TIGER TIPS
RESOURCES FOR AUBURN RESEARCHERS
The Challenge of Integrating Multiple Authors

Excerpted from the Nov. 2011 issue of Research Development & Grant Writing News
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Larger proposals that include multiple research partners pose a particular challenge to the coherence of a project narrative. Individual team members typically contribute individual narrative statements featuring their prior and future research **but with little or no recognition of how that research will integrate with other team members' contributions to the proposed project.** These "stand-alone" statements fail to describe how each research strand complements every other strand, adding up to an integrated set of contributions to the project's vision, goals, and objectives. These individual narrative contributions often do not address the overarching questions that motivate the research, nor do they describe each of the multiple research strands in a context that clearly demonstrates their relationship to the motivating questions or hypotheses.

Too often, these typically one- to four-page **descriptive only** contributions to a proposal narrative resemble a series of isolated numbers comprising the combination to a safe, but lacking the sequence required to open it. In the case of a project narrative, the combination needed for funding must be a **logically ordered sequence** of questions, or hypotheses, or perhaps statements of need, depending on the agency and type of research, that explain the novel and significant features of the research activities described in the narrative.

Descriptions of research activities or capacities improperly sequenced and explained within the overarching context of a research vision, goals, and objectives **turn the narrative into something of a mystery for readers and reviewers.** You don't want reviewers noting to themselves and other review panel members after reading the research narrative "*it is not at all clear why all these descriptions about various research capacities are important and what exactly this research team intends to do.*" However, this will be the result if the research narrative evolves, to use the current vernacular, as a collection of "**stove-piped" or "siloed" contributions by multiple authors.**

For example, a proposal addressing an issue related to sustainability may be comprised of research team members from geosciences; physical, biological, and agricultural sciences; engineering; computational sciences; and the social and behavioral sciences. Perhaps the research focus is on the sustainability of a coastal ecosystem impacted by climate change. In this case, it is easy to envision multiple research contributions by those with research expertise in climate, water,

modeling, sensors, coastal biology, social and economic impacts of sustainability on affected stakeholders, and research expertise on one or more species in the coastal estuaries that serve as indicators of ecosystem health. Moreover, it is easy to see how researchers in one of the foregoing research areas important to the sustainability of coastal ecosystems may be tempted to write their narrative contributions as "*siloed text*."

This will most likely occur when the vision is still evolving as the research contributors draft their narrative contributions, or when the overarching questions motivating the research have yet to be fully defined, or are in the process of being re-defined. ***The vagueness or incompleteness of the research vision can increase the likelihood that a first full draft of the proposal will read as a series of siloed statements unintegrated with one another***.

Moreover, it is often the case that the ***research team members attempt to do too many important tasks simultaneously but in isolation from each other.*** In these cases, finding time to draft text is often difficult enough let alone adding the requirement of reading and considering others' contributions. This difficulty can be compounded by electronic communications among team members that fluctuates between periods of silence punctuated by a cascade of electronic messages, often including drafts of graphics, figures, and multiple track-edited versions of an evolving project description that can quickly become a blizzard, or rainbow, of track edit colors.

These issues all cry out for an orderly resolution grounded on a well-crafted proposal development schedule. This planning tool will help meld the vision and goals of the project and communicate them continuously via a defined production timeline to all of the contributing authors. This will better ensure that the text evolves in a way that not only describes the importance of each research-specific strand or research contribution but also describes how it interrelates with every other research strand included in the project description. It is not an easy task, but this integration holds the key to success. The team is well advised to find someone among its own members or from a campus research office who can ***assist the PI in bringing informed coordination to the proposal development process.***

Another pitfall of a multiple authored research narrative or project description lies in writing these ***statements as if the authors were contributing to an edited collection or a journal issue rather than to the single, integrated statement*** identified as the research vision. This occurs most often on multi- or trans-disciplinary proposals that evolve ad hoc rather than from a well-planned proposal production schedule, or when the decision to submit these complex proposals occurs only a month or several weeks before the due date. In this last case, the proposal schedule can lead to a "fire drill" in which potential new research partners are added concurrently with the writing of the first drafts of the research narrative.

