Funding Favors the Strategically Prepared

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Louis Pasteur once famously noted that "*in the field of observation, chance favors the prepared mind*." Whether or not the famous French microbiologist had to write grants and agonize over crafting the clear and compelling specific aims needed to secure support for his research is best left to historians of nineteenth-century science, but it's nonetheless abundantly clear in the twenty-first century that, in the universe of research grant writing, "***funding favors the strategically prepared***." After all, ***success in writing research grants is fundamentally a strategic endeavor***—knowing what to say, how to say it, and why you say it in your research narrative is a ***strategically-guided process***. That is not to say that "dumb luck" does not occasionally and perversely award funding to a few mediocre proposals. Why the occasional bad proposal gets funded is akin to the age-old theological question, *Why do bad things happen to good people*? However, these questions are essentially unanswerable and best left to philosophical pondering.

The more important question to answer is why haven't ***Strategic Research Funding Plans*** been created at the appropriate institutional scale and scope--for individual researchers, research teams, departments, colleges, universities, and potential multi-institutional partnerships? Too often *Strategic Research Funding Plans* ***are noted for their absence***. But as Lewis Carroll noted in *Alice in Wonderland, "if you don't know where you're going, any road will get you there*." **Bottom line:** ***everyone needs a strategic game plan when it comes to writing successful research grants***. Their absence is akin to NASA announcing it will revisit the moon landing but noting, "if we overshoot the moon, we'll try to land on Mars."

Admittedly, when it comes to institutional strategic plans in general, some may be good, some may be not so good, and some may be truly horrid, but all seem to share the common characteristic of being quickly forgotten by everyone. Fortunately, regardless of scale*, Strategic Research Funding Plans* are fairly simple to develop, require minimal maintenance, and are flexible and adaptable to changing priorities or research opportunities. The core elements of a funding plan include its scale and scope, a time horizon, an assessment and tracking of potential funding agencies, an assessment of research capacities and priorities, a research funding training and transition plan, faculty forensics, and continuous engagement strategies for research development and grant writing.

The goal is simply to connect the dots—understand the trees but envision a forest, i.e., more research funding. A *Strategic Research Funding Plan* offers a simple solution to a persistent problem: ***insufficient success in obtaining research funding***. The stepwise process for creating a *Strategic Research Funding Plan* include these core elements.

Define Your Scale and Scope

The first step is to define the boundaries of your funding plan by both scale (e.g., engaged researchers) and scope (e.g., engaged research capacities and expertise). Once this is done, your domain of focus has been established. You must access this domain to assess your competitiveness, and then map to potential research funding opportunities over your selected time horizon.

In terms of scale, determine whether the funding plan is for one or at most a few researchers, a large research team, or a department or college. In this last case, is the department or college trying to align resources to new faculty hires, better motivate research with existing faculty, form new research teams, or support faculty research cluster hires to pursue large team grants in a topic area such as sustainability, genomics, water, manufacturing, nano-materials, or energy, among numerous other areas. With this knowledge, your place in the "research funding universe" can be determined by identifying and continuously tracking a subset of federal agencies and foundations that fund research in your domain of interest. In most cases, this will be a small subset of agencies, but that also depends on how you have defined the scale and scope of your funding plan.

However, even if your research domain of interest spans multiple federal agencies and perhaps even a few foundations, for example, under a broad topic area such as sustainability or genomics, a realistic assessment of your capacities likely will limit your focus to a few research agencies and a few programmatic areas within those agencies where you are competitive for funding. Most likely, your research funding opportunities will not be the equivalent of free beer and wide roads. As your funding focus narrows through the self-assessment process from what you might dream about to what is possible, your funding plan will converge on a more realistic competitive strategy.

