Selling Your Specific Aims

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Grant Club Presentation

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Sales 101

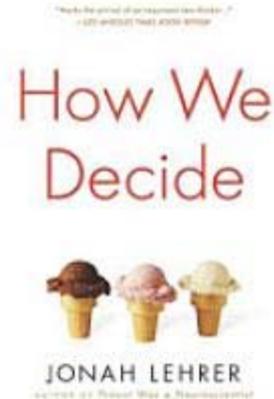- Everybody is a customer

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JONAH LEHRER

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- Successful selling involves getting to know your customers' needs, then offering them solutions to meet those needs. *Make this process painless.*
- Decisions are made with both sides of the brain – logic <u>and</u> emotion.
- The reviewers are your customers.

How We Decide

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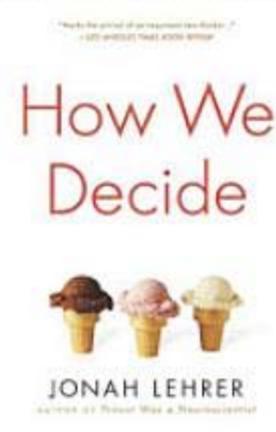
What is your product?

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➢ A well-crafted project that will result in the advancement of *significant* knowledge in your field

A quick review -- First, here are the four basic phases of an ordinary sales meeting -- a simple sales agenda:

- **Preliminaries** -- Warming up events at the start of the call
  How are you? Nice Weather? Is that a picture of your daughter? Did you catch that fish? Keep these questions and this phase short. One or two, and don't let them go on.
- **Investigation** -- Finding out facts, information, and needs.
  How much do you see your company growing next year? How do you keep track of how much work your managers are accomplishing? What is your current work order system? Lots of time is spent in this phase. It is here were you try different SPIN® strategies (more on that next).
- **Demonstrating Capability** -- Showing you can solve their problem:
  resist going to this phase until the prospect has stated an explicit need that your demo solves such as, "I'm starting to think that a centralized CRM tracking system could help me keep track of my managers and vendors."
- **Obtaining Commitment** -- Getting an agreement to proceed to a further stage of the sale. First check that you've covered all of the prospect's key concerns. Then summarize your benefits. Finally, propose the next appropriate level of commitment.

SPIN Selling as Applied to Grants

Tell a story:

- Situation – setting the stage
- Problem – creating tension
- Implications
  - Detail all possible outcomes and meanings
  - Examine implications of NOT doing your project*
- Needs – resolution of tension by proposing a solution

http://www.sellingandpersuasiontechniques.com/SPIN-selling.html

Know Your Client/Audience

- **<u>NSF</u>** - With an annual budget of about $6.9 billion (FY 2010), they are the funding source for approximately 20 percent of all federally supported basic research conducted by America's colleges and universities. In many fields such as mathematics, computer science and the social sciences, NSF is the major source of federal backing.

- **<u>NIH</u>** –
  - Look for what they say are research priorities and cite them!
  - Find out who will likely review your grant and what their research areas are:
    http://www.csr.nih.gov/Committees/rosterindex.asp

Know the Evaluation Criteria

- <u>NIH</u>:
  1. Significance
  2. Investigator(s)
  3. Innovation
  4. Approach
  5. Environment
- <u>NSF</u>:
  1. Intellectual Merit
  2. Broader Impacts
- <u>Foundations</u>: If their announcement does not specify, FIND OUT.

NSF Project Summary

- The proposal must contain a summary of the proposed activity suitable for publication, not more than one page in length. <u>It should not be an abstract of the proposal</u>, but rather a self-contained description of the activity that would result if the proposal were funded. The summary should be written in the third person and include a statement of objectives and methods to be employed. It must clearly address in separate statements (within the one-page summary):

  - the **intellectual merit** of the proposed activity; and
  - the **broader impacts** resulting from the proposed activity.

- It should be informative to other persons working in the same or related fields and, insofar as possible, understandable to a scientifically or technically literate lay reader. Proposals that do not separately address both merit review criteria within the one-page Project Summary will be returned without review. To that end, proposers are encouraged to include separate headings within the one page document for both "Intellectual Merit" and "Broader Impacts".

http://www.nsf.gov/pubs/policydocs/pappguide/nsf11001/gpgprint.pdf

From one seasoned reviewer

- Regarding the specific aims, as a reviewer, on the positive end, I ask:
  - "Does this turn me on?"
  - "Is it intriguing?"
  - "Will it lead somewhere?"
  - "Will it matter what the person finds?"
  - "Will it change the way we think about this topic?"
  - "Will it change clinical or public health practice?"
  - "Is it truly novel?"

