴¹⁷ The regulations typically ensure that no peer reviewer is in a position to review his or her own proposal or a proposal in which he or she has a financial stake. The regulations, however, do not always prohibit reviewers from evaluating proposals that are in direct competition with their own present or future applications, a matter that will be discussed in the next section.

2. Research Conflict of Interest

Even if the potential grantee recuses himself from the decision on his particular grant, he may have a financial stake in his evaluations of the remaining competing applications. Under the scoring systems that are typically used for allocating limited funds among members of a pool of qualified applicants, the chances of the reviewer's proposal being funded are enhanced if the scores of the competing proposals are held down.⁴¹⁸ In highly competitive fields like chemistry and biotechnology, any additional advantage in the great race to make a new discovery is useful.⁴¹⁹ The peer review process gives researchers access to the innovative ideas of other scientists and artists in their fields, and they can use those ideas in their own research. Indeed, it has been suggested that unshared access to the contents of grant proposals is one of the few small bits of compensation that a reviewer receives for the many hours that he or she devotes to the review process.⁴²⁰

The argument for allowing scientists to review competing proposals is that in some very narrow fields, there are literally no other people in the world qualified to provide an adequate peer review.⁴²¹ Under the well-recognized judicial doctrine of "necessity," a judge may hear a case in which she has

⁴¹⁶NIH Manual 4510, *supra* note 51; 45 C.F.R. §684.11(g); NSF Proposal and Award Manual 1-5 (1989). The proposals of panelists in NIH are reviewed by ad hoc panels assembled for that purpose. *Id.* at 5.

⁴¹⁷See Part 2, at note 63; Part 3, at note 33; Part 4, at note 33; Part 5, at note 53.

⁴¹⁸See NSF Perceptions Report, *supra* note 411, at 24 ("In times such as the present, where the success rate on proposals becomes ridiculously low, the reviewers all become nervous and supercritical because they know that a positive review severely diminishes their own chances of funding."); Roy, *supra* note 6, at 75 ("Because of the absence of even simple procedures to avoid conflict of interest, scientists are often asked to judge the work of competitors, knowing that an excellent rating might jeopardize their own funding.")

Critics of the NEA grants process also complained bitterly of the fact that panelists could sit on panels that judged applications from their own institutions so long as they absented themselves from the consideration of those applications. These complaints inspired Congress to provide in the agency's statute that no person could sit on a panel that considered an application from that person's institution.

⁴¹⁹Roy, *supra* note 404, at 319 (grant proposals are sent to "the set of colleagues who can most adequately evaluate the proposal but who also could use this same information in their own research.")

⁴²⁰See 1976 House Hearings Report, *supra* note 3, at 205 ("the most substantial 'rewards' for reviewing are those universally regarded as unethical or degenerate: theft or plagiarism of ideas, inside information that provides an advantage over colleagues, and a chance to forestall competitors or settle old scores.")

⁴²¹Chubin and Hackett observe:

In the worst case, the pool of appropriate reviewers may shrink to include only those likely to have a conflict of interest because they are so close to the proposer as collaborators or colleagues). Selecting reviewers from outside this pool would invite an incompetent, incomplete, or inappropriate review, yet within the circle of friendships, rivalries, and professional relations jeopardize the character and quality of reviews. Exacerbating these pressures is the shrinking pool of real dollars for research . . . , the increasing complexity of science, and the magnitude of competition for resources. The ethically difficult task of providing an objective, disinterested, reasoned review may soon be practically impossible.

Chubin & Hackett, *supra* note 3, at 80.

a financial stake if any qualified judge would have the same stake in the decision.⁴²² Occasions for the invocation of the doctrine of necessity are exceedingly rare in the legal world, and they should be equally rare in the scientific and fine arts worlds. It is difficult to imagine that there are many legitimate fields of scientific inquiry or artistic expression that are so specialized that the only persons capable of understanding and evaluating grant proposals are current or prospective grantees of the same program.⁴²³ In general, a person with a pending grant application or potential future application from the same pool of funds ought not sit in judgment over his or her competitors.

When information gleaned from the peer review process can be used to the appropriator's monetary advantage, the situation poses a clear financial conflict of interest. Even when monetary gain is not at issue, use of the peer review process to expropriate another's ideas threatens the integrity of the entire peer review-based grants process. Stealing another's ideas plainly constitutes a form of plagiarism, a brand of scientific misconduct that has found its way into the popular press with some frequency in recent years.⁴²⁴ But it is an especially difficult form of plagiarism to detect and prove.

Applicants are likely to be more circumspect in sharing information with reviewers if they know that it may be used to advance the reviewer's reputation or, worse, used to deprive the applicant of the recognition that rightfully belongs to the applicant.⁴²⁵ At the extreme, the researcher may decline to apply for grant funds until the project to be funded is nearing completion to ensure that any reviewers do not have an opportunity to get a "leg up" on the applicant.⁴²⁶ Unlike financial conflict of interest, which is the subject of detailed regulations in many granting agencies, research conflict of interest is not explicitly regulated or even strongly discouraged. Of the agencies studied for this report, only EPA formally addressed this sort of conflict of interest in its guidelines, which provide that "no Panelists will disclose or use to their own advantage any data, concept, research protocol, or any other idea included in the applications."⁴²⁷ The guidelines do not, however, say what the consequences of disclosure or use will be.

E. Lobbying and Political Pressure

One very clear threat to the objectivity of the decisionmaking process is its susceptibility to *ex parte* lobbying by interested persons outside of the formal channels of communications. Not only is the *ex parte* attempt to bend the ear of the decisionmaker unfair to those applicants that cannot make equal claims to the decisionmaker's attention, but it also gives the appearance that the outcome of the

⁴²²For example, the doctrine of necessity applied when several federal judges challenged the failure of Congress to give all federal judges a raise. Since no federal judge lacked a financial conflict-of-interest, any judge could hear the case. *Atkins v. United States*, 556 F.2d 1028, 1036 (Ct. Cl. 1977), cert. denied, 434 U.S. 1009 (1978).

⁴²³A frequent critic of the peer review system, Rustrum Roy, challenges the proposition that peer review must be narrowly limited to persons doing the same work as the applicant. The result is that:

In the present system, the simplest precautions against conflict of interest are ignored. The system flies in the face of the most elementary knowledge of human nature and presupposes a level of objectivity, disinterestedness and honesty, such as never obtained in any human group.

Roy, *supra* note 404, at 318-19. Roy suggests that a better definition of peer is person of equal "rank" and "experience" in science, "drawn not only from the narrow specialty, but explicitly including neighboring fields." *Id.* at 318.

⁴²⁴For example, in 1989 the National Institutes of Health accused a prominent researcher at the Baylor School of Medicine of appropriating ideas from a manuscript that he was asked to evaluate as part of a pre-publication peer review for a scientific periodical. Michael Specter, NIH Accuses Biologist of Stealing Ideas from Rival Researcher, *Washington Post*, July 13, 1989, A16.

⁴²⁵See Darryl E. Chubin, *Open Science and Closed Science: Tradeoffs in a Democracy*, 10 *Science, Technology & Human Values* 73-81 (Spring 1985) ("Because peers are usually defined by substantive competence, those playing the above roles are competitors. Every incentive exists to retain information that might benefit the other. Whereas the communal spirit would suggest 'we're all in this together,' peers are just as apt to set aside altruism and act 'selfishly,' i.e., to withhold information, at least temporarily, so that some competitive advantage, however transitory, is not lost.").

⁴²⁶Roy, *supra* note 404, at 319.

⁴²⁷Orientation Handbook, *supra* note at 181, at 5.

process depends more on influence-peddling than upon the merits of the applications.⁴²⁸ If *ex parte* lobbying plays a role in determining who gets discretionary grants, potential applicants without "contacts" within the granting agency or the peer review panels will be discouraged from applying, and the quality of applications will ultimately suffer.⁴²⁹ Very similar considerations apply to attempts to pressure the decisionmaker by bringing in influential people from the Administration or Congress. Although high level administration officials and congresspersons clearly have a legitimate interest in how the agency goes about distributing government dollars, an objective process must proceed on the basis of objective criteria, rather than anticipation of legislative favors or fear of congressional retaliation. Fortunately, there is little indication that *ex parte* lobbying, influence peddling and outside political pressure play a significant role at any of the scientific institutions studied in this report.

F. Conclusions

Despite the relative dearth of empirical support for definitive conclusions about the extent to which existing peer review grant processes have actually produced biased results, the system as currently implemented in the agencies studied here clearly does have a *potential* for systematic bias. Perhaps more importantly, the potential for bias has occasionally given rise to a public *perception*, stronger for some agencies than others, that bias infects the peer review process. While the potential for bias identified above is clearly not so great as to warrant abandonment of the peer review process or even dramatic changes, it may justify examining proposals for some modest improvements to the existing system.

⁴²⁸For example few would hold out the discretionary grant process at the Department of Housing and Urban Development during the mid-1980s, where successful applicants had to secure the services of former high level administration officials to gain access to the "real" decisionmaking process, as a model for distributing government money in an objective fashion. See generally, Irving Welfeld, HUD Scandals: Howling Headlines and Silent Fiascoes (1992).

⁴²⁹When universities began to bypass the peer review process at the major scientific granting agencies in the late 1980s to lobby Congress for direct appropriations for research projects, several prominent representatives of the academic research community passed resolutions opposing such "pork barrel" funding of scientific research. See Donald N. Langenberg, Earmarked Appropriations: The Debate over the Method of Federal Funding, 20 U. Mich. J. L. Ref. 1029 (1987); High Tech Goes into the Pork Barrel as Congress Helps Old Homestate U., 19 Nat. J. 1350 (1987).

VII. CONCLUSIONS AND RECOMMENDATIONS

The peer review model that has evolved into the primary vehicle for awarding discretionary grants in the scientific community has proven remarkably successful and durable. The proof is in the pudding--the United States is a world leader in most areas of pure scientific research. Government-funded research has produced a storehouse of new knowledge, and past governmental expenditures have created an infrastructure of educated professionals and physical research capacity that should serve as a launching pad for still further scientific advances. The primary reason for this success is the intense dedication of the scientists who devote thousands of poorly compensated hours to reviewing grant applications and sitting through seemingly endless peer review committee meetings.⁴³⁰ More important than the dedication of these volunteers is their integrity, which stems largely from a sense of responsibility to the "scientific community" that nurtures and sustains them. However nebulous the notion of a community of scientists is to the man on the street, it is very real to the professionals from academia and industry who practice science in their laboratories. A consciously biased vote in a peer review panel meeting is not only a lapse in personal integrity, it is a betrayal of the larger community of professionals. In words of the Director of one of NSF's large programs: "Our whole success is based on our credibility."⁴³¹ Hence, instances of bribery, logrolling, and other forms of chicanery that often accompany public discretionary grants programs are virtually unheard of in the context of scientific peer review.

The peer review tradition is not as strong in the arts, social sciences and other professional areas. In the arts, where the public funding is a more recent phenomenon, the sense of community is less well-developed, and the criteria for evaluation may not be as objective. Yet because they recognize that peer review may be the only viable alternative to oppressive government-imposed content restrictions,⁴³² members of the arts community are also strong proponents of peer review. Although the peer review system seems to be working tolerably well in the arts, it has yielded results that have, to a much larger extent than in the sciences, attracted outside criticism from the lay public and politically powerful critics. To some extent, this is inherent in the subject matter. Congresspersons probably deem themselves more qualified to evaluate the quality of artistic proposals than to second guess a group of prestigious scientists.⁴³³

Despite its obvious strengths, the peer review process has potential weaknesses. Some are inherent in the concept of peer review and cannot be changed without changing the character of the process. They are, in other words, necessary evils. Other weaknesses can be cured. Fortunately, there are several practical solutions to reduce the potential for bias and the eliminate the appearance of bias in the peer review process, but they all come with a price attached, either in the form of additional resources that must be devoted to the process or in the form of reduced efficiency.

At the outset, reformers should be wary of attempting to induce too many reforms into a system that is working reasonably well in most contexts. One of the mystifying aspects of peer review in the sciences is the fact that so many highly trained and extremely busy people are willing to devote so much time to the process for so little compensation. While prestige is an important form of

⁴³⁰1976 House Hearing Reports, *supra* note 3, at 33 ("The value of the roughly 100,000 reviews contributed free to the [National Science] Foundation by the scientific community each year is thus in the range of \$2,000,000 to \$10,000,000.").

⁴³¹Telephone interview with Dr. Bill Harris, Director, Science and Technology Centers, National Science Foundation. Nov. 20, 1990. (202) 357-9808.

⁴³²Anthony Lewis, *Abroad At Home: Fight the Philistines*, New York Times, June 8, 1990, sec. A, p. 31, col. 1 ("When politicians get into the business of deciding what is legitimate art, the game is up. That is why the NEA was originally set up in a way that insulated grant decisions from political pressure, with peer review committees playing a crucial role.")

⁴³³Public opinion polls on peer review in the arts are mixed. In a Gallup/Newsweek poll of 500 randomly selected adults conducted on June 23, 1989, 20 percent of the respondents had no opinion, 58 percent favored allowing expert panels, rather than federal officials, award the grants. On the other hand, a Los Angeles Times poll of 2,217 adults on September 20, 1989 indicated that "among those people informed about and supporting government funding, 43 percent preferred the 'public voting on which artists should get funding' to selection by a peer group of artists by 'other artists' (26%) or by 'government experts' (14%)." Gladys Engel Lang & Kurt Lang, "Public Opinion and the Helms Amendment," 21 *Journal of Arts Management and Law* 127, 133-35 (1991).

compensation in the academic community, reforms that add to the reviewers' burdens may offer a further disincentive to undertake an already not-so-attractive task. According to some staffers in the scientific agencies, scientists are becoming less reticent to decline invitations to become peer reviewers, and it is therefore becoming more difficult to assemble panels with the right expertise to evaluate some applications. These problems may only multiply in the future as more academic scientists spend more of their time in lucrative consulting relationships. When the alternative to serving on a peer review committee is \$200 per hour in consulting fees, prominent scientists may tend to opt for the latter alternative.