Of course, research partnerships often expand the potential funding opportunities when team members have experience at multiple agencies. However, a more difficult and common challenge, particularly at the scale of an academic department, occurs when the traditional funder of departmental research faces budget cutbacks and/or changes funding priorities concurrent with an increase in proposals submitted to that agency as more universities make funded research a priority. For example, funding constraints and changing research priorities at USDA or EPA may force faculty in departments traditionally funded by those agencies to seek funding at other agencies, such as NSF, NIH, and DOE. But this is not easily done without a research funding ***Training And Transition Plan*** in place to better guide this process. Understanding the unique mission and culture of each funding agency is key to success. A history of competitiveness at USDA/NIFA does not translate into competitiveness at NSF, NIH, DOE or DOD (see *Integrating PI Experiences from Various Agencies*, December, 2012).

Define Your Time Horizon

Defining your research funding time horizon is important, particularly since your goal in a funding plan is to identify a series of potential funding solicitations that form a ***Funding Opportunity Matrix*** to which you map your research scope of interest, expertise, and capacities, and then assess your competitiveness. A moving one-year time horizon is a reasonable starting point for this process in many cases, although it could be multiple years for large teams focused on winning major research centers through success in obtaining smaller "***building block***" research grants. Many center grants, such as the current NSF *Engineering Research Centers*, may have several hundred preliminary grants submitted but will invite only 4 or 5 per hundred of those to submit a full proposal. ***So being strategically prepared several***

years in advance is critical to success. Regardless, within your selected time period, you need to identify and track all potential funding opportunities for evaluation.

Identify and Track Potential Funding Sources

Once this process is set up, it is fairly easy to monitor and maintain for the selected group. In most cases, funding opportunities will come from the major federal research agencies listed on Grants.gov, although foundation funding may also be included in your *Funding Opportunities Matrix*. The important point here is to make sure your matrix includes both solicited and unsolicited opportunities, as well as Broad Agency Announcements that often remain open for several years, although funding priorities may shift during the BAA's open period through modifications posted to Grants.gov. BAAs and other unsolicited proposals often have a stepwise process, or gates, that start with a brief concept paper or "elevator abstract" that eventually leads to an invitation to submit a full proposal. Crafting concept papers is an excellent team-building exercise that forces a focus on ***clearly and succinctly*** describing research significance, integration, synergy, and the value-added benefits of the team structure to the agency's research mission priorities.

Moreover, it is wise to subscribe to Grants.gov electronic notifications, either RSS feeds or email alerts, to keep your *Funding Opportunities Matrix* current. Bottom line: if you wake up to find a funding opportunity of potential interest delivered to you during the night by an RSS feed or email alert, then the entire team should receive that funding opportunity before you finish your morning coffee or diet Dr. Pepper. In particular, if BAA's are a potential funding source for your research, consider subscribing to the Modified Opportunities by Agency RSS feed to receive a listing of ***recently modified opportunities*** by agency name. Many open funding opportunities at the mission and defense agencies may have 20 or more modifications posted during the open period that reflect changing research priorities. Grants.gov modification notices keep you current on all changes made to open solicitations—***this is critical information to track***. Of course, almost all federal research agencies have very robust electronic notification services using RSS and emails.

Keep in mind that your *Funding Opportunities Matrix* needs to be distributed among members of the research team. Whether done in a Word table or an Excel spreadsheet, emailed around as an attached file, or posted to a website is less important than that it be easily ***visible, accessible, transparent, and current*** for those who use it. In other words, don't use a database. Databases are great for tracking all the identified Goldilocks planets in the galaxy, or the inventory at a big box store, but a ***simple, easily visualized spreadsheet matrix gives the best relational understanding of potential funding opportunities***. Other than that, creating the matrix is just an organizational process of listing in a spreadsheet or Word table all the relevant funding agencies, URL links to funding opportunities, due dates, program synopses, and any other key information needed for the team to discuss a "go/no go" decision on the potential funding opportunity. ***The key is to keep this information current on a daily basis***.

Assess Your Research Capacities and Priorities

Another key step in the funding strategies process is to map your capacities and expertise, either as an individual or a team, to a specific funding opportunity of possible interest to determine your competitiveness. One of the most important decisions in research grant writing is deciding whether or not to submit a proposal. In this regard, to quote Ann Landers, "*Don't accept your dog's admiration as conclusive evidence that you are wonderful*."