"Defining what is creative and novel is difficult, and it is easier to define some examples of what is not novel and creative. So, in my view, if others have done a study (e.g., a GWAS of BMI) in one age, ethnic, or gender group – repeating the same study in a different demographic is not a bad idea, but it is certainly not terribly creative. Similarly, after ~4 decades of attempts to improve cognitive behavior therapy for obesity, when I see someone propose a modest variation, despite very legitimate reasons they may offer to believe that this may be beneficial, it is hard for me to see it as more than a minor increment.

Some studies are extremely important even if there is not an ounce of creativity in them. For example, by the time one gets to doing a large scale clinical trial, much ground work has already been laid and the need for the trial is fairly obvious to all experts in the field. So, while not 'intriguing,' such studies do have the potential to change clinical or public health practice."

Two First Impressions of Your Proposal

- Abstract
- Specific Aims
- The abstract is the movie poster, the SA Page is the movie trailer

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An Abstract Formula

1. **What will you do and who will do it?**
2. **Why is it important?**
3. **What has already been done?**
4. **How are you going to do it and how is your approach special?**

What Themes Must Come Out in Your SA Page

- A grant proposal must convince the reviewer that the money funded will be a good return on investment.
- The aims are a crucial part of winning over the reviewer. Your whole proposal should be written for a general science audience, not for just specialists in your field. This is particularly important in the specific aims.
- If you use specialized terminology without explaining it here, you will loose your reviewer's good will quickly, and your chances of funding are slim to none.
- Keep it general, and keep it interesting. Make sure to cover each of the four key components (*from the book Four Steps To Funding by Morgan Giddings*):
  - **Why**, **Who**, **What**, and **How**.

A Specific Aims Template

- <u>1-2 sentences</u>: Set the big picture, central challenge of your field that lots of people are interested in solving. These words hook your audience and make them want to read more.

- <u>Example</u>: "Post-translational modifications (PTMs) on proteins can significantly affect their function and their interactions with other proteins, so a major component of mass spectrometry (MS) based proteomic research is focused on identifying post-translational modifications present in different cellular states."

- *This should be the backdrop for the "**Why**".*

A Specific Aims Template

- <u>2-3 sentences</u>: elaborate on the problem, and what has been going on in your field to solving it. This is the introduction to the "**What**," i.e. the theory behind what you're trying to do.

- <u>But</u> keep it interesting and for a general audience! Do not get bogged down in heavy factual details here, or your reviewer will become lost and uninterested.

- <u>Example</u>: "PTM analysis usually proceeds by one of two methods: bottom-up is the most common, whereby all proteins are digested into peptides and then individual peptides are analyzed by tandem mass spectrometry to find mass-shifts associated with the presence of modification(s). The second route is top-down analysis, where the mass of intact proteins is measured on a high accuracy MS instrument, and from the mass, protein modifications can be inferred due to a shift compared to the predicted mass in a protein database."

A Specific Aims Template

- <u>1-2 sentences</u>: Name a general problem/gap in your field that is slowing or stopping progress towards achieving the big picture named in the first sentence. **This is a critical part of your aims**!

- You must have a single, clear gap that needs solving [clearing], in order to have a good proposal. This is your framing device for your "**Why**".

- <u>Example</u>: "Both methods have limitations - with bottom-up, it is difficult to find and analyze all the peptides associated with each protein, so there are usually gaps in coverage. Top-down is limited because a single mass measurement can be assigned to multiple isobaric (equal mass) combinations of modifications, so is not definitive."

A Specific Aims Template

- <u>1-3 sentences</u>: elaborate on the **gap**, making it more **specific** and **focused**.

- <u>Example</u>: "To overcome these limitations, several groups including our own have combined top-down with bottom-up (TDBU) analyses of post-translational modifications in proteins, using top-down data to predict possible modification scenarios, and bottom-up data to determine which scenario is correct. At present, there is no openly available software for automatically combining these two different types of data sets, and analysis by hand is extremely slow and time consuming."

A Specific Aims Template

- <u>(optional) 1-2 sentences</u>: Discuss the theory that leads up to your proposed solution, in general and non-technical terminology.

- *Do not get bogged down in minute technical details here.*

- For the example I'm using here, no additional theory was presented, but many successful proposals present a bit of theory at this point, often as a prelude to a hypothesis.