After examining the threshold question whether peer review should be abandoned altogether in favor of a "strong manager" model of grant allocation, this chapter will explore some possible "patch and repair" solutions to the bias problem and make some relatively modest recommendations for change. The fact that nearly all of the changes suggested here have already been implemented in one or more of the peer review granting agencies studied in connection with this Report suggests that most of them should not be unduly burdensome.

A. Advantages of the Peer Review Model

The peer review model's greatest strength is its ability to achieve objective assessments of competing proposals from highly qualified professionals with expertise in the area of interest.⁴³⁴ When objective criteria can be articulated and applied by persons with training in the relevant field, peer review is an exceedingly effective vehicle for shielding the decisionmaking process from extraneous and inappropriate considerations. In addition, because the applicants are being judged by their peers (or in many cases their "betters"), they are generally inclined to accept the outcome. Indeed, the peer review system is a vehicle for rewarding excellence in the arts and sciences quite apart from the monetary support that comes from funding decisions.⁴³⁵ Because it involves the input of many reviewers, it is generally not perceived as being autocratic or arbitrary. Finally, peer review helps to shield governmental decisionmakers from the political pressures that usually exist when a bureaucracy has the power to dole out public dollars. This is especially important in the arts, where the pressures to impose a narrow cultural uniformity on government funded art are great.⁴³⁶

B. Peer Review versus the "Strong Manager" Model

The discussion of the peer review process in the foregoing chapters began with the assumption that peer review is the most appropriate decisionmaking model for dispersing government funds in the programs being described. It is therefore appropriate at the outset to consider the possibility of abandoning the process altogether in favor of an alternative model that might more efficiently lead to more objective results.

A host of alternative decisionmaking models exist. For example, funds might be allocated through a lottery in which the agency staff would screen all applications for an initial threshold showing of competence and relevance and then conduct a lottery to determine which of the meritorious proposals are funded. Although this process would be completely free of favoritism, animus, tunnel vision, conflict of interest, and outside pressure, it would not fulfill the programmatic

⁴³⁴1976 House Hearing Reports, *supra* note 3, at 32.

⁴³⁵O'Rourke, *supra* note 312 (Peer review "is one of the few acts of approval and applause in the art world that is out of the market loop, beyond the reach of the gatekeepers and taste-makers, those who are involved in the commercialization of art.")

⁴³⁶See Fiss, *supra* note 298. Vartan Gregorian, President of Brown University argues that

Government money is not the government's; it's the people's. It needs checks and balances to be spent wisely, but that is why the peer-review panels are there."

Glueck, *supra* note 320. One might legitimately question Gregorian's conclusion that "experts" in the arts are the best judges of how the "people's" money should be spent. As Part 5 described, Congress has recently required NEA to appoint at least one lay person to each of its peer review panels. See also text accompanying notes 513-523, *infra* (suggesting that lay participation be expanded on peer review panels in all granting agencies).

goal of awarding limited monies to the "best" projects.⁴³⁷ In situations in which society can place little confidence in the ability of human beings (even with considerable expertise) to select the "best" from among a group of otherwise acceptable alternatives, a lottery is an extremely efficient way to make the choice.⁴³⁸ Although this kind of situation probably arises more often in governmental decisionmaking than most policymakers willingly acknowledge, scientific research grants is probably an area in which society can trust informed experts objectively to pick the best proposals from among a pool of good proposals. Whether the same confidence may be placed in the ability of experts to distinguish the best art and music from among a host of acceptable proposals is more debatable. At this juncture, however, Congress has elected not to fund the arts through a lottery. Despite a great deal of recent controversy over public funding to the arts, few would second guess this decision.

Assuming that it is possible to choose the "best" proposals in an objective way according to predetermined criteria, it does not go without saying that the entity making that choice should be a group of the applicants' professional peers. The most frequently mentioned alternative to peer review is the "strong manager" model in which highly trained government officials pick the winners and losers from among the qualified applicants with the aid of objective criteria and/or a formula. This model is familiar in the context of government contracts awarded on the basis of competitive bidding.

Rustrum Roy, a frequent and persistent critic of the peer review system in United States science, has suggested a formula-based strong manager model for funding scientific research. Under this model, the decisions would be made by permanent agency staff, rather than outside peers, but the staff's discretion would be constrained by Roy's suggested formula. The formula is based on the principle that grant applications should be submitted by institutional departments, not individual researchers, and be based upon the past productivity of the applicant institution in the relevant field. A department's productivity would be measured by the number of papers published in agreed-upon journals; the number of M.S. and Ph.D. degrees granted; the aggregate research support from all mission agencies for the faculty; and total support for research from industry.⁴³⁹

Roy's simple formula for determining the sum to be allotted to a department or interdisciplinary laboratory is as follows:

Total sum to be granted to unit =

A x (number of publications) +

B x (weighted number of advance degrees) +

⁴³⁷See Chubin & Hackett, *supra* note 3, at 198.

⁴³⁸See McGarity, *Multi-Party Forum Shopping for Appellate Review of Administrative Action*, 129 U. PA. L. Rev. 302 (1980); 28 U.S.C. §2112(a).

⁴³⁹Rustrum Roy, *Peer-Reviewed Productivity-Based Formula for Funding University Research*, reprinted in *Research Project Selection Hearings* at 24.

Dr. Ercole Cavilieri, a cancer researcher and well-known maverick at NCI, suggested a similar model for awarding discretionary grants in science:

A scientist first learns how to do research in the process of obtaining a Ph.D. degree. If his or her supervising professor believes he or she is a strong candidate for funding, the professor nominates the graduate student for a post doctoral assignment at the laboratory of another scientist. The student would have a supervisory committee both at graduate school and at the institution at which he or she had the post doctoral assignment. The supervisory committees would have an opportunity to observe both the intellectual capacity of the student and also his or her performance as a researcher. After a year or two of post doctoral work, the student would be nominated by his or her graduate school supervisor for a research division grant. The committees and the professor would be expected to vouch for the student's ability to do high quality research. NIH would grant him a 5 year development grant. If the scientist has performed well after five years, he or she would be entitled to continuing support for so long as the researcher continues to produce an acceptable volume of high quality research.

Telephone interview with Dr. Ercole Cavilieri, Professor & Researcher at the Univ. of Nebraska Medical Center, Eppley Institute for Research in Cancer; Eppley Institute of Pharmaceutical Sciences, Nov. 15, 1990.

C x (sum received for research from mission-oriented agencies) +

D x (sum received for research from private industry)

The weighting factors - A, B, C, D - would be adjusted by each agency so that the sum of the monies distributed to all institutions would be equal to the total budget.⁴⁴⁰ If necessary an element of peer review could be incorporated into the system by allowing a panel of peers evaluate the credentials and immediate past performance of individuals in the applicant department.⁴⁴¹

1. Advantages of the Strong Manager Model

The strong manager model has numerous advantages over the peer review model. First, and most obviously, it is less expensive. The resources that are required to assemble peer review panels are available for funding research under the strong manager model. Prestigious and highly productive professionals, who would otherwise spend time writing proposals and engaged in peer review evaluations, could spend more time on their own research and other creative efforts. Especially in programs in which a very large number of qualified applicants are competing for a small number of grants, it seems wasteful to demand that productive professionals spend large amounts of time writing and evaluating proposals, no one of which has a high probability of success.⁴⁴² One prominent researcher complained to NSF that:

The amount of time and effort spent on preparing proposals, reviewing them after inefficiently short periods, and administering them, is an astronomical cost in terms of science that is not getting done. When I observe my colleagues here in the United States I am saddened to see creative, trained minds, diverted away from productive research into huckstering This society is so super-competitive that the process of creativity is becoming swamped by constant evaluations. We are forced into presenting ourselves better and better, rather than doing more and better science. The peer review process has much to recommend it, but I suspect that we are overdoing it in a big (expensive) way.⁴⁴³

The strong manager model only requires a staff made up of competent, but not necessarily prestigious, professionals who are capable of applying the formula in a consistent manner.

Second, the strong manager model gives more emphasis to past productivity and less to the ability of an applicant to draft an attractive proposal. According to Rustrum Roy, "Only the most sanguine advocate unfamiliar with the literature would claim that there is any basis for expecting a correlation between a scientist's ability to present an essay and the actual future production of the 'best science'."⁴⁴⁴ A National Academy of Sciences study of peer review in NSF did not find a high correlation between grants awarded and measures of the previous scientific performance of the

⁴⁴⁰Roy, *supra* note 404, at 322.

⁴⁴¹Roy, *supra* note 439, at 24, 40.

⁴⁴²Roy, *supra* note 404, at 318. Roy uses the example of a decision in 1983 by the Department of Defense to allocate \$30 million pursuant to research proposals from universities. This resulted in 2,200 proposals totalling \$625 million. The peer review panel assembled to make recommendations about the applications necessarily spent a great deal of time evaluating proposals that ultimately could not be funded. *Id.* at 317.

⁴⁴³Merit Review Task Force, *supra* note 100, at 5 (the report does not identify the commenter).

⁴⁴⁴Roy, *supra* note 404, at 318. See also Roy, *supra* note 6, at 48. The recent report of the NSF Merit Review Task Force suggested that more attention be devoted to an applicant's past track record. Merit Review Task Force, *supra* note 100, at 15-16. The report cited favorably the model of the Natural Sciences and Engineering Research Council of Canada, in which proposals from established investigators focus more on the recent track record, while new investigators follow a different proposal format that emphasizes the potential for creative work.

applicants, and there was some indication that chance played a large role in grant awards under the peer review model.⁴⁴⁵

Third, the strong manager model eliminates the potential for research conflict of interest that exists in the peer review model. An applicant's competitors are not in a position to affect the outcomes of the applicant's proposals. Moreover, until the agency has made a final decision whether or not to fund a project, the applicant's ideas need not be disclosed to anyone other than the agency staff.

Fourth, the strong manager model can provide the continuity necessary for a sustained and successful research program. Institutions that produce high quality research on a continuous basis can be assured of continued funding over the long haul.⁴⁴⁶ Researchers can pursue "chance leads" that arise in their research without fear that they will stray too far from the project that was funded.⁴⁴⁷

Fifth, the strong manager model is appropriate for granting agencies with clearly defined missions that may vary from the policy preferences of the reviewers, who might become afflicted with tunnel vision. In such agencies, "the staff member can better judge the key issue of the importance of a proposed bit of research in fulfilling the mission's objective than can extramural experts."⁴⁴⁸ Roy points out that proposal peer review is not used by mission-oriented agencies like the Department of Defense, NASA, the Bureau of Mines, or the Department of Energy. In particular, he notes that the highly successful Office of Naval Research and the Defense Advanced Research Projects Agency have never used peer review and continue to use a strong manager system.⁴⁴⁹

In sum, the strong manager model institutionalizes the "halo effect." The most heavily credentialed researchers would tend to get funding, whether or not they could write persuasive proposals. There would be an effective entitlement to funding until such time as the researcher demonstrated that he could no longer perform good research.

2. Disadvantages of the Strong Manager Model

Perhaps the greatest danger of the strong manager model is the very real possibility that agencies will award money for bad science to support a crony of upper level appointees or to advance a particular political perspective. This problem, which is sometimes referred to as "staff abuse,"⁴⁵⁰ seems endemic to grant procedures in which great discretion is placed in the hands of a few relatively unaccountable low-level governmental officials. EPA's experience in the early 1980s and the experience of the Department of Housing and Urban Development with discretionary grants in the mid-1980s should give pause to anyone who would advocate substituting politically appointed agency staff for peer reviewers.⁴⁵¹

Because the strong manager model focuses heavily upon past accomplishments, it would tend to be biased against newcomers to a scientific field. Roy recognizes this potential and would shield against it by allowing any unit that adds new faculty members to receive one or more extra credits

⁴⁴⁵Cole, Cole and Simon, *supra* note 126, at 885. The study concluded that approximately twenty-five percent of panel decisions would be reversed by a different panel. "Since the reversal rate is about 25%, we may conclude that the fate of a particular grant application is roughly half determined by the characteristics of the proposal and the principal investigator, and about half by apparently random events which might be characterized as the 'luck of the reviewer draw.'" *Id.* See also Alan H. Clark, Luck, Merit and Peer Review, 215 Science 11 (1982) (arguing that this fact does not justify eliminating the peer review model for awarding grants).

⁴⁴⁶According to Roy: "A great advantage of the [strong manager] system is that no step-function changes up or down are possible, preserving the continuity essential in long-term basic research." Roy, *supra* note 439, at 24.

⁴⁴⁷Roy, *supra* note 6.

⁴⁴⁸1976 House Hearing Reports, *supra* note 3, at 39.

⁴⁴⁹Roy, *supra* note 6, at 47. For a brief description of the granting system at the Office of Naval Research in the 1970s, see 1976 House Hearing Reports, *supra* note 3, at 20.

⁴⁵⁰1976 House Hearing Reports, *supra* note 3, at 25.

⁴⁵¹See generally, Welfeld, *supra* note 428.

equal to the average research support for each faculty in the unit.⁴⁵² This does not, however, allow for the institution that desires to achieve prominence by building from the ground up, and it would make it very difficult to shift funding out of departments that become moribund.