In many cases you, or your team, will have identified more possible funding opportunities over the coming year than would be realistic to apply for, and so some winnowing will be required to prioritize opportunities based on a competitive assessment of how well you or your team can address the sponsor's goals and objectives. On a large team proposal, this process of assessing competitiveness is critical (see *Red Teaming the Solicitation*, July, 2012). Planning, developing, and writing a competitive proposal, regardless of size, represents a significant commitment of time and resources ***focused on research narrative perfection***. Remember, it is infinitely better to submit a few excellent proposals each year than to spam multiple funders with a blizzard of mediocre proposals. The funding dice are heavily weighted to favor the strategically prepared.

Moreover, the assessment you or your team makes about your competitive readiness for a specific solicitation will form the basis of the narrative arguments you make in the proposal to convince program officers and reviewers to fund you.

Faculty and Team Forensics

A key part of assessment is to develop a process of forensics that helps determine the role each member of a research team will play in any funding solicitation under consideration for a submittal. Additionally, once this "forensics" process is complete for each team member, it needs to be conducted ***to assess the team as a whole***. After all, you can anticipate with certainty that program officers and reviewers, regardless of agency or solicitation, will want to know the experience and expertise each team member brings to a proposed research project, the experience the proposing team has working together (e.g., results of prior support, joint publications, preliminary data, etc.), the value-added benefits and research synergy the proposed team configuration brings to the project, and how the proposed research advances the mission of the funding agency or the field, or impacts other fields.

Research Funding Training and Transition Plan

Often, particularly at the level of a large research team, academic program, or an academic department, an assessment of funding opportunities leads to the conclusion that it is unlikely, given budget constraints or shifting priorities, that sufficient research funding will be available at one long-standing or "go-to" agency to maintain an existing research capacity, or expand a research capacity into new areas. ***The most common solution to this situation is to seek to expand the number of funding agencies to which proposals might be submitted***.

This is not an unreasonable plan, albeit with several caveats, the principal one being that exploring new agencies necessitates understanding a new agency culture and mission. Transitioning from NIH to NSF, for example, or from USDA/NIFA to NSF, or from NSF to DOE or DOD, will all require an ***Agency Transition Plan***. Do not make the mistake of thinking that all agencies that fund, say, sustainability, water, energy, genomics, or whatever, ***are fungible***. ***They are not!*** If you are going from a mission agency, e.g., DOD, EPA, USDA/NIFA, etc., to a basic research agency, e.g., NSF, NIH, DARPA, DOE/OS, etc., or even transitioning among mission agencies, it will be critical to your success to understand, as former Texas Governor Ann Richards was fond of observing, "***how the cow eats the cabbage***" at the particular agency of interest.

Research Grants Training

In many cases, a Strategic Research Funding Plan requires some ***aligned grant-training activities specifically targeting the proposed strategic directions***, particularly for new faculty, newly formed faculty clusters, or more senior faculty seeking to transition to new agencies, perhaps from USDA/NIFA to NSF. In particular, faculty transitioning from grants of a few PIs to large-team grants will benefit from training on the subject of planning, developing, and writing these major, more complex efforts. This training can often be given by a campus research development and grant-writing office with experience assisting in the writing of center level grants, particularly in partnership with senior faculty whose large team research has been well funded, or who have served as reviewers of large team grants.

Continuous Engagement Strategies

Finally, strategic plan graveyards have a very long waiting list of old strategic plans looking for a final resting place, as well as many who hope these plans never again see the light of day. To keep this from happening to your Strategic Research Funding Plan, make sure to keep it ***short, simple, accessible, and current***. Its real value serves as a "funding GPS system" that helps faculty, regardless of scale and scope, discuss a coordinated plan for writing research grants over the coming year, or more. ***A well done Strategic Research Funding Plan is a tool that puts real money on the table for consideration and engagement***. Real money on the table is the glue that will hold a team together. After all, when Willie Sutton was asked why he robbed banks, he replied, "*because that's where the money is*." ***Similarly, a Strategic Research Funding Plan shows you where the money is and helps you get your fair share, or more!***