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Issue: Mar. 1998

Journal: *PS: Political Science & Politics*



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Gee! I've Never Spent \$5.5 Million Before:¹ The Six Fallacies of NSF Proposal Writing

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It is often mysterious to junior faculty, and even some who are senior, how decisions are made about funding research proposals. What do reviewers look for? What problems are common? Perhaps most important, what facilitates success? Having recently completed a term on the Political Science Panel at the National Science Foundation, we thought sharing some of the lessons we learned from this experience might help faculty who are preparing proposals for the Foundation; we believe these lessons may be applicable when submitting proposals to other funding organizations as well.

Serving on the Political Science Panel is one of the most interesting and rewarding forms of professional service we have experienced. Every six months, a panel comprised of eight academic political scientists reviews the proposals that have been submitted to the NSF.² Each proposal is reviewed by at least two members of the panel, and there are a varying number of external reviews of the individual proposals by highly qualified peers. There are two things to be noted about the consideration of the proposals. First, virtually every proposal is discussed, some briefly and some at great length. Second, while the discussion is led by the two assigned reviewers, it is common for other members of the panel to have read proposals not assigned to them and to join in the deliberations. The discussions provide unique insights into the research frontiers (and backwaters) of our discipline. At the end of two days of more or less nonstop deliberation, the panel advises the program's directors on the funding priority for each project. The ultimate decision on funding and its level is made by the NSF.

Compared to our experiences with private foundations, and all too many journals, NSF's review process stands out for its thoroughness and

professionalism. A great many of our colleagues take time and care to review proposals in their field, offering criticisms as well as useful advice.

The panel's discussions of proposals also demonstrate the attention that is given to each. Although we have personally felt the twinge of disappointment (or more honestly, the agony of rejection) of having proposals to the NSF not funded, we now appreciate the Foundation's attempt to judge research fairly and objectively.

What lessons did our experience teach us about proposal writing? In a somewhat lighthearted way, we want to outline several fallacies of proposal writing that we have identified. These are only our impressions, but they come from hours of discussion of hundreds of proposals.

Fallacy 1: Someone should collect these interesting data, why not me?

Some PIs have never met a datum that they didn't like. A large number of proposals identify significant voids in our empirical knowledge of a topic, and ask for funds to collect these data. A purely descriptive study can be useful for science, but there are millions of facts and processes that we can learn more about. The simple practical fact is that NSF funding is insufficient to collect all the data that might be interesting to social scientists.

A practical example comes from Dalton's field of interest, electoral research. NSF makes a very large investment in the American National Election Study, which addresses important theoretical and political issues in American politics. However, this effort cannot be replicated in other nations—even when they, too, have important elections—unless the value added by a study is more than the data itself. In fact, American

politics scholars are sometimes the worst in claiming that every bit of data is worth collecting, but every fact about American society and politics is not worth NSF's investment. There has to be more to a successful proposal than just collecting new data.

Fallacy 2: Have theory, will travel

Another genre of proposals begin with a strong theoretical question. In such a proposal, the PI has drawn together the literature or developed a sophisticated model. What is often lacking, however, is the connection between theory and data. This disconnection can take two forms. First, many proposals lack a reasonable concern for empirical evidence. Even though some might criticize the empirical bent of NSF, the collection of empirical data to test theory is a central part of the scientific process. Second, and more common, is a proposal to collect data which seem only tangentially related to the theory being presented.

The best proposals fuse the presentation of a significant theory with plans to collect appropriate data. "Obviously," you say, but this is the weakness that damns many proposals. The theoretical framework and the theoretically-derived research questions of a proposal *are* the prime criteria for funding. Research

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rich with theoretical importance naturally rises toward the top of the pile for consideration. However, it will likely be dominated by a project that proposes both a central theory and a critical test, or, alternatively, one that offers the opportunity to extend past theorizing and offers the potential for advancing scientific knowledge in multiple ways.

Fallacy 3: Judge me by my past work

Another group of proposals is distinctive because they are written by senior faculty who could, and should, submit much better proposals. Sometimes, panelists and reviewers had the feeling that the implicit argument of some senior scholars' proposals was that future funding was deserved based on past accomplishments. In other instances, it appeared that the proposal may have been rushed to meet the NSF submission deadline.