Institutionalizing the halo effect through the strong manager model would also tend to increase the disparity between "have" and "have not" institutions, because the best researchers tend to locate at the most prestigious institutions.⁴⁵³ As a result one institution might well have several well-funded departments, while another received no funding at all. Over time this would become self-reinforcing, as faculty members with high potential gravitated to the departments that were most securely funded.

The efficiency advantages of the strong manager model should not be overemphasized. While awarding a smaller number of multi-year grants to a few departments would reduce the amount of resources devoted to the grant awards process at the front end, it might result in the adoption of more protective procedures at the back end when the granting agency sought to deprive an existing department of its grant at renewal time. The grants, in other words, might come to more closely resemble entitlements.

Finally, by placing heavy reliance upon publications, Roy's formula-based version of the strong manager model would to some extent simply shift the locus of peer review from the grants process to the private sector journal peer review process where governmental privacy and due process protections are not applicable and where there may be even fewer protections against bias.⁴⁵⁴

3. Conclusions

The case for wholesale abandonment of the peer review model for discretionary grants in the arts and sciences is far from compelling. In the main, peer review seems to be functioning quite efficiently, and the occasional criticisms of the process in practice do not appear to warrant rejection of the model.

Peer review works best in cautious programs in which incremental gains are expected and where accuracy is a paramount goal. Because it tends to result in bias against mavericks, however, it can be counterproductive in programs designed to explore fresh ideas and innovative approaches. Agencies that administer programs aimed at enhancing innovation should consider reducing or eliminating the role that peer review plays in awarding discretionary grants. One intermediate solution, therefore, would be to emulate NSF's recently adopted "expedited awards" program in which a small percentage of each Program's budget can be set aside for small grants of limited amount and duration without peer review. If the seed grants bear fruit, the mavericks should have a better chance to prove the merits of their ideas to skeptical peer reviewers in the next funding cycle. In 1989, an NSF appointed panel examined the recently implemented program and concluded that it was an excellent vehicle for funding "untested and novel ideas, ventures into emerging research areas, new expertise and approaches to 'old' topics, [and] new multi-disciplinary work."⁴⁵⁵

⁴⁵²Roy, *supra* note 6, at 79.

⁴⁵³See Chubin & Hackett, *supra* note 3, at 42.

⁴⁵⁴See Chubin & Hackett, *supra* note 3, at 201.

⁴⁵⁵Quoted in Bjerklie, *supra* note 105.

RECOMMENDATION

Agencies that rely upon peer review to evaluate grant proposals should consider setting aside a small portion of the available funds for awards to innovative proposals out of the mainstream based upon recommendations of the staff without peer review. Such awards should be of relatively brief duration, and should be subject to renewal only through the ordinary peer review process.

A. Openness and Accountability as Shields Against Bias

Bias can flourish in closed peer review systems in which panel meetings are conducted in private, mail reviews are unavailable for scrutiny and rebuttal by rejected applicants, and the relevant economic and research interests of the reviewers are not disclosed. By its very nature, peer review tends to be secretive and unaccountable to applicants and the general public. Two long-time students of the peer review process observe that:

Peer review is an intensely private process that originates with a scientist's mind, continues on paper as a bureaucratic procedure and ends behind the closed doors of a funding agency. The process is at nearly all points inaccessible, opaque, and heavily infused with the values and interests of stake holders. Peer review leaves few clues in the public domain, and many participants in the system insist on minimizing public access to information.⁴⁵⁶

On the theory that "sunlight is . . . the best disinfectant,"⁴⁵⁷ one relatively modest protection against bias in peer review is to open the process up to greater scrutiny by affected applicants and the public. The House subcommittee that studied peer review in NSF in 1976 recommended that NSF attempt to achieve "[t]he greatest degree of openness [in the] award-decision making process consonant with effective proposal evaluation and reasonable efficiency" ⁴⁵⁸

Parts 2-5 revealed that the peer review systems in NIH, EPA and NSF have evolved in the direction of greater openness and accountability, but some agencies have evolved more rapidly than others. The evolution in the scientific agencies toward greater openness has mirrored a general opening up of the bureaucratic process through the enactment of the Freedom of Information Act (FOIA),⁴⁵⁹ the Federal Advisory Committee Act (FACA),⁴⁶⁰ and the Privacy Act,⁴⁶¹ all three of which apply directly to various aspects of the peer review process in the granting agencies.

1. The Existing Legal Regime--The Freedom of Information Act, the Federal Advisory Committee Act, and the Privacy Act

The FOIA requires every federal agency to make available to any person any record in the agency's possession upon a request by that person that reasonably describes the record. This broad requirement, however, has several important exceptions. The exemptions most relevant to peer review in granting agencies are exemptions (4), (5) and (6). Exemption (4) includes "trade secrets and commercial or financial information obtained from a person and privileged or confidential," and exemption (5) covers "inter-agency or intra-agency memorandums or letters which would not be available by law to a party other than an agency in litigation with the agency." Exemption (6) applies

⁴⁵⁶Chubin & Hackett, *supra* note 3, at 50.

⁴⁵⁷Louis D. Brandeis, *Other People's Money* 92 (1914) ("Sunlight is said to be the best disinfectant; electric light the most efficient policeman").

⁴⁵⁸1976 House Hearing Reports, *supra* note 3, at 5.

⁴⁵⁹5 U.S.C. §552.

⁴⁶⁰5 U.S.C., App. 2.

⁴⁶¹5 U.S.C. §552b.

to "personnel and medical files and similar files the disclosure of which would constitute a clearly unwarranted invasion of personal privacy."⁴⁶²

The FACA requires federal agencies that rely upon recommendations of advisory committees to charter those committees.⁴⁶³ The term "advisory committee" is defined functionally to include any committees that are "utilized" by federal agencies "in the interest of obtaining advice or recommendations for" those agencies. Peer review committees clearly come within this broad definition.⁴⁶⁴ Each advisory committee's charter must set out the committee's objectives, duties, number and frequency of meetings, and termination date. Insofar as the Government in the Sunshine Act does not provide otherwise,⁴⁶⁵ public notice must be given of all advisory committee meetings, they must be "open to the public," and interested persons must be permitted to attend and file statements.⁴⁶⁶ The Government in the Sunshine Act allows an agency to close meetings or portions of meetings where an open meeting might result in disclosure of, *inter alia*, trade secret and commercial or financial information that is privileged or confidential, or information "of a personal nature where disclosure would constitute a clearly unwarranted invasion of personal privacy."⁴⁶⁷ The agency must prepare minutes for advisory committee meetings and make those minutes available to the public, subject to the exemptions in the Freedom of Information Act.⁴⁶⁸ Transcripts of advisory committee meetings must be made available to the public, subject to the same exemptions.⁴⁶⁹

The Privacy Act requires federal agencies to protect personal information in agency files from unauthorized disclosure, to publish descriptions of the existence and nature of the records containing personal information about people, and to give individuals access to review and copy information about themselves and to demand that the agency correct any information that is not accurate, relevant, complete or timely.⁴⁷⁰ The agency must either make the requested correction or inform the individual of its reasons for failing to do so. The agency must give an individual whose request is denied a right to review that decision within 30 days.⁴⁷¹ The Act, however, only applies to "systems of records" from which records are retrieved by the name of an individual or other personal identifier. This latter qualification has proven controversial and difficult to interpret. The Privacy Act also contains several exemptions, one of which is for "investigatory material compiled solely for the purpose of determining suitability, eligibility, or qualifications for Federal civilian employment [or] Federal contracts," but only "to the extent that the disclosure of such material would reveal the identity of a source who furnished information to the government under an express promise that the identity of the source would be held in confidence."⁴⁷²

2. Reviewer Meetings

Most peer review granting agencies facilitate openness and accountability by holding open committee meetings. Open meetings allow outsiders to observe the decisionmaking process in action. Even when meetings are legitimately closed to the public to protect privacy interests or to preserve candor, each committee member has the opportunity to observe the demeanor of the others and to

⁴⁶² 5 U.S.C. §552(b)(4), (5), (6).

⁴⁶³ 5 U.S.C. App. 2, §9(c). See also United States General Accounting Office, *Peer Review: Compliance With the Privacy Act and Federal Advisory Committee Act* (1991) (reporting that most agencies studied in the report chartered peer review committees as advisory committees under FACA).

⁴⁶⁴ See Memorandum Opinion for the General Counsel, National Endowment for the Humanities, from Leon Ulman, Deputy Assistant Attorney General, Office of Legal Counsel, August 18, 1980 (mimeo, copy on file with author).

⁴⁶⁵ 5 U.S.C., App. 2 §10(d).

⁴⁶⁶ 5 U.S.C., App. 2 §10(a)(1), (3).

⁴⁶⁷ 5 U.S.C. §552b(c)(3), (4), (6).

⁴⁶⁸ 5 U.S.C., App. 2 §10(b), (c).

⁴⁶⁹ 5 U.S.C., App. 2 §11(a).

⁴⁷⁰ 5 U.S.C. §552a(b), (d), (e).

⁴⁷¹ 5 U.S.C. §552a(d)(3). The review period may be extended another 39 days for good cause.

⁴⁷² 5 U.S.C. §552a(k)(5).

challenge their evaluations. A committee member who would play favorites or blackball an applicant must be prepared to meet the honest inquiries of his or her fellow experts on the committee. Hence, bringing all of the reviewers together to discuss their opinions can in itself be a powerful shield against favoritism and animus.⁴⁷³ All of the granting agencies studied in this report provide for peer review panels, and some assemble more than one group of peers for a single round of evaluations.⁴⁷⁴

The principal disadvantage of panel meetings is the expense, both in terms of the resources required to bring the experts together and the valuable time of productive professionals consumed in travel and meetings. Meetings are almost always less efficient than one-on-one communications. In addition, since it will usually be more difficult for upper level decisionmakers to reach results that differ greatly from a panel's unanimous recommendations, meetings can reduce the discretion of politically accountable decisionmakers.⁴⁷⁵ Finally, meetings can facilitate old boyism and the halo effect, and they will not necessarily limit any tendency of peer reviewers to downgrade mavericks.

Nevertheless, the effort seems warranted in most cases. Where expense is a genuine constraint, alternatives exist to facilitate peer review meetings at very little overall cost. For example, it should be relatively inexpensive in the context of mail reviews at NSF to circulate written reviews to each of the reviewers and conduct a single conference telephone call to discuss and possibly amend the reviews. Such an informal meeting could greatly enlighten the agency staffer who must rank the proposals for upper level decisionmakers. It could provide valuable feedback to the reviewers as to how their peers evaluated the same proposals.

Assembling the reviewers for a meeting will usually bring the process within constraints of the Federal Advisory Committee Act. With several important exceptions, meetings subject to FACA must be open to the public. Although it may be difficult to open telephone conference calls to the general public, it may be feasible to invite interested members of the public to listen to the contents of the conversations either in person or on tape. The extent to which the meetings should be open to the public and minutes and transcripts be made available to applicants and the public will be discussed below. The essential point here is that there is virtue in meetings, whether or not their contents are open to applicants and/or the public.

RECOMMENDATION

Agencies that rely upon peer review to evaluate grant proposals should generally assemble the reviewers for a meeting in which each reviewer has an opportunity to comment upon the evaluations of the other members in the presence of the other members. Such meetings may be arranged in person or by telephone conference call.

A. Feedback and Rebuttal

The decision not to fund a grant application can have serious consequences for an academic researcher's career. Younger scientists at prestigious institutions have no hope of becoming tenured if they do not have at least one NIH or NSF grant. The denial of a grant application to a more established researcher can result in the closing of his laboratory and effectively end his or her career as a productive researcher.⁴⁷⁶ For some artists and musicians, NEA grants are a principal source of livelihood. A rejected applicant in any of these agencies understandably wants to know why the funding agency took that potentially career ending action. If the applicant discovers that a mistake

⁴⁷³1976 House Hearing Reports, *supra* note 3, at 37-38.

⁴⁷⁴NSF relies upon mail reviews without meetings for many of its programs, but the staff always has the option to assemble the outside reviewers for a meeting to discuss all of the proposals.

⁴⁷⁵See 1976 House Hearing Reports, *supra* note 3, at 38.

⁴⁷⁶See Kolata, *supra* note 18 (reporting statements made at a National Academy of Sciences Forum on the crisis in research funding); Booth, Biomedical Scientists Cite Funding "Crisis," Washington Post, June 29, 1990, A25, col. 1 (same).

was made in the evaluation, fairness demands that the applicant be given an opportunity to correct the error and to rebut the decision not to fund before the final funding decision is made.

1. Feedback

One of the most powerful procedural protections against bias is the requirement that the decisionmaker state his or her reasons.⁴⁷⁷ Just as judges in the legal system are generally obliged to provide reasons for the exercise of judicial power, peer reviewers could be required to provide a statement of reasons to rejected applicants. A reasons requirement is, however, not a panacea. Any sophisticated observer of the legal and administrative process knows that an agency's statement of reasons can be a *post hoc* rationalization for a decision reached upon unarticulated or improper grounds. It is often easy enough for the decisionmaker to find the bottom line first and then come up with a rationale to explain that result. Still, forcing the peer reviewers to state reasons can enhance the acceptability of the decisions among the pool of rejected applicants and the reasons can help them improve future applications.⁴⁷⁸

The FOIA and the FACA require granting agencies to provide some feedback to rejected applicants as members of the general public. The Privacy Act goes beyond FOIA and FACA to make particular information about individuals available to those individuals even when that information need not be disclosed to the general public. Thus, the question whether feedback is appropriate has to some extent already been decided by Congress, and the granting agencies are obliged to follow the statutory directives.