A Specific Aims Template

- <u>1-2 sentences</u>: Propose an approach to solving the roadblock. If you are working in a hypothesis-driven area of work, this is where you'll state your hypothesis. If you can tie this in with the "**Who**" your proposal will be stronger.

- This is your "**What**" - i.e. your model of how the world works (within the area of your proposal).

- <u>For example</u>: "We are ideally positioned to build and deliver open source software to address these limitations, having extensive experience in both top-down and bottom-up software development, as well as experience in applying TDBU data to an exhaustive analysis of *E. coli* ribosomal proteins."

- In this example, they are proposing new software, and they are also talking about their experience in building that software in the very same sentence. If this were a hypothesis, you'd do essentially the same thing, proposing your hypothesis and immediately showing why **you and your team** have the experience to be working on it.

A Specific Aims Template

- <u>(optional) 1-2 sentences</u>: Explain why you and your team are the right people to implement this solution/approach.

- **This is another critical section: it is the Who.**

- You need to point out why not just anyone can do this work, and why you are qualified and ready to jump in and solve it. The best thing is to cite one or more previous papers of yours on the subject, or point to unpublished work.

- <u>Example</u>: "Our established development track record includes PROCLAME for top-down analysis (PROtein CLeavage And Modification Engine)[1] and GFS for bottom-up (Genome-based peptide Fingerprint Scanning)[2-4]."

A Specific Aims Template

- 1 sentence: "We are proposing to accomplish this goal [or test this hypothesis] with the following specific aims:"

- The aims are your **How**. They need to be credible, meaning that it is realistic that you can accomplish them given your skills, your budget, and your timeframe.

- Each aim needs not only a **How**, but also a **Why**, as in "Why do this aim? What is its purpose for being?"

- The following structure is a great way to force yourself to answer not only the **Why** but also the **How** for each aim. "Aim #: To X we will Y."

A Specific Aims Template

- Sometimes the HOW (Y) is divided into several sub-steps, as a numbered/lettered list, and can even be more than one sentence, if absolutely necessary.
- Example:
  - "Aim 1: To <u>improve the identification of post-translational modifications and amino acid substitutions on proteins by combining top-down and bottom-up mass spectrometry data</u>, we will **enhance our PROCLAME software to use a Markov chain Monte Carlo algorithm that can incorporate: a) intact-mass mass data from top-down analysis, b) peptide data from bottom-up analysis, and c) context-sensitive rules that use but are not limited by knowledge of where modifications are likely to occur. We will further enhance the program's assessment of modification frequency by ongoing analyses of protein databases like UniProt[5].**"
  - Here, I have <u>underlined</u> the **Why** and **boldfaced** the **How**. Again, for a good aim, it must have both.

An Alternate Format

- **Aim 1: Develop algorithms for C. elegans viability assays to identify modulators of pathogen infection**
  - **Challenge:** To identify individual worms in thousands of two-dimensional brightfield images of worm populations infected by Microsporidia, and measure viability based on worm body shape (live worms are curvy whereas dead worms are straight).
  - **Approach:** We will develop algorithms that use a probabilistic shape model of C. elegans learned from examples, enabling segmentation and body shape measurements even when worms touch or cross.
  - **Impact:** These algorithms will quantify a wide range of phenotypic descriptors detectable in individual worms, including body morphology as well as subtle variations in reporter signal levels.

A Specific Aims Template

- <u>(optional)1-4 sentences</u>: How clearing the hurdle fits into the big picture. For the NIH, this big picture needs to be tied to improving health or curing disease. For the NSF, this may be solving one of their named grand challenges. The more people afflicted and the deadlier the disease, the easier it is to establish the importance of the project in the big picture context.

- <u>Example from a well-scored proposal</u>: "By performing a differential analysis of proteins encoded by transcripts in a variety of tissue types, we expect to uncover knowledge about the location and timing of protein translation in cells, information about which transcripts get translated, and information about how many of the putative alternative exons predicted actually encode proteins. By enhancing genome annotation with these data, and by making the project data openly accessible to other researchers, we expect these data sets will become a rich source of information for those studying regulation and mis-regulation of the path from transcription to translation in disease conditions."

From Russell & Morrison Guide

LINEAR PROGRESSION OF LOGIC FOR A STRONG SPECIFIC AIMS SECTION©

GAP

OBJECTIVE

CENTRAL HYPOTHESIS

SPECIFIC AIMS

EXPECTED OUTCOMES