In either case, the obvious lack of care displayed by a few proposals always puzzled us. Submitting NSF proposals is not like submitting journal articles, where some researchers can successfully follow a stochastic process of submission until a journal finally accepts an article. Revise and resubmits are not normally encouraged by the Foundation. We suspect that most proposals rejected by NSF do not find equivalent funds from other sources. In other words, proposals usually have only one shot, and thus the first shot should be the best.

To be sure, panel members and reviewers are sensitive to the past achievements of those submitting proposals; in fact, an evaluation of the professional qualifications of the PI to actually perform the work proposed is an explicit part of the Foundation's review criteria. While past accomplishment is one indicator of this, absent a good proposal, it means little. There are simply too many good proposals for each of them to receive full funding. However, the solution is not to enlarge the request artificially in anticipation of a budget cut.

Fallacy 4: Ask for a lot and at least you'll get a little

Whatever one requests, NSF will almost certainly provide a lower level of support.³ There are simply too many good proposals for each of them to receive full funding. However, the solution is not to enlarge the request artificially in anticipation of a budget cut.

Proposals are evaluated primarily on their scientific potential and the ability of the principal investigators to develop the projects successfully. However, almost all the proposal reviewers consider the expense budget a measure of the reasonableness of the principal investigator and his or her commitment to the research project. There may be some justification for the inclination to think that the more you ask for the more you will get, but panel members and the director know this "rule" as well, and some proposals can be self-defeating when the budget takes on an air of unreality.

It is our impression that reviewers give greater credence to proposals that focus on costs associated with extraordinary research expenses, such as supporting graduate RAs, collecting data, or supporting fieldwork. When the bulk of funding is requested for costs that are normal expenses for faculty at research universities (for example, faculty salary, computers, travel to professional meetings), these proposals receive a lower priority. As one skeptical panel member frequently asked: Could this research be done without NSF support?

Fallacy 5: I'll do the research, then ask for the funding

In a highly competitive environment, it is often difficult to write a persuasive research proposal when nothing like it has been done before. There are several ways of attempting to overcome this problem. One method that has been used by some of our more ingenious colleagues is to actually do the research before writing the proposal. If the research is successful, then the PI will know it can be done. This path, however, is not without its difficulties. Members

of the panel are chosen for their experience and knowledge. This knowledge usually includes information not just about who is doing what, but also how far along they are. Frequently scholars deliver papers at professional meetings that describe their research programs—how else would they get funding to attend the meeting? Sometimes these are read by panel members or external reviewers who attend the meeting. When the proposal is significantly less advanced than the research presented in the paper, it can lead to skepticism about the need for funding. Some prospective PIs even get so far ahead of the process that they submit papers to journals containing the substance of the proposal and the results! As strange as this might sound, it does happen. When the proposal's reviewer and the paper's referee are the same person, the outcome is not felicitous.

A better strategy for the researcher is to write a proposal that convinces the panel that he or she has presented a set of critical theoretical questions relating to a significant research area, can locate the relevant data to test his or her ideas—and perhaps even has some of it—and has identified the appropriate methods for analyzing the data once it is gathered. One time-honored method of doing this is conducting and reporting the results of a pilot study that demonstrates that the PI knows what she or he is doing.

Fallacy 6: I have been rejected, so it must be garbage

The Foundation's Political Science Program receives close to 240 proposals a year. Since funds are limited, a great many good proposals cannot be supported, despite their merits. It is probably the case that the majority of the research not funded will be judged as being of good quality on the rating sheets returned by reviewers. Consequently, PIs need to recognize that the absence of funding does not imply that the research is not worth doing. Reading the reports of the review-

ers, copies of which are sent to those who submit proposals, can offer valuable insights into how the research might be improved, clarified, or even, notwithstanding what was said above about resubmission, revised for another try, either to the Foundation or somewhere else.

Following these lessons will not ensure your next NSF proposal will be successful, but they may ensure your proposal will be better written and more favorably received by the reviewers. Better proposals mean better projects, which mean better science, regardless of NSF's decision.