The Privacy Act requires federal agencies that maintain a system of records in which the records of individuals are identifiable to allow individuals to review and copy information about themselves, and FOIA similarly requires agencies to provide copies of agency documents to any person. But neither statute requires that the agency generate any written information that it would not otherwise prepare; nor do they require the agency to maintain information in the applicants' files for any particular length of time. Thus, for example, an applicant for an EPA grant is theoretically allowed to see the written evaluations of individual reviewers, but the evaluations are in the agency's file only for as long as it takes the agency staffers to incorporate their substance into a "Summary Statement." Thus, as a practical matter, the applicant does not have access to the written reviews.

The FACA gives applicants the right to observe peer review committee meetings where outside evaluations are discussed, and it further requires that all "records, reports, transcripts, . . . working papers, . . . studies, . . . or other documents which were made available to or prepared for" advisory committees be made available for public inspection.⁴⁷⁹ But FACA also allows agencies to close advisory committee meetings to the public when necessary to protect trade secrecy and personal privacy, and the right to inspect documents is subject to the exemptions in FOIA.

The public availability of committee working papers, including initial peer reviews, under FOIA raises several complex legal issues, some of which have been answered in the seminal case of *Washington Research Project, Inc. v. Dept. of Health, Education and Welfare*.⁴⁸⁰ In that case an organization sought information on eleven projects that NIH had funded through the National Institute of Mental Health to study the effects of psychotropic drugs on the behavior of children with certain learning disabilities. In particular, they sought the grant applications and information collected pursuant to the peer reviews. At that time NIH only publicized a list of research grants that

⁴⁷⁷See, e.g., *International Harvester Co. v. Ruckelshaus*, 478 F.2d 615 (D.C. Cir. 1973); Friendly, *Some Kind of Hearing*, 123 U. Pa. L. Rev. 1267, 1292 (1975).

⁴⁷⁸After conducting extensive hearings into the peer review at NSF in 1976, a House subcommittee recommended:

The Foundation should include in each letter announcing a funding decision to an applicant either a statement of the methods and rationale of the decision or a statement that such information will be provided on request.

1976 House Hearing Reports, *supra* note 3.

⁴⁷⁹5 U.S.C., App. 2 §10(b).

⁴⁸⁰504 F.2d 238 (D.C. Cir. 1974), cert. denied, 421 U.S. 963 (1975).

were awarded, including a general description of the project and its budget. The agency claimed that all of the requested information came within exemptions (4), (5) and (6) of FOIA.

The court of appeals first rejected the agency's argument that a grant application was protected from disclosure by the trade secret exemption (exemption (4)), noting that the exemption was "not necessarily coextensive with the existence of competition in any form."⁴⁸¹ Thus, despite the fact that the ideas contained in research grant proposals were the researcher's "stock in trade," they were not protected, because they were not commercial. The court concluded:

It is clear enough that a non-commercial scientist's research design is not literally a trade secret or item of commercial information, for it defies common sense to pretend that the scientist is engaged in trade or commerce.⁴⁸²

In a footnote, the court noted that NIH regulations at that time precluded grant awards to for-profit institutions.⁴⁸³

The court held, however, that the pink slips and site visit reports (and presumably reviewer reports to peer review panels) were protected by exemption (5), the exemption for internal agency documents. Although a peer review panel was not itself a federal agency, it was "performing staff functions through the medium of outside consultancy."⁴⁸⁴ Thus, while exemption (5) did not shield purely factual material, it did allow an agency to refuse to disclose "materials reflecting deliberative or policy-making processes."⁴⁸⁵ Even purely factual matter could be exempt if it was "inextricable without compromise of the deliberative process."⁴⁸⁶ Similarly, a summary of factual information that was part of the deliberative process could be withheld. Applying these statutory principles, the court concluded that most of the material in the site visits and pink sheets did not have to be disclosed. In particular, the factual material in the pink sheets was sufficiently connected to the deliberative process so as to preclude disclosure of any information contained therein.

FACA does not have a similar "internal deliberations" exemption, because the whole purpose of FACA is to open up such deliberations to the public. Thus the primary rationale for declining to make peer review evaluations available to requesters under FOIA is unavailable to requests under FACA to attend peer review committee meetings and to have access to materials relied upon and discussed at those meetings. The *Washington Research Project* court's resolution of the trade secrecy question would seem to govern both FOIA and FACA requests, and thus preclude that rationale for limiting public access to peer review documents.

Recent developments, however, may have undermined the *Washington Research Project* holding on the trade secrecy issue. NIH has changed its policy of not funding private research enterprises, and some academic scientists have become wealthy as a result of research programs initially funded by NIH. In the booming area of biotechnology, lucrative partnerships and consultantships are no longer the exception to the rule that academic scientists are devoted, but poorly compensated, seekers of scientific truth. In short, it no longer "defies common sense to pretend that the scientist is engaged in trade or commerce." Yet even if the trade secrecy exemption may be applicable to some grant applications in the area of biotechnology, the *Washington Research Project* rationale would still seem to preclude using the trade secrecy exemption to shield from public disclosure peer review information about applications in other hard sciences, the social sciences and the arts.

The FACA, however, has an additional exemption for advisory committee consideration of matters for which meetings may be closed under the Government in the Sunshine Act—viz., information "of a personal nature where disclosure would constitute a clearly unwarranted invasion of

⁴⁸¹504 F.2d at 244.

⁴⁸²*Id.*

⁴⁸³504 F.2d at 244, n. 6.

⁴⁸⁴504 F.2d at 246.

⁴⁸⁵504 F.2d at 249, quoting *Environmental Protection Agency v. Mink*, 410 U.S. 73, 89 (1973).

⁴⁸⁶504 F.2d at 249.

personal privacy." This exemption is considerably broader than FOIA's exemption for "personnel and medical files and similar files the disclosure of which would constitute a clearly unwarranted invasion of personal privacy." Arguably, peer review evaluations are "of a personal nature" to both the reviewer and the applicant. A reviewer's comments are personal in the sense that they do not reflect the ideas or assessments of other persons. On the other hand, the peer reviewers are constantly urged to evaluate the applications in their professional roles without regard to personal considerations, like the reviewer's friendship with the applicant.⁴⁸⁷ Similarly, career-oriented information is generally considered professional, rather than personal, from the perspective of the applicant. If a reviewer's comments are of a personal nature, then the agency could reasonably conclude that disclosing them to the public would constitute a clearly unwarranted invasion of personal privacy. On the other hand, it is not obvious how disclosing the comments of other persons on the applicant's proposal constitutes a clearly unwarranted invasion of the applicant's personal privacy.⁴⁸⁸ While the case for closing peer review panel meetings to the public under the FACA is plausible, it is not especially compelling.⁴⁸⁹

Assuming that the granting agencies can shield most peer review information from public view, the Privacy Act may still require them to share such information with the applicants themselves. That statute requires agencies to give individuals access to review and copy information about themselves in agency files. The Privacy Act lacks the trade secrecy, internal agency deliberation and personal privacy exemptions, but it contains at least one exemption that may be applicable to peer review evaluations. Agencies may promulgate rules to exempt records that constitute "investigatory material compiled solely for the purpose of determining suitability, eligibility, or qualifications for civilian employment or federal contracts to the extent that the disclosure of such material would reveal the identity of a source who furnished information to the government under an express promise that the identity of the source would be held in confidence."

This Privacy Act exemption would appear to be applicable to peer review documents concerning discretionary grant applications if the word "contracts" includes discretionary grants. Although the subject of great debate between the executive branch and Congress, this question has not been resolved by a court. The American Law Division of the Congressional Research Service has

⁴⁸⁷See Memorandum Opinion, *supra* note 464 (mimeo, on file with author) ("to invoke a Sunshine Act exemption, a more specific justification must be found to exist than merely a generalized need to protect candor in advisory committee deliberations").

⁴⁸⁸A memorandum prepared by the General Counsel of the National Endowment for the Arts found that resolution of the issue involved a balancing analysis:

The subjects to be discussed with respect to applications for financial assistance could well include, for example, an applicant's abilities in his field, his reputation among his colleagues, and his professional background in performance. These topics would certainly appear to involve the type of personal information in which an applicant has a privacy interest. But the fact that an applicant has a legitimate privacy interest in a closed committee meeting does not end the inquiry. The agency must also determine that the privacy interest is not *de minimis* and is not outweighed by countervailing interests in openness.

Memorandum Opinion, *supra* note 464 (mimeo, on file with author).

⁴⁸⁹The legislative history of the addition of the Sunshine Act exemptions to the Federal Advisory Committee Act is not especially enlightening. The Conference Committee Report speaks directly to the issue of peer review panels, but does not resolve it:

The conferees . . . are concerned about the possible effect of this amendment upon the peer review and clinical trial preliminary review systems of the National Institutes of Health. The conferees thus wish to state as clearly as possible that personal data, such as individual medical information, is especially sensitive and should be given appropriate protection to prevent clearly unwarranted invasions of individual privacy. Although the conferees are sympathetic to the concerns expressed by NIH . . . the conferees are equally sympathetic to concerns expressed by citizen's groups that important fiscal and health-related information not be unnecessarily withheld from the public.

H.R. Conf. Rep. No. 1441, 94th Cong., 2d Sess. 26 (1976).

concluded that the word "contract" in the exemption does not include discretionary grants,⁴⁹⁰ but the General Counsel of NSF has concluded that it does.⁴⁹¹

NSF takes the position that federal grants and awards are a subset of the broader category of federal contracts and that in the context of grants, the terms are interchangeable. CRS argues that contracts and grants are distinct entities. Contracts are limited to civilian and military personnel employment and traditional procurement contexts, whereas grants involve less supervised dispersals of government largess without a well-defined quid pro quo. The statute is at best ambiguous, and each side of the debate can cite ample legislative history to support its view. Ultimately, the matter will have to be resolved definitively by a court, or Congress will have to resolve it with new legislation.

All of the granting agencies studied for this report close peer review committee meetings during the discussion and ranking of applications.⁴⁹² As we have seen, despite the *Washington Research Project* holding that pink sheets need not be disclosed to the *public*, NIH routinely makes these staff-prepared summaries of the comments of peer reviewers available to *applicants*, and if pressed it will provide rejected applicants with redacted copies of study section minutes. Although NSF originally failed to provide reasons to applicants, its recent procedural changes should ensure that most applicants learn the reasons for the reviewers' recommendations. EPA provides summary statements to rejected applicants, and they are theoretically entitled to see the written comments of the primary reviewers, but since these are discarded as soon as the summary statements are drafted, applicants do not as a practical matter have access to them. The practice in NEA varies. Some Program Specialists are willing to describe in detail the considerations that motivated the panelists; others only send out a form letter containing the applicant's score.

As we observed in Part 6, a reasons requirement is a powerful legitimator of a decisionmaking process, and it usually is relatively cost-free, because the system itself usually generates written statements of reasons, albeit sometimes in rather primitive form, for its own internal purposes. Granting agencies that rely upon the peer review model should go beyond the minimum requirements of FACA and the Privacy Act to adopt NIH's practice of preparing detailed one-page summary statements of panel evaluations on a routine basis, whether or not an applicant requests that information. Although this requires some additional staff time, it should not be excessively burdensome. Some documentation of panel deliberations is no doubt undertaken in any event. Reducing those notes to a one page explanation should not add greatly to the staff time already devoted to the process. In addition, granting agencies should make any written evaluations prepared by the peer reviewers and minutes of any peer review panel meetings available to applicants as requested.

Although not explicitly required by the Privacy Act, agencies could record and prepare transcripts of advisory committee meetings and make redacted versions of them available to applicants. Many granting agencies, however, administer dozens of peer review committees, and are hard-pressed merely to prepare minutes of panel meetings. A requirement that meetings be recorded and transcripts prepared would probably discourage candor to some extent and would definitely add greatly to the expense of the peer review process. On the other hand, some agencies, like NEA, for reasons of their own routinely record peer review meetings. To the extent that transcripts are also prepared, they should be made available to applicants with information allowing the identification of particular speakers suitably redacted. The tape recordings themselves, however, should not be made available to applicants, because they would no doubt allow an applicant to attribute particular comments to particular individuals.⁴⁹³

⁴⁹⁰Memorandum to House Government Operations Subcommittee on Information, Justice and Agriculture from American Law Division, Congressional Research Service, dated January 4, 1990.

⁴⁹¹Memorandum to Erich Bloch, Director from Lawrence Rudolph, (undated).

⁴⁹²See also United States General Accounting Office, *Peer Review: Compliance With the Privacy Act and Federal Advisory Committee Act* 6 (1991).

⁴⁹³See text accompanying notes 501-509, *infra*.

2. Rebuttal

As we have seen, the Privacy Act gives persons about whom an agency keeps records the right to demand that the agency correct any information in such records that is not accurate, relevant, complete or timely. Depending upon the timing of the attempted correction, this provision could provide an avenue for applicants to submit rebuttals to inaccurate statements in the documents that the agency makes available as feedback. Agency practice with respect to providing rejected applicants an opportunity to rebut initial peer review determinations varies widely.⁴⁹⁴ Applicants for NIH grants may submit purely factual rebuttals to the relevant Advisory Council, but it is highly unlikely that an Advisory Council will ever seriously consider a rebuttal absent flagrant factual errors. NSF's recent reforms do not provide any opportunity for an applicant to rebut factual errors in the review documents. EPA's Privacy Act regulations give applicants an opportunity to submit corrections to documents contained in their files, but the most important documents are usually removed before the applicant can gain practical access to them, and it is not clear that any submitted rebuttal would be considered prior to the final funding decision. NEA applicants can obtain a reconsideration of rejected applications, but only if an agency staffer is willing to take up the applicant's cause. Even in those rare cases in which an applicant can persuade a staffer to appeal, the grounds for reconsideration are very narrow.

Of the agencies studied here, only NIH provides an opportunity for the applicant to rebut any errors manifested in the evaluations prior to the final funding decision, and even that process is not especially effective. The Privacy Act provides that a person about whom an agency keeps records has the right to review those records and to secure the correction of any information that is not accurate, relevant, complete or timely. Once again, however, this requirement applies only to records that the agency retains long enough to be available to a requesting applicant. Documents that are discarded at the end of peer review committee meetings or soon thereafter are generally not available to be rebutted under the Privacy Act.

The granting agencies should follow NIH's practice of making summary statements ("pink sheets" in NIH parlance) available to applicants sufficiently in advance of a final decision to correct inaccuracies and to have those corrections considered by the agency staff.⁴⁹⁵ In addition, the agencies should retain any written evaluations of peer reviewers and minutes and any transcripts of committee meetings in the applicants' files for a sufficient length of time (normally less than one month) that the applicant can obtain a copy and rebut information contained therein. While this may increase the number of document requests and attempted rebuttals from the current minimal level, it should not bog down the process, because only factual rebuttals (not disputes about the merits of the evaluations) need be considered. Finally, the existing NIH process could be improved by allowing applicants to submit written rebuttals to the peer reviewers themselves, rather than to a reviewing entity (like the NIH Advisory Councils) that usually approve the peer reviewers' recommendations on a *pro forma* basis. This would provide a realistic opportunity to affect the decisionmaking outcome without consuming too much reviewer time.⁴⁹⁶ A second meeting of the reviewers would not be required, except in cases in which the reviewers believed that a serious error had been made that would affect

⁴⁹⁴According to Rustrum Roy, the Dutch government allows rebuttal prior to funding. Roy, *supra* note 404, at 327.

⁴⁹⁵See Chubin & Hackett, *supra* note 3, at 203-04 ("Principal investigators . . . should be allowed to write a rejoinder to their reviews before the award . . .").

⁴⁹⁶A recent book on peer review by Chubin and Hackett suggests that NSF implement a less adversarial "dialogue" model:

Principal investigators and authors should be allowed to write a rejoinder to their reviews before the award or publication decision. . . . We hope peer review can become a dialogue, a collective decision with somewhat less of the adversarial tone it now has.

Chubin & Hackett, *supra* note 3, at 203.

the outcome of the process. Any additional meeting could probably be accomplished by conference telephone call.⁴⁹⁷

RECOMMENDATION

Granting agencies should prepare and routinely make available to applicants brief summaries of the reasons for peer review evaluations. If peer reviewers or peer review committees prepare written evaluations of individual applications, these documents should be retained for a full funding cycle, and copies of such written evaluations should be made available to applicants upon request in a redacted form so that particular evaluations may not be attributed to particular reviewers. This information should be made available to applicants sufficiently far in advance of the agency's final decision that applicants may review the documents, submit corrections of any information that is not accurate, relevant, complete or timely, and have those corrections considered by the peer reviewers and/or the agency staff.

Much of the reason for the wide variation among the granting agencies with respect feedback and rebuttal stems from the fact that few have attempted to articulate substantive criteria and guidelines for implementing their Freedom of Information Act, Federal Advisory Committee Act and Privacy Act obligations. In some agencies (e.g. NEA) the agency's practice varies from program to program depending upon the particular Director's attitudes about the value of sharing information concerning the content of panel meetings with rejected applicants. Such wide variations across programs within a single agency on issues as basic as the agency's Privacy Act obligations are difficult to justify. On the other hand, it is not necessary that the agencies narrowly confine the information that they make available to rejected applicants to the bare minima required by the Privacy Act.

The agencies should determine in advance and in some detail the kinds of information that will normally be made available to rejected applicants and to the public and adhere to those determinations in all of the agency's programs in the absence of compelling reasons for departing from them. The best vehicle for crafting agency policy on information disclosure is an informal rulemaking proceeding devoted to that purpose. The agency could publish a proposed rule containing a detailed description of the information that will normally be available to applicants and to the public and specifying procedural vehicles for obtaining that information. Some information (e.g. scores, anonymous evaluations or staff summaries of peer evaluations) could be made available automatically in the agency's letter notifying applicants of the outcome; other information might be made available only upon receipt of a specific request and only to someone authorized to receive it. The agency could even create an appeals process under which an applicant or member of the public could demand more information upon a showing of good cause.

RECOMMENDATION

Granting agencies should, through notice-and-comment rulemaking, write uniform procedures identifying information that will normally made be available to grant applicants and the public and specifying the procedures under which particular kinds of information will be available to different classes of requestors. Such procedures should specify information in as much detail as possible, and they should be made applicable to all granting programs within a single agency.

⁴⁹⁷Since the conference call meeting would be a meeting of an Advisory Committee, it would have to be announced in advance. Since it would be considering an individual application, however, the meeting could be closed to the applicant and the public. Thus, the meeting could be accomplished by a conference call in which only members of the peer review committee would be invited to attend.

A. Anonymity

1. Applicant Anonymity

An obvious first-level shield against favoritism and animus is a requirement that the name and institutional home of the applicant be kept secret from the peer reviewers.⁴⁹⁸ Like "blind grading," this sort of anonymity makes it difficult to reward friends or damage enemies, because the evaluator is not supposed to know which projects are associated with which applicants. It also should eliminate the "halo effect" that results in unmeritorious applications receiving funds on the basis of the reputation of the principal investigator. Finally, blind evaluations may increase the chances that meritorious applications from mavericks will be funded.

The most powerful objection to applicant anonymity is the fact that in many cases the best indication of the potential for success is the applicant's experience and past track record. Since peer reviewers cannot evaluate an anonymous applicant's track record, they would be limited to the application itself, which may depend more on the applicant's writing ability than his or her competence or potential for creativity. In relatively narrow fields, it is impossible as a practical matter to shield the identities of applicants from reviewers. People in a given field know each other's work, and the citations list for a grant application is likely to be filled with citations to the applicant's previous work.⁴⁹⁹ Finally, blind reviewing may discourage competent reviewers from participating in the process.⁵⁰⁰

Applicant anonymity is desirable when it is feasible, but it is not often feasible. Some of the programs in NEA are able to achieve anonymity for portions of the review (e.g., blind auditions of orchestras or performers via tape recordings), but they lift the veil of anonymity for other portions.

RECOMMENDATION

Where feasible and consistent with effective application of merit review criteria, the identities of applicants for discretionary grants should not be revealed to peer reviewers. Agencies should consider allowing peer reviewers to conduct discrete portions of peer reviews under conditions of applicant anonymity in cases in which complete applicant anonymity is not feasible or consistent with effective application of merit review criteria.

2. Reviewer Anonymity

Many observers of the peer review process have suggested that the identity of peer reviewers ought to be a matter of public record. Biased reviewers can hide behind the cloak of anonymity and thereby avoid accountability to applicants and the general public for their biased evaluations. Opening peer review to public inspection could shield the decisionmaking process against unfounded charges of bias.⁵⁰¹ Some observers argue that reviewers who make career-shaping decisions about the scientific quality or artistic excellence of grant proposals should be willing to defend their evaluations

⁴⁹⁸The following analysis addresses only the extent to which government-retained peer reviewers should be aware of the identity of applicants. It does not address the broader question whether the identities of applicants should be made available to the general public, a question that invokes the interplay between the Privacy Act and FOIA.

⁴⁹⁹See Chubin, *supra* note 425.

⁵⁰⁰1976 House Hearing Reports, *supra* note 3, at 35.

⁵⁰¹For example, peer review panels that make funding recommendations to the California Arts Council have public observers. According to Mr. Elliot Klein, Administrator of the Music Panel, "the fact that we have public observers at our meetings also furthers assures the level of integrity." Chris Pasles and Herman Wong, Arts Council Doling Out Funds Today, *Los Angeles Times*, Aug. 28, 1987, pt. 6, p. 1, col. 2.

forthrightly to those whose lives are directly affected.⁵⁰² Long-time observers of the peer review process, Chubin and Hackett maintain that:

At bottom this suggestion [for eliminating reviewer anonymity] is motivated by two questions: Is it appropriate to allow comments in a review that one would not write directly to the author? and How many essential, accurate, critical comments about a manuscript or proposal cannot be expressed in language that could be directly communicated to the author? Criticisms that must be anonymous probably should not be written, and it would be a very rare criticism that could not be phrased in civil language.⁵⁰³

Chubin further maintains that reviewer anonymity promotes hypocrisy in professional relationships:

The dichotomy between the face-to-face civility that peers are expected to maintain and the behind-the-scenes savagery that peer review protects creates noticeable strains--and sometimes outright cleavages--in a research community. Peer review thus disarms and factionalizes while shielding strong personalities from any timely cross-examination. The public and private exchanges between researchers may differ significantly in style and tone.⁵⁰⁴

Most reviewers, however, strongly object to this suggestion.⁵⁰⁵ One former NSF official with more than eight years of experience as a program officer found this proposal to be "hopelessly naive and destructive."⁵⁰⁶ The primary disadvantage of eliminating reviewer anonymity is the impact that it would have on the candor of the evaluations.⁵⁰⁷ In a world in which the roles of applicant and reviewer are frequently reversed, a reviewer may not be as candid in a negative evaluation of a project. Even if all reviewers could somehow be absolutely shielded from retaliation, few members of a professional community are anxious to incur the hostility of a colleague by making sharply critical evaluations, even when warranted. As with nonanonymous faculty evaluations of students in job or professional school applications, the reader of the nonanonymous evaluation must have a keen eye for the slightest indication that the writer is subtly damning the subject with faint praise. As

⁵⁰²Opponents of reviewer anonymity at the 1976 House subcommittee hearings on peer review at NSF relied upon the following somewhat defensive arguments:

(1) Qualified reviewers can be relied upon to be candid and straightforward in their evaluation of a proposal, regardless of whether the system is open or closed. Reviewers who are not willing to defend their positions in an open system ought not to be reviewing Federal grant proposals in any case.

(2) Openness would result in more responsible and objective reviews. Superficial or personality-based comments would diminish, and the result would be a more focused and effective evaluation.

(3) Qualified scientists will continue to participate in the interest of furthering the best quality science.

(4) Confidentiality makes the system unnecessarily difficult to defend from charges of internal bias, old-boy practices, favoritism, or other criticisms. That is, an open system can better demonstrate its impartiality and effectiveness.

(5) An open system would increase the workload of program officers in some ways and reduce it in others. In any event, staffing levels can be adjusted to the new workload.

(6) Openness means change and change may cause some problems initially; but, in the long run, the system will recalibrate and stronger reviews will result. The new system will stand public scrutiny, and science will achieve a higher level of credibility.

1976 House Hearing Reports, *supra* note 3, at 44-45.

⁵⁰³Chubin & Hackett, *supra* note 3, at 205.

⁵⁰⁴Chubin, *supra* note 425.

⁵⁰⁵Only 27% of the respondents in a survey of NCI applicants preferred eliminating reviewer anonymity, while 61% opposed it and 12% were undecided. Chubin & Hackett, *supra* note 3, at 78.

⁵⁰⁶Comments of Mr. Garth Redfield, *supra* note 108.

⁵⁰⁷See, e.g., *Voelker v. Federal Bureau of Investigation*, 638 F. Supp. 571 (E.D. Mo. 1986) (stressing the need for confidentiality in outside evaluations for purposes of government employment); *Mervin v. Bonfanti*, 410 F.Supp. 1205 (D.D.C. 1976) (same).

much as we might wish it were otherwise, it is simple human nature not to speak candidly when the subject of the conversation is in the same room.⁵⁰⁸

If the anonymity of peer reviewers were lifted, there could be a dramatic increase in overt and subtle "lobbying" of peer review members over the phone, at lunch, and in other contexts in which a potential applicant had an opportunity to buttonhole a reviewer. Although lobbying in the political context is justified as an attempt to convey information to poorly informed decisionmakers, it is generally viewed by the public as conduct just short of bribery. In context of discretionary grants, the peer reviewers have a predefined source of information (the grant application) that is meant to constitute the exclusive decisionmaking "record" upon which the rankings are based. No additional information is necessary or desirable. Therefore, most agency staffers, reviewers and applicants view overt lobbying as highly inappropriate in the grants process. To the extent that eliminating the reviewers' shield of anonymity opens up the entire process to the specter of lobbying, it is highly undesirable.

All of the agencies studied in connection with this report refused to reveal to applicants the identities of professionals who conducted detailed reviews of individual proposals. While protecting the identities of primary and secondary panel reviewers, NIH does make available to applicants and the public the names of all of the members of the panel. Similarly, the identities of EPA panelists are ascertainable to applicants who go to the trouble of attending panel meetings.⁵⁰⁹ The applicant may then attempt to guess the identities of his or her primary and secondary reviewers among the 10-15 members of the panel. As a practical matter, it would be difficult in any event to shield the identities of panel members from applicants, because "it is impossible to keep secret the names of members of a standing committee who travel to Washington several times annually."⁵¹⁰ Since a person who wants to ascertain the identities of panel members can probably do so with some effort, they should be easily available to everyone.

As we have seen, the FOIA does not require that the identities of reviewers be revealed, because they are protected by the internal deliberations exemption to that Act's disclosure requirement. Reviewer anonymity is more difficult to protect under the FACA, because the identities of panel members must be revealed when the committees are chartered and when they meet in open session. The identities of the applications that a particular panel considers, however, need not be made public if the committee is free to go into "executive session" to consider individual applications. Although peer review committees in all of the agencies studied here do in fact go into executive session to consider individual applications, it is only permissible if an open meeting would otherwise reveal information "of a personal nature where disclosure would constitute a clearly unwarranted invasion of personal privacy," a topic discussed above. Similarly, whether the Privacy Act allows agencies to shield the identities of reviewers from applicants (as opposed to the general public) depends upon whether the document revealing that information constitutes "investigatory material compiled solely for the purpose of determining suitability, eligibility, or qualifications for . . . federal *contracts* . . . , " an exemption that was also discussed above.

The question of reviewer anonymity under the Privacy Act is utterly unresolved. One side of the debate argues that the contracts exemption from disclosure is equally applicable to grants; the other side argues that grant and contracts are clearly distinguishable. The best way to resolve this impasse is for Congress to amend the act to provide applicant access to all staff-prepared summaries, initial written reviews by peer reviewers, and minutes of peer review committee meetings. The identities of the reviewers, however, should be shielded from view.

⁵⁰⁸1976 House Hearing Reports, *supra* note 3, at 45-46.

⁵⁰⁹NSF also makes its lists of potential reviewers available to the public. These lists are generally so long that it is impossible to guess the identities of individual reviewers. 1976 House Hearing Reports, *supra* note 3, at 46.

⁵¹⁰*Id.*, at 46.

RECOMMENDATION

Congress should amend the Privacy Act to clarify that discretionary grant applicants may have access to and submit proposed corrections to all staff-prepared summaries, initial written reviews by peer reviewers, and minutes of peer review committee meetings. The amendments should provide that granting agencies may refuse to disclose information that would allow an applicant to identify the names of the persons who conducted detailed individual reviews of his or her application. The identities of all members of any peer review panels should be made available to applicants and the public.

If reviewer anonymity is a desirable goal, then it should be preserved in fact as well as in principle. Reports of breaches of confidentiality abound, even in institutions like NEA and NIH that take confidentiality very seriously. The only effective sanction currently available is removal of the offender from the committee and perhaps barring the offender from future committees. Granting agencies should explore stronger sanctions. One NEA official suggested that panelists should be sent a strongly worded letter informing them of their Privacy Act obligations and of the penalties that may flow from breach of confidences. Another NIH staffer suggested that granting agencies be empowered to administer fines for breaches of confidentiality. Since granting agencies are not usually regulatory agencies and do not typically have the authority to invoke civil or criminal penalties, this solution might require statutory amendment. It would also require a procedure within the agency for finding facts and administering the fines. Still another strong sanction that is probably available under current law is to bar offending reviewers from receiving a grant from the granting agency for a period of time, depending on the seriousness of the breach. Because this penalty may be perceived as too harsh, however, agency staff may be reluctant to invoke it. Since no sanction seems clearly preferable to the others, agencies should determine the proper punishment for breaches of confidentiality on a case-by-case basis.

Another serious problem with breaches of confidentiality is the difficulty of detecting instances of serious breaches. Almost everyone associated with the system at NIH believes that it happens sometimes, but most agree that it is not ubiquitous. Unless someone associated with the program serendipitously overhears a reviewer breaching a confidence, the most likely source of information concerning breaches of confidentiality are the persons to whom the confidential information was conveyed. Granting agencies could make confidentiality a two-way street by making it inappropriate to *receive* confidential information about the contents of peer review meetings as well as to give it. The agencies could promulgate regulations providing that grantees could lose their grants (and perhaps future grants) if they receive confidential information and do not report the source of that information to the granting agency within a specified period of time. The regulations would function much like an honor code in a university in which students are prohibited from cheating and are obligated to report any instances of cheating that they observe.

A. Composition of Review Committees

Several possible hedges against bias in peer review address the question of who may review particular applications. These largely prophylactic measures are aimed at preventing situations in which bias might infect the process from arising, rather than revealing bias as it happens. In addition, they can help alleviate fears that too much decisionmaking power has been delegated from publicly accountable agency officials to unaccountable peer reviewers.

1. Limited Nonrenewable Terms

One way to prevent "old boy networks" from arising is to ensure that the membership of peer review committees changes relatively rapidly by providing that each member may only serve for a limited nonrenewable term. For example, most NEA panels are reappointed on an annual basis, and a panelist may only be reappointed for a maximum of three consecutive one-year terms. Forced turnover can help ensure that the committees do not become dominated by particular individuals with

narrow viewpoints. It does not, however, guarantee that the committees will not be dominated by persons wedded to a particular paradigm. In most agencies the staff is responsible for choosing the committee membership.⁵¹¹ If the staff "stacks the deck" with persons who know each other and who share similar ideas about the relevant issues, the effect on the outcome of the granting process will be fairly predictable. So long as there are plenty of persons with the same viewpoint available among the prospective panelists, rapid turnover is not a solution to staff bias.

2. Random Selection from a Qualified Reviewer Pool

The potential for "stacking the deck" could be reduced by requiring the staff to assemble a long list of qualified potential reviewers and selecting actual reviewers for particular proposals or groups of proposals through a random selection process. Although this might give potential applicants a greater degree of comfort that the process was functioning fairly, it would reduce "old boyism" only to the extent that the original pool was not limited to prominent old boys. Random selection of reviewers would prevent the staff from choosing the most knowledgeable reviewers to evaluate particular applications, and the process would present the additional burden of assembling and running a fair random selection process.⁵¹²

3. Youngster Participation

Another solution to the "old boy network" problem and to any systematic reluctance of established peer reviewers to fund "youngsters" is to provide that a certain percentage of the membership must consist of relatively new researchers. In highly competitive programs with chronic funding shortages, the conservative bias of peer review operates to discriminate against relatively young researchers attempting to break into the field. Over time, these discouraged "youngsters" will either shift to other research fields or leave research altogether. In addition to spicing up committees with persons reflecting fresh viewpoints, increasing youngster participation would give younger applicants an opportunity to see the system at work from the inside and perhaps enhance their own chances of securing a grant in future competitions.

4. Lay Person Participation

Most granting agencies currently appoint only experts from a very narrowly defined pool of "peers" to peer review committees. Some observers of the peer review grants system have suggested that the definition of "peer" be broadened to include professionals from neighboring fields and even lay persons with no special knowledge about the subject matter. In this view, "[t]he scientific merit of a field can be judged better from the vantage point of the scientific fields in which it is embedded than from the point of view of the field itself."⁵¹³ This view has also been advanced in the fine arts, which are generally more accessible to persons without particular training and experience.⁵¹⁴

⁵¹¹One exception is EPA, where the staff chooses the chairman of the peer review committee, and the chairman chooses the remaining members. The problem may be roughly the same if the staff can choose chairmen who will predictably choose adherents of a particular point of view.

⁵¹²1976 House Hearing Reports, *supra* note 3, at 36.

⁵¹³Alvin M. Weinberg, *Criteria for Scientific Choice*, 1 *Minerva* 159-71 (1963), at 164-65 (Quoting Dr. John Von Neumann). See also Roy, *supra* note 439, at 24.

⁵¹⁴The former director of New York City's public art program suggests that NEA panels be composed of eleven persons, eight of which would be chosen from among ordinary people, such as teachers, construction workers, housewives, and physicians. He argues that:

The panel's discussion of what art should be exhibited would give artists a sense of what the community will support and the community a feeling for what the artists are trying to do, eliminating conflicts such as the one over the Mapplethorpe exhibit. Had this been done with him, some of the offensive photographs would have been excluded without damage to his artistry.

Moreover, the panels will eliminate the stranglehold on NEA grants that a small group of artists and their supporters now have. They will provide opportunities for grants to many artists throughout the United States who are now excluded from the NEA old-boy network. Furthermore, they will be effective in challenging the mediocrity of the art that is on the so-called 'cutting edge' today.

Donald Martin Reynolds, *Fund Art for the Communities Sake*, *Newsday*, Nov. 6, 1990, p. 45.

The tendency to choose peers from a very narrow pool limits the number of available reviewers and, consequently, concentrates the workload on the shoulders of a relatively small number of experts. In addition, it exacerbates the tunnel vision problem and facilitates the formation of old-boy networks. It also provides the potential for research and even financial conflict of interest, because a narrowly drawn pool of peers will invariably include some potential competitors of most of the applicants. Finally, in very specialized fields, limiting panels to recognized professionals risks rendering the process unaccountable to the public that ultimately provides the funds.⁵¹⁵

One shield against these sources of bias would be to appoint one or more professionals from related fields and educated lay persons to all peer review committees.⁵¹⁶ Appointing lay persons to peer review panels should enhance the accountability of the funding agencies.⁵¹⁷ Each lay member of a peer review committee would sit as a representative of the taxpayers who have no direct stake either personally or professionally in the outcome of the process. This would also help avoid the tunnel vision problem and perhaps even enhance the chance of funding innovative mavericks. Finally, a requirement that lay persons and professionals from related fields serve on panels would probably hinder any staff efforts to "stack the deck" with adherents to particular scientific or artistic points of view, because their attitudes would be less easily ascertainable in advance.⁵¹⁸ Congress thought so highly of the concept of lay participation on peer review panels that it wrote into the 1990 amendments to NEA's statute a requirement that each NEA peer review panel "include representation of lay individuals who are knowledgeable about the arts but who are not engaged in the arts as a profession and are not members of either artists' organizations or arts organizations."⁵¹⁹

Other than the inconvenience to the lay person, the primary objection to including lay persons on peer review committees is that they will lack the expertise to evaluate proposals properly. A lay person without training in the relevant field, it is argued, cannot possibly understand the strengths and weaknesses of any given application, much less measure one against the other.⁵²⁰ Some professionals in the arts similarly maintain that "knowledge, experience, talent, and interest make the

⁵¹⁵For example, performance artist John Fleck candidly admits that urinating on the stage and simulating lovemaking to himself is art because professionals say it is.

Why is it art? Because art professionals say it is . . . I've got a pile of reviews saying how wonderful I am. It isn't for everybody. Not everybody is going to understand it, but not everybody understands modern art.

Paula Span and Carla Hall, *Rejected!*, supra note 326.

Professor Joseph Epstein attributes the problem to the intellectual weakness of some fields of artistic (and presumably scientific) endeavor: "[I]f the field is weak, the grants are going to be shaky, because the peers are from those fields and they're giving grants to people like themselves." Richard Bernstein, *The Endowment: A Reflective Defense*, New York Times, Aug. 14, 1990, B1, col. 1.

⁵¹⁶Former NEA Chairman, John Frohnmayer consistently advocated lay representation on NEA peer panels, but by "lay" he apparently meant persons highly educated in the arts who did not obtain their livelihood from their art. See Barbara Gamarekian, *Arts Nominee Speaks Out Against Helms Amendment*, New York Times, Sept. 23, 1989, sec. 1, p. 9, col. 2.

Rustrum Roy suggests that peer review granting agencies have defined "peers" too narrowly and should expand the class of peer reviewers to include representatives from "a national cross-section of professionals, i.e. it should be mandated that on the average, if 80% of the PhD's in materials science work in industry or government, then 80% of the reviewers of publicly supported research must come from the groups." Roy, supra note 439, at 24, 25. The proposal here is to define go beyond the universe of peers, even broadly defined, to include educated professionals and lay persons on peer review committees.

⁵¹⁷Arlene Goldbard, Co-director of the Baltimore-based Neighborhood Arts Programs National Organizing Committee, suggests that: "It would be possible to design a system of cultural responsibility, where the decisions about what was worthy of support, by and large, were made locally by the people who have some contact with the work as it's produced, who know something about the community in which the work is to be distributed." *Can the Government Promote Creativity—Or Only Artists?* New York Times, April 25, 1982, sec. 4, pg. 6, col. 1.

⁵¹⁸This observation is more accurate in the sciences than in the arts. Sometimes lay persons have fairly well-defined views about artistic issues that are easily ascertained in advance. For example, it would be fairly easy for a staff concerned about outside criticism and congressional pressure to reduce the probability of funding erotic art by appointing a lay person to the relevant panel whose views on erotic art were well known. Lay persons generally have less well-defined ideas about highly esoteric scientific issues.

⁵¹⁹45 U.S.C. §959(c)(2).

⁵²⁰At least two NIH staffers interviewed for this project argued that there should be no public members on peer review committees, arguing that lay participants hinder the quality of the scientific debate.

opinions of experts more valuable than those of the lay person. When speaking of art, "the silly cliché '... but I know what I like,' is an unacceptable excuse for prejudice and ignorance."⁵²¹

There are several answers to this objection. First, it is incumbent upon applicants for public support to write proposals clearly enough that educated lay persons can understand them. Second, with the help of the other panelists, an intelligent and interested lay person should become sufficiently educated about the critical issues that are on the cutting edge of a field of research. Third, it is not critical that the lay person understand all of the intricacies and nuances in order to gain a sense for the integrity with which the other panelists are applying the broad criteria to individual proposals, and this may be a sufficient role for lay person in highly technical fields. Fourth, lay representatives are currently being successfully used in many highly technical regulatory agency advisory committees, such as FDA drug review panels and EPA science advisory committees, despite their lack of technical expertise. Finally, just as war is too important to be left to the generals, these decisions are too important to be left entirely to highly educated professionals who may view the world from very narrow perspectives.⁵²² Perhaps the most important lesson of NEA's public policy fiascos of the early 1990s is that public support can quickly vanish when funding decisions are left to a small group people who define a field of scientific or artistic endeavor, articulate the criteria for excellence in that field, and deem themselves the exclusive arbiters of excellence in that field.⁵²³

Expanding the participation of lay persons or of scientists from unrelated fields will be successful in reducing bias only to the extent that the "outsiders" play an active role in the deliberations. In large programs administering many grants, the panels must of necessity divide up the considerable burden of reviewing individual proposals. Typically, the task of detailed review is assigned to a subcommittee of one or two members of the committee who are especially familiar with the field of research addressed by the proposal. As a practical matter, other members of the panels are not likely to read the proposals in sufficient detail to offer cogent challenges to the evaluations of the original reviewers. Indeed, one frequent participant in peer review panel meetings in NIH observed that the agency staff puts pressure on panel members to accept the evaluations of the subcommittees by requiring that any panel members who questions those evaluations must write up a justification for his or her objections. One easily implementable solution to this dilution of the voting

⁵²¹Salzer, *supra* note 393 (Ms. Salzer is a Professor of Drama at San Diego State University).

⁵²²Professor Karen Mulcahy testified to the Independent Commission on the National Endowment for the Arts that:

The decision-making of a grant panel is not the same as that of a jury at a show at an art gallery. Artistic excellence should be important but not controlling. It's like saying war is too important a public policy to leave to the generals. To say public culture should be decided on by artists is like saying Pentagon policy should be turned over to defense contractors.

Paracini, *supra* note 347.

⁵²³Referring to the "NEA Four," Professor Joseph Epstein, a member of the National Council on the Arts, explained that:

[T]he people who gave those grants are people from the field of experimental theater and performance art who appreciate that sort of thing. That's part of the problem. In those fields where there are no real standards, except a vague feeling that, "gee, it works," or, "it clicks" there is nothing very concrete to go on. When you read the panel evaluations on these grants, you feel that they are intellectually very thin.

Bernstein, *supra* note 515. Referring to complaints about the provision in the 1990 amendments that required lay participation on NEA peer review panels, an editorial in the Chicago Tribune asked:

"Could it be that the arts community is upset because it senses that it has lost the franchise on 'aesthetic authority'? For twenty-five years, the NEA's 'peer-review' system allowed the arts community to enclose an increasing ingrown notion of aesthetic authority." Not incidentally, it also has been able to divvy up the government kitty among its favorites, often in disregard of elementary principles of conflict-of-interest, public taste and, some cynics would say, artistic merit."

Editorial, Chicago Tribune, Dec. 4, 1990, p. 22. See also Margaret Spillane, *The Culture of Narcissism: Performance Artist Karen Finley and the National Endowment for the Arts*, *The Nation*, Vol. 251, no. 20, pg. 737, Dec. 10, 1990 (complaining that the artists' "specialized class-bound notion of Those Who Know What Art Is—and those who get to make and judge that art—persistently undermines confidence in the popular creative spirit"); Knight and Slye, *supra* note 386.

strength of the outsiders is to require that every application be read in detail by both a scientist familiar with the field and a person who is not an expert in that particular scientific field.

5. Size of Committees

One way to shield against animus and against the sort of research conflict of interest in which a panel member attempts to downgrade proposals of competitors is to expand the size of the committees. The more that a panelist's "blackball" vote is diluted by other votes that are purely on the merits, the less effect that vote will have on the overall rankings. Thus, committees in NIH with more than 25 members and committees in EPA with up to 60 members experience very little blackballing. Indeed, short of a conspiracy, blackballing is virtually impossible in such large committees.

Large committees, however, are very expensive to assemble and maintain. Travel costs alone can be quite substantial for a very large committee, especially if it is required to meet as many as three times per year. Large committees can also be difficult to manage, and they are generally less efficient. Unless personal animus on the part of panel members is a particularly pressing issue (e.g., a field dominated by two warring camps), the added expense of expanding the size of the committee may not be justified by the possibility that one panelist will deliberately downgrade a proposal so severely that it will not be funded. In highly competitive programs in which only a few very large grants are awarded, however, the additional expense of assembling large committees may be warranted.

6. Number of Committees

Another way to shield the peer review process from animus and favoritism is to conduct a multi-tier review in which more than a single committee has responsibility for evaluating each proposal. Many peer review granting agencies have a high level advisory committee made up of very prominent people who look over the results of the original peer review committees and have the power to change the results (or recommend that the agency change the results). The Advisory Councils at NIH and the National Advisory Council on the Arts are two examples. This second tier review, however, is usually quite superficial and rarely delves into the merits of individual proposals. Although they have many important functions, high level review panels do not have the capacity to ferret out and eliminate bias.

The multi-tier process in NSF's Science and Technology Research Centers Program offers a good model for programs that make a few large grants. In that process, a proposal is initially distributed to outside mail reviewers and then to a six-member peer review committee for the purpose of culling the applications down to a manageable group of thirty applications. Additional experts are assembled into site visit teams that visit the thirty sites and report back to still another "external peer review committee" that examines all of the information available on the thirty institutions in two separate groups. After each group reevaluates the results of the other group, the full external peer review committee identifies the fifteen or so applications that it recommends for funding.

While this extremely thorough system effectively shields the decisionmaking process from animus and favoritism, it is exceedingly resource-intensive, and it would not generally be justified for programs that award a large number of small grants. The very last step, however, is relatively inexpensive, and might be useful even for very large programs. The prospect of having a second subcommittee examine the results of the first subcommittee's evaluations should caution panelists against attempting to blackball proposals by giving them very low scores.

RECOMMENDATION

Granting agencies should not limit the pool of available peers to narrow professional fields, but should instead attempt to appoint reviewers from related professional fields to peer review panels.

Granting agencies should appoint at least one lay person without training in the relevant field to every peer review panel. Granting agencies should also attempt to include younger professionals who have not previously received grants. Granting agencies should provide that the membership of peer review panels changes on a regular basis. To the extent consistent with agency resources and depending on the size and number of the grants awarded in a program, granting agencies should consider maximizing the number of persons serving on an individual peer review committee, performing duplicate reviews in two or more subcommittees, or appointing multiple committees to perform a tiered review.

7. Conflict of Interest

The granting agencies are by-and-large sensitive to the problem of financial conflict of interest,⁵²⁴ and they generally prohibit a reviewer from participating in the evaluation of his or her own proposal or a proposal from his or her own institution.⁵²⁵ NIH and NSF regulations allow a person to sit on a panel that reviews an application from that person's own institution,⁵²⁶ but require that person to be absent from the discussions of the institution's application. A virtually identical provision in NEA's regulations was severely criticized on the ground that the conflict still existed even though the affected panelist was absent.⁵²⁷ As was the case with NEA, there should be a sufficient number of qualified reviewers available to evaluate a panel's applications without drawing on persons from institutions with applications pending before that panel.⁵²⁸

The agencies have generally failed to pay sufficient attention to the problem of research conflict of interest. The conflict of interest regulations of only one of the agencies studied in this report addressed the possibility that a reviewer could use his or her position to decrease the probability of success of applications from competing scientists.⁵²⁹ And only one agency dealt with the possibility that reviewers might use information gleaned from the peer review process to their own financial or research advantage. Some agency officials opined that, like plagiarism, research conflict of interest would be classified as scientific misconduct and therefore subject to sanctions such as removal from peer review committees or debarment from the grant process.

The research conflict of interest problem can best be addressed through amendments to agency conflict of interest regulations. The most effective solution is a complete bar on a reviewer's participation in the consideration of his own application or one from a close associate or the institution that employs him and to prevent him from evaluating any application of a rival or rival

⁵²⁴The prototype recusal requirements are those of NIH, which exclude from study sections applicants, family of applicants and their co-workers both at their institutions and at other institutions. In addition, a panelist must leave the meeting when the panel is considering an application from his or her own organization or an organization with which he is negotiating for future employment.

⁵²⁵The existing conflict of interest guidelines only obliquely address applicants who are former students of panelists, a phenomenon that occurs with some frequency in the sciences, though perhaps with less frequency in the arts. EPA has a rough rule of thumb that a panelist need not recuse himself from the consideration of proposals from former undergraduate students or from former graduate students who have not graduated within the last five years. This seems like a reasonable approach to reducing the appearance of favoritism toward proteges. The problem is not sufficiently widespread or disturbing, however, that the rule of thumb should be written into a binding regulation. Peer reviewer should be asked at the outset of the process to identify any former students among the applicants, and they should be asked to recuse themselves in accordance with the five-year rule of thumb.

⁵²⁶Since NSF reviewers meet as panels much less frequently than NIH reviewers, this issue does not arise in NSF as often as it does in NIH. The problem does arise, however, in the Science and Technology Centers Program and is dealt with by dividing the large panel of thirty or so panelists into two groups and ensuring that no panelist sit in the group that performs the first review of the applications from that panelist's institution. See Part 3.

⁵²⁷See Part 5, at notes 84-84.

⁵²⁸This may require that some attention be paid to the definition of "same institution." For example, if the University of California, Penn State University, or the State Universities of New York could conceivably be viewed as a single institution this recommendation could be troublesome. A better starting point for a definition of "institution" would be a single campus of a single university.

⁵²⁹NIH's conflict of interest regulations suggest that a reviewer "should not participate in the review of an application from a scientist with whom the reviewer has had long-standing differences which could reasonably be viewed as affecting objectivity." NIH Manual 4510, *supra* note 51, at 7; NIH Manual 1805 at 6-7.

institution in a competition for a pool of funds from which he or his institution is competing. Considerable criticism in the press lead Congress to amend NEA's statute to adopt this solution, and it does not appear to have hampered the peer review process at that agency unduly.

This prophylactic solution is probably feasible for many scientific research funding programs. If scientists conducting unrelated research are qualified to evaluate proposals in the particular field and if they are willing to devote their time to evaluating research in fields not directly related to their own research interests, then a ban may be appropriate. In some programs, however, this constraint may unduly limit the supply of qualified and willing reviewers. For example, in NSF's Science and Technology Centers Program, where virtually every major research institution in the country either has or is applying for a grant, it is difficult to find qualified scientists for mail reviews who are not associated with a competing institution. Thus, it may not always be feasible to bar persons with potential research conflicts of interest from peer review committees, even though these are exactly the persons who can most effectively blackball rivals and expropriate novel ideas contained in research proposals.

Alternatively, all members of peer review committees could be required to sign an oath that they will not use any information gleaned from the review process to further their own research interests. To some extent, the other members of the panel can police against research conflict of interest, because they may be familiar with each others' research and therefore know whether one of their number may inappropriately gain access to information about research in a competing laboratory. The problem with this solution is both the difficulty of proving that a researcher violated the oath and the chilling effect that the oath might have on reviewers. It may be that few researchers would be willing in advance to subject themselves to sanctions if a rejected scientist later accused them of appropriating research ideas.

Still another suggestion might be to promulgate a general rule prohibiting reviewers from using information and ideas gained in peer review committees in their own research absent the written consent of the applicant. Any applicant who believed that his ideas were appropriated could lodge a complaint with the funding agency. If, after a hearing, the claim were proved to be valid, the agency could suspend further funding of the offender's research or condition suspension on some more appropriate penalty, such as a public retraction and apology.

In the final analysis, the remedy for research conflict of interest is the professional integrity of the researchers who sit on the committees and the willingness of other scientists to look unfavorably upon the abuse of the peer review process to appropriate the ideas of others. The Director of an important NSF program observed:

As to conflicts of research interests, this is something you really can't legislate. If you try to define it and write it down, people will use it as a crutch. Just like Keating in the S & L scandal - if you write down a rule, then people use it as a reason to get by and play games, saying you said this, but you didn't say this. They will play games with the interpretation of the rule. You just can't legislate morality.⁵³⁰

Yet there is currently no explicit prohibition of the practice and no remedy for the damage done by this abuse of the peer review process in the conflict of interest regulations of any of the agencies studied in this report. Indeed, it is even possible that some scientists view this access to the ideas of others as appropriate compensation for the time spent reviewing proposals.⁵³¹

⁵³⁰Telephone interview with Dr. Bill Harris, *supra* note 431.

⁵³¹See Chubin & Hackett, *supra* note 3, at 205.

RECOMMENDATION

Granting agencies should promulgate conflict of interest regulations that prevent any person from reviewing or sitting on a panel that reviews his or her own grant application or the application of a close collaborator, a recently graduated former student, or an affiliated institution. The regulations should provide that when the agency asks a reviewer to review the application of a close competitor or competing institution, that fact must be disclosed to the agency, to other members of any peer review committee and to the applicant before the time to ask for reconsideration or appeal has expired. To the extent feasible, agencies should avoid asking a reviewer to evaluate the application of a close competitor or competing institution. If necessary, granting agencies may provide for specific waivers of the conflict of interest recommendations on a case-by-case basis where there is no other practical means for securing appropriate expert advice on a particular grant application.

8. Peremptory Challenges

One fairly inexpensive way to enhance the perception of fairness in the peer review process is to allow an applicant to nominate one or more researchers for exclusion from the list of peers available to evaluate his or her work. An applicant could be invited to submit a short list of persons that the applicant believes to be biased with respect to his or her research. The applicant might be required to provide reasons for exclusion or to choose from a list of reasons deemed appropriate by the agency. Appropriate reasons could, for example, include animus or financial or research conflict of interest. Lack of qualifications, however, should generally not be a sufficient reason for a peremptory challenge. The agency staff is in the best position to determine who is qualified to review an application.

Providing an applicant one or two peremptory challenges should help reassure rejected applicants that they were not blackballed for personal or idiosyncratic reasons. It may also increase the comfort level of applicants (especially in programs in which for-profit institutions are competing for funds) that their ideas will not be expropriated. We have seen that the staffs of NIH and NSF occasionally allow peremptory challenges on an informal basis, and this appears to add to the general perception that the programs are being run fairly.⁵³²

The primary disadvantage with peremptory challenges is that they deplete the supply of potential reviewers. In very narrow fields, the only qualified reviewers may be potential competitors or existing rivals. Many smaller programs have only a single peer review panel that is competent to review some proposals. In those programs, the peremptory challenge would result in the removal of the challenged individual from the deliberations. The potential contribution that the excluded individual may have on the panel's deliberations on other applications may outweigh the potential for bias with respect to the applicant making the peremptory challenge. For these reasons, the number of peremptory challenges allowed to any individual applicant must be limited.

Another objection to peremptory challenges is that in some fields, it may allow applicants "to influence the review of their proposals by challenging the most competent and incisive reviewers."⁵³³ Although limiting the number of challenges would not eliminate such attempts to "game the system," the agency could discourage such strategies by requiring challengers to provide adequate reasons for their challenges as suggested above.

⁵³²One question that might arise if peremptory challenges are allowed is whether potential peer reviewers could obtain such challenges under FOIA. The short answer to that question would seem to be that any written challenge would be available under FOIA, except to the extent that information contained therein fell within one of the Act's exemptions. Although this is not the place for an extended examination of this issue, such challenges would normally not contain trade secret information. Although clearly related to future deliberations, the request itself would probably not come within the exemption for internal agency deliberations. Nor is it clear that disclosure of the information would constitute a "clearly unwarranted invasion of personal privacy." The person making a peremptory challenge has no obvious privacy interest in shielding that fact from the object of the challenge.

⁵³³Comments of Mr. Robert A. Papetti, *supra* note 204.

RECOMMENDATION

Granting agencies should by regulation provide that any applicant may submit a confidential list containing a small number of potential reviewers that the applicant deems objectionable together with a statement of the reasons for the challenges. The agencies should presumptively grant such challenges, unless the agency determines that a qualified group of peers cannot be assembled if all such challenges are honored. The agencies should provide, on a confidential basis, reasons for rejecting such challenges to the applicants who submit them.

9. Eliminating High and Low Scores

Most government funded programs involving discretionary grants have enough funds available to fund fewer than one-half of the applications submitted to them. In programs in which there is intense competition for limited funds, a single peer reviewer can affect the outcome at the margins by giving an application a very high or very low score. Panels with large numbers of members can borrow from the practice of athletic events involving qualitative evaluations (e.g. figure skating and diving) and eliminate the high and low scores from the calculations of the average score. Panels with more time to spend on discussing the merits of applications can have the agency staff identify "outliers" and request that the Panel devote further attention to those applications in which one or more individual scores varied from the mean by more than a predetermined amount.

RECOMMENDATION

Peer review committees that rely upon qualitative scoring systems for evaluating and ranking discretionary grant proposals should develop vehicles for either eliminating or further discussing individual scores that vary widely from the average.

G. Lobbying Peer Reviewers and Staff

One of the most significant advantages of the peer review model is that it discourages lobbying and influence-peddling. The professionals and lay persons who participate in the peer review process understand that decisions should be based upon the information contained in the applications, and not upon information and arguments supplied *ex parte* by interested outsiders. The peer reviewed granting decision is supposed to be made objectively on the basis of the application and the reviewers' assessment of the qualifications of the applicant. With respect to *ex parte* contacts, the adjudicatory model seems entirely appropriate in the granting agencies that rely upon peer review.

Lobbying upper level advisory committees and upper level agency staff is an inappropriate technique for securing discretionary grants and therefore should be prohibited. At the very least all attempts to sway peer reviewers and agency staff outside the formal confines of proposal submittal and review should be noted in writing by the object of the importuning. Contact between lower level agency staff (e.g. Program Directors in NIH) and applicants should be encouraged, but direct importuning of peer reviewers and upper level staff with the power to accept or reject the recommendations of peer reviewers should not be allowed.

RECOMMENDATION

Granting agencies should encourage informal contacts between applicants and agency staff who do not participate in the decisionmaking process for the purpose of conveying information and providing advice. Agencies should adopt regulations subjecting *ex parte* contacts with peer reviewers and with agency staff in a decisionmaking capacity to the strictures of sections 554 and 557 of the Administrative Procedure Act.

H. Levels of Review

Several NIH officials interviewed for this report maintained that the Advisory Councils offered so little substantive input into the ultimate funding decisions that the Councils should be abolished. The primary complaint about Advisory Councils was that they did not offer any real scientific input. To some extent this was attributed to the presence of lay members on the Advisory Councils. One NCI staffer suggested that the Advisory Councils be replaced by the Boards of Scientific Advisors that already exist in each of the Divisions. In NSF lay persons generally do not sit on the peer review panels that are sometimes assembled to aid the agency staff, but the overall policymaking entity, the National Science Board, theoretically has the power to make the final determinations. This power is exercised frequently in the context of large programs like the Science and Technology Centers Program, but it is almost never used in the context of programs that make a large number of relatively small grants to individual researchers.

A very persuasive case can be made, however, for the proposition that funding decisions are too important to be left entirely to the scientists in the field in which the research is funded.⁵³⁴ The funds, after all, come from the public purse, and the public can reasonably insist that funding decisions reflect criteria other than the scientists' view of scientific merit or the artists' view of artistic merit. Indeed, if important funding decisions were left entirely to persons who were not government officials, the process might raise constitutional concerns under the delegation doctrine.⁵³⁵ In both the arts and the sciences, priority-setting invariably involves policy considerations that are intensely political in nature. While the agency staff is capable of incorporating externally articulated policy considerations at the final stage in which the ultimate funding decisions are made, the staff is also composed of highly trained professionals. In addition, lay participants can occasionally lend a perspective that enhances the quality of the scientific review.⁵³⁶ An institutional vehicle incorporating lay members may be a necessary quid pro quo for continued funding of science on a large scale by government.

I. Rotating Agency Staff

In some of the agencies studied in connection with this Report, the agency staffer responsible for a grant has a great deal of influence on the ultimate success or failure of the application, while in others his or her influence is marginal. For example, in NIH, the Scientific Review Administrator is supposed to be a silent observer of peer review meetings, speaking only when spoken to, and he or she plays only a limited role at Advisory Council meetings and in the upper level decisionmaking process. The NSF Program Officer, on the other hand, is responsible for ranking of the proposals and making the initial recommendations whether or not to fund, and the outside mail reviewers are in a sense merely advisors to the Program Officer. One former NSF peer reviewer, who is now a staffer responsible for grants in another agency, reported that it is not uncommon for the NSF Program Officer to suggest to the outside reviewers subtly how they might view the proposals. Many interviewees noted particularly the powerful position occupied by the NSF Program Officers. Agency staffers with biases of their own can distort the peer review process so that it does not result in funding the most scientifically meritorious proposals.

One relatively expensive solution to the problem of staff bias is to eliminate mail reviews or supplement them with panel meetings in all cases. For agencies with large numbers of applications and relatively low travel budgets, this may be impractical. A considerable advantage of mail review

⁵³⁴See text accompanying notes 513-523, *supra*.

⁵³⁵See *Carter v. Carter Coal Co.*, 298 U.S. 238 (1936).

⁵³⁶For example, the principal investigator in an ongoing NCI study involving women and breast cancer proposed to change the diet of 2,000 women for 10 years. The proposal raised large policy issues appropriate for consideration by lay persons. The Advisory Council, however, recommended that the proposal be rejected on the largely scientific ground that the intense publicity about the link between cancer and diet would probably result in dietary changes in the control population that could render the results invalid. Telephone Interview with Leo Buscher, Grants Management Officer, National Cancer Institute. Thursday, Oct 4, 1990. This evaluation no doubt benefited from the lay perspective represented on the Advisory Council.

is the difference in price between a postage stamp and an airplane ticket. As valuable as unbiased peer review is to the process of awarding grants, monies spent on the process itself cannot be used on the research that the program is meant to support.

A much more easily implemented device for shielding the process from staff bias is to rotate the staff periodically to ensure that no single staffer establishes his or her own "barony" and thereby influences the course that research takes in an entire field. This solution has the disadvantage of depriving the system of the expertise that the staffer might acquire over the years in a single program, but that disadvantage might easily be outweighed by the advantage of interjecting fresh blood into the system. It would also have the indirect effect of enhancing the influence of the outside reviewers on the ultimate funding outcome.

RECOMMENDATION

Agencies that administer multiple programs for awarding discretionary grants should consider rotating staff periodically among the programs. Especially in programs in which peer reviewers do not meet to reach collective judgments, agencies should rotate the staff responsible for making initial funding recommendations.

J. Greater Role for Agency Staff

Perhaps the best shield against animus and favoritism is vigilance on the part of the agency staff serving the peer review committees. Staffers who attend peer review panel meetings can see the expressions on the faces of the reviewers as they make what may be sarcastic or ad hominum comments. The staff can also tell when a panelist has crossed the fine line between advocacy on the merits and favoritism for an "old boy" or hallowed researcher. Agency staffers are also generally more inclined to view mavericks with a sympathetic eye. If the staffer has the de facto power to discount votes that he or she believes are biased, the objectivity of the system is enhanced.

On the other hand, it may be expecting too much of a busy staffer to draw such fine lines. Most staffers have training in the subject matter that the panel addresses, not in psychology or politics. Empowering the staff to reverse or discount panelist votes may simply invite the staffer to second guess the experts on the merits or to express his or her own biases. Once the agency has decided to draft rules or guidelines on bias and conflict of interest, however, the staff can play a very important role in ensuring that peer reviewers are well-educated about them and that they strictly observe them.

K. The Audit Possibility

The openness in the peer review grants process inspired by the Privacy Act, the Freedom of Information Act and the Federal Advisory Committee Act should go a great distance toward insulating the process from animus and conflict of interest. Because it relies upon the policing activities of rejected applicants, however, the openness solution to the bias problem may lack efficacy in the context of a chronically underfunded program in which unsuccessful applicants who rock the boat are easily identified and shunned. In addition, openness by itself does not effectively address favoritism. Even in an open system, the victims of cronyism or the old boys' network are not likely to know that less meritorious proposals have been elevated over theirs for irrelevant reasons. Most rejected applicants will at most focus on the comments and review summaries that the agencies provide to them about their own applications. They are not likely to examine the entire proceedings to see if the process has been systematically or individually biased toward a particular person or methodological approach.

One well-known technique for spotting decisionmaking that is tainted with inappropriate or irrelevant considerations is the audit, under which outside auditors selectively examine individual decisions in considerable detail for evidence of bias or other impropriety. The audit idea surfaced

during congressional hearings into alleged bias at NSF conducted during the mid-1970s.⁵³⁷ Although an extensive report by the subcommittee recommended that NSF adopt an internal auditing program, little came of the recommendation for many years.⁵³⁸ In 1989, NSF implemented a version of the audit idea with its "Committee of Visitors" program under which each Directorate must appoint a committee of outsiders every three years to review the peer review process in operation.⁵³⁹

It should be feasible to import the audit concept to scientific decisionmaking in granting agencies that use the peer review model. Agencies like NSF and NIH could either appoint or hire outside auditors to examine randomly selected files, including applications, written comments, telephone logs, conflict of interest statements, committee meeting audiotapes or transcripts. The auditors would probe the relationships between NSF staff and reviewers and between reviewers and applicants for financial and research conflict of interest. The audit would be strictly confidential; the names of reviewers and the contents of the reviews would not be made public. If the examination revealed evidence of bias or impropriety, the auditors could be empowered to interview participants and to write a report stating their conclusions about whether the process operated fairly and in accordance with agency regulations. In those, presumably quite rare, cases in which bias was detected, the agency could decide to investigate the matter more vigorously.

The audit idea has several advantages. First, it allows a motivated person or group of persons to conduct an intense review of a limited number of funding decisions without jeopardizing the critical confidentiality of the process. At the same time, the ever-present prospect of an audit should act as a substantial disincentive for reviewers and staff to bend the rules or to invoke improper considerations. If they were conducted by outsiders, the audits could also shield the agencies from charges of whitewashing by congresspersons and the general public. Over time, audits should provide useful evidence of the extent to which bias exists at various granting agencies.⁵⁴⁰ If little evidence of bias resulted from a large number of audits, they could be eliminated.

Audits have disadvantages as well. They will require resources that might otherwise be devoted to the pursuit of the agency's primary goals. A limited system of audits, however, should not be too expensive. The prospect of being audited might discourage qualified reviewers from voluntarily participating in the process. And it is always possible that an overly zealous auditor will erroneously find bias in a process in which it did not exist, thereby disrupting the process for a time.

Despite its expense, it may be possible to implement the audit idea on an experimental basis. If it proved too expensive, it could be abandoned with little loss in time or energy. If it proved successful, it could inspire renewed confidence in the peer review process.

RECOMMENDATION

Granting agencies that rely upon peer review should experiment with random audits of the peer review process for bias and conflict of interest.

L. Conclusion

Despite its flaws, the peer review system is still the best model for making complex and exceedingly difficult decisions about how to allocate limited collective resources to the arts and sciences. One need only examine the output of NIH, NSF, EPA and NEA to conclude that the peer

⁵³⁷1976 House Hearing Reports, *supra* note 3.

⁵³⁸The subcommittee recommended that NSF conduct random audits of the decision processes in NSF for individual grants: These audits should be performed in sufficient detail to address questions of relations among Foundation staff members, applicants, and reviewers. Members of the auditing staff should not normally have responsibilities in the process of decision-making for individual awards. The audits will not replace any activities of the General Accounting Office or other Congressional arms. 1976 House Hearing Reports, *supra* note 3, at 58.

⁵³⁹See discussion in Part 3.

⁵⁴⁰1976 House Hearing Reports, *supra* note 3.

review model has produced marvelous results. The changes advocated here do not go to the heart of the peer review system. If they are not implemented, the peer review system will continue to function reasonably well. Yet there is little reasons to remain satisfied with any flaws if they can be reduced or eliminated at little cost. With some modest improvements, the model that has evolved in this country should provide an example to the world of how a democracy can employ expertise in the service of artistic and scientific excellence.