These situations can produce several drafts of the project description at a rapid rate as multiple contributions are added to the narrative. The complete draft of the project description may give the illusion of completeness***, but on closer examination lacks an overarching organizing theme or research vision that synthesizes the component contributions resulting in a coherent and logically sequenced whole***. Correcting this document after it has evolved can be difficult;

unfortunately, such a draft is likely to amount to ***nothing more than a siloed collection of research descriptions*** loosely associated and lacking a narrative thread that can persuade reviewers of its coherence. Once a complete narrative structure has emerged, contributors resist making major renovations to it. However, if the collaborators understand that the first full draft of a research project narrative is best viewed as a preliminary set of loosely associated descriptions, then the principal investigator can call for major revisions designed to produce a more integrated statement.

Indicators of a failed narrative, or a weak narrative, may reveal themselves sufficiently before the due date to allow the time and effort required to transform a weak narrative into a competitive narrative. Perhaps the best indicator of a weak complete first draft of the research project description begins with a nagging sense of unease after reading it. It doesn't seem to convey a clear sense of what specifically is being proposed, what questions are being asked, or hypotheses posed, nor does it explain why the research is unique, innovative or advances the field in some way. It may also fail to convey a sense of how the multiple research descriptions meld to an integrated whole. Another indicator of a failed or weak narrative is a difficulty in clearly explaining the significance of the project and its outcomes after closely reading the 15 or 20 pages describing it.

It is a mistake to assume that your sense of uncertainty and vagueness following the reading of the proposal indicates a lack of technical expertise to critique the narrative, i.e., that the fault lies with the reader and not the writer. Two good reasons to dismiss that thought implicate both you and the proposal author(s): (1) federal research agencies, particularly the major ones that most often comprise the overall research portfolios of universities, advise writing the research narrative for the intelligent reader, not the expert reader. NSF, for example, advises writing to the reader of *Scientific American*, or the scientifically literate reader. (2) Moreover, research agencies that fund large, often transdisciplinary proposals, will have blended review panels comprised of members from various disciplinary backgrounds, including the social and behavioral sciences and, in some cases, the humanities. Research collaborators must describe their research in a way that convinces the entire review panel, not just those from specific disciplinary domains, to recommend the project for funding.   So if you are asked to critique a proposal, ***do not hesitate to note when you do not understand clearly what is being proposed***, or when the project's goals and objectives appear ambiguous. Recall Professor Albert Einstein's observation that put a heavy burden on scientific authors: "*If you can't explain it simply, you don't understand it well enough. Most of the fundamental ideas of science are essentially simple, and may, as a rule, be expressed in a language comprehensible to everyone*." The bottom line: ***When proposals lack clarity, the fault lies with the author and not a review panel***. In practice, it is better to be presented with a challenging critique and penetrating questions in response to a draft project description than to hear those challenging critiques and penetrating questions from a review panel and program officer. In this case, your ***second chance is likely to occur one year in the future when a re-submittal is possible.***

Of course the best solution to the above issues is to formulate a plan for the proposal's production that anticipates such core issues as partnership configurations, vision, and goals in a logical sequence that allows time for a draft narrative of the project description to evolve continuously (see ***Schedule and Task Assignment Table for Proposal Production*** in the December 15, 2010

issue of this newsletter). A poorly planned proposal has little likelihood of success. Walt Kelly's Pogo once famously observed, "We have met the enemy and he is us!" That observation perfectly fits a ***poorly planned and poorly coordinated*** proposal development effort. But preparation and continuous coordination and communications can save you from becoming your proposal's enemy by avoiding the issues discussed above. A well-planned and well-coordinated proposal development effort cannot turn ideas of modest importance into ideas of compelling significance, but it can give your ideas a chance to be realized. A well-crafted proposal will anticipate continuous revision to ensure that the project as a whole includes and exceeds the sum of its individual contributors.