Notes

1. One panelist made this comment after the panel approved the National Election Studies' request for a 1991-96 budget. Ultimately, the election study project was funded for "only" 5.1 million over a five year period. Presently, about 24% of the NSF budget in political science is devoted to the National Election Study.

2. For information on proposal submissions and past awards, consult the NSF's website for the Political Science Program at <http://www.nsf.gov/sbe/sber/polysci>.

3. One very sage NSF official observed that he had never had a researcher reject any amount of money, regardless of the researcher's initial budget estimate.

About the Authors

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In Focus . . . Access to Government Documents

Scholars' access to government documents was a topic of considerable debate throughout 1997. The Moynihn Commission's report *Protecting and Reducing Government Secrecy* and the court ruling requiring the State Department to be less grudging in its declassification of historical documents brought the issue of information access to public attention. Many other noteworthy incidents involving scholars' access to government documents occurred during 1997. The following two cases were first reported in the NCC Washington Update, an electronic publication of the National Coordinating Committee for the Promotion of History (available on line at <http://www.h-net.msu.edu/~ncc/>).

Grand Jury Records of Historical Interest Could Be Opened in Some Circumstances

On December 15, 1997, the United States Court of Appeals for the Second Circuit in New York City issued a ruling that opens the door for making sealed federal grand jury records and reports available to researchers in some instances.

In ruling against the plaintiff in *Bruce Craig v. United States of America* (Case No. 96-6264), the judges allowed that "It is . . . entirely conceivable that in some situations historical or public interest alone could justify the release of grand jury information." Mr. Craig, a Ph.D. student at American University had sought access to a grand jury transcript from a McCarthy-era espionage hearing.

The three judge panel denied Craig's petition on the grounds that the disclosure "would involve some witnesses who are still alive." The judges did, however, go on to outline specific factors courts could use in deciding future petitions: identity of the party seeking disclosure; whether the defendant to the grand jury or the government opposes disclosure; why the disclosure is being sought; the status of the principals in the grand jury case and their families; the extent to which the material in the sealed record has already been made public; whether the witnesses to the grand jury hearing are still alive; and the continued need for keeping the grand jury information secret.

Public Citizen Charges Seven Federal Agencies with Failure to Comply to FOIA

Public Citizen, a non-profit consumer advocacy group, has filed papers in the U.S. District Court for the District of Columbia charging OMB, the Office of the Administration in the Executive Office of the President, the Office of the U.S. Trade Representative, the Department of Education, the Department of Energy, the Department of Justice, and the Department of State with failure to comply with legislation requiring all federal agencies to publish guides and indices to available information.

Under the Freedom of Information Act, all government offices are required to make agency opinions, orders, policy statements, staff manuals, and other records "that have been or are likely to become" the subjects of public requests available in Reading Rooms. In 1996, the Electronic Freedom of Information Act Amendments required all federal offices to prepare and make available guides and indices of all major information and record locator systems. The Public Citizen complaint asserts that the seven agencies named have not taken the appropriate actions to meet the new FOIA requirements. (*from NSF materials*)

NSF Offers New Customized Information Delivery

This past December, the National Science Foundation began offering a new information delivery system call "Custom News" through its web site (<http://www.nsf.gov>). Subscribers to Custom news will be notified via email of the availability of new NSF publications. The Custom News service also provides subscribers with access to full texts of electronic publications such as reports, press releases, tipsheets, and advisories. Subscribers to Custom News are encouraged to specify the type of information they wish to receive through the service.

The NSF web site also provides several links to permanent repositories of NSF documents, reports, and announcements: "Fastlane" (<http://www.fastlane.nsf.gov/>) allows users to conduct full-text searches of recent awards and grants by NSF program, topic, state, or institution; "Public Information" (<http://www.nsf.gov/home/pubinfo/start.htm>) contains news releases, tips, speeches, and information taken from *National Science and Technology Week*; "U.S. Science Statistics" (<http://www.nsf.gov/sbe/srs/seind96/start.htm>) offers a series of reports and data sets on topics like federal and industrial support of R&D and Ph.D. completion rates; "Grants and Awards" (<http://www.nsf.gov/home/grants.htm>) provides information about the disciplines and programs NSF supports.