

# from GSA Structural Geology and Tectonics Division Newsletter, March 1994

The editors of GSA Bulletin, Art Sylvester and John Costa, published a comment in the December 1993 issue (vol. 105, number 12, p. 1516) that struck a chord with us. We thought that proposals that appeared to make every effort to hide the significance of the work, and that seemed to be written to even prevent understanding of what it was that the proposer wanted to do, were unique to our system. Now we are told that manuscripts sent to GSA have also been infected with this! We recommend that you read their comments, enjoy them, and try to respond to their plea. The following section is abstracted from a talk Carol Simpson gave recently on the same subject

## WHAT MAKES A SUCCESSFUL PROPOSAL?

1. Have a good idea
2. Give it some careful thought
3. Package it nicely
4. Sell it to reviewers

We can't advise you on how to have a good idea, or on how to think it through, but we can offer some advice on items 3 and 4.

- A. Follow the NSF guidelines
- B. Get the reviewer's attention
- C. Formulate a reasonable work plan
- E. Try to avoid 'sticker shock'

### A. Follow the NSF Guidelines:

NSF has recently revised its "Grants for Research and Education in Science and Engineering" (GRESE) application guide. Make sure you have access to a copy of the latest version - now called the NSF Grant Proposal Guide (GPG) NSF 94-2. Important points are:

- There is now a proposal forms kit available as part of the GPG, or as NSF 94-3, or you can get it electronically from the Foundation's Science and Technology Information System (STIS).
- The Project Description section is limited (unless modified by program announcement/solicitation or approved in advance by the applicable NSF Assistant Director) to 15 pages, including text and all visual materials. Apparently, the exception in the previous version of the GRESE presented difficulties in defining visual materials, counting pages and keeping overall length limited. Font size is to be not less than 10 point.
- Appendices are not permitted (unless modified by program announcement/solicitation or approved in advance by applicable NSF Assistant Director).
- Biographical sketches are limited to 2 pages per investigator and should include: Vitae (only essential details); up to 5 publications closely related to proposed project; 5 other significant publications; collaborators within the past 48 months; the name of each investigator's own graduate and postgraduate advisors.

### B. Get the reviewer's attention:

If you haven't got the interest and enthusiasm of the reader in the first paragraph, you're in for a long uphill battle. So, right up front in the Project Summary: i) say what the problem is; ii) say why it is significant, iii) specify the hypotheses to be tested; iv) specify the technique(s) that will test them; and v) say what you expect the outcome to be. Sounds obvious, but you'd be surprised how many proposals do not do this - instead they launch into a detailed discussion of the stratigraphy on either side of the Whydycallit fault, follow this with vague references to, for example, 'mapping' and 'geochemistry,' and then finish with an even vaguer statement that the results will 'help constrain the tectonics of North America' (or wherever). Imagine you've got five minutes of time with your Dean

who has to choose between funding your project or refurbishing the athletic center. Your research future is on the line. OK, so why is your project worth doing?

### C. Keep the Reviewer's Attention:

You're off to a good start and the reviewer thinks there just may be a good idea here. The problem now is to expand in the Project Description on those initial claims to solve "the problem of life, the universe and everything," without leaving the reviewer full of nagging doubts that you can do the job successfully, or, worse yet, uninterested in whether you do or not. Easy to say, not so easy to do. In 15 pages or less, you must:

- (a) show the exact nature and significance of the problem you want to solve;
- (b) clearly and simply state the hypothesis (or hypotheses) that you intend to test;
- (c) show that you have done your homework on all previous related work;
- (d) succinctly describe the preliminary work you have done which leads you to believe that the problem can be solved;
- (e) say what new work must be done to solve the problem, and by whom;
- (f) discuss the anticipated pitfalls and how these will be overcome;
- (g) discuss the anticipated results (positive and negative) and how they will be used to test your hypotheses.

(a), (b) and (c) would normally fall into the Introduction section of the proposal, (d) into the Preliminary Results section, (e), (f) and (g) into the Proposed Research section. Of course, you can organize the 15-page Project Description part of your proposal on entirely different lines, but each of these categories should be addressed somewhere.

### D. Formulate a Reasonable Work Plan:

Make sure that the reviewers sense you can actually do all the work you propose to do in the time available between classes, committee meetings, student supervision, proposal writing, manuscript preparation. For example: If you plan to make a couple of 70 km-long transects across a mountain range with no roads, or map a 400 km<sup>2</sup> area on foot, make sure it really is feasible to cover that amount of ground in the 2 summer months field time you have allotted. If you intend to use thin sections, ask yourself if you can realistically examine carefully 500 sections in 2 summer months (10 a day for 5 days a week for 10 weeks...). If you need radiometric age determinations, geochemical analyses, palynological analysis, seismic profiles, how many will you need and from where? And don't put the whole Department onto one project unless everyone is necessary. If you have Co-PIs, Post Docs, Graduate Students, Undergraduates, Secretaries, Technicians... make sure that each is justified and that it is clear to reviewers that all these people are absolutely necessary to do this particular job. Avoid duplicative efforts or the appearance thereof.

### E. Try to avoid 'sticker shock', i.e., keep the budget in line with the job:

Most reviewers get a little dismayed by very high budget lines - it's a fact of life that you can't avoid. So the best approach is to accept this and think of ways both to keep the budget as low as possible and to persuade reviewers (and NSF) that the money is going to be well invested. If you want to work in a remote, inaccessible spot, then it's probably going to cost more than if you want to work in your backyard. Either way, you will need to justify the cost of doing the work, including the expense of getting to the area, in the Project Description and include a detailed breakdown of the individual costs in the Budget Explanation. Similarly, if you really need expensive machine time, then make sure you budget enough of it to do the job - but also make sure you carefully justify both the necessity for the machine's use and the amount of time. Remember, it doesn't mean the project is more or less important if there is a large or small budget. What does matter is that the budget is appropriate for the significance of the scientific outcome.

-Tom Wright and Carol Simpson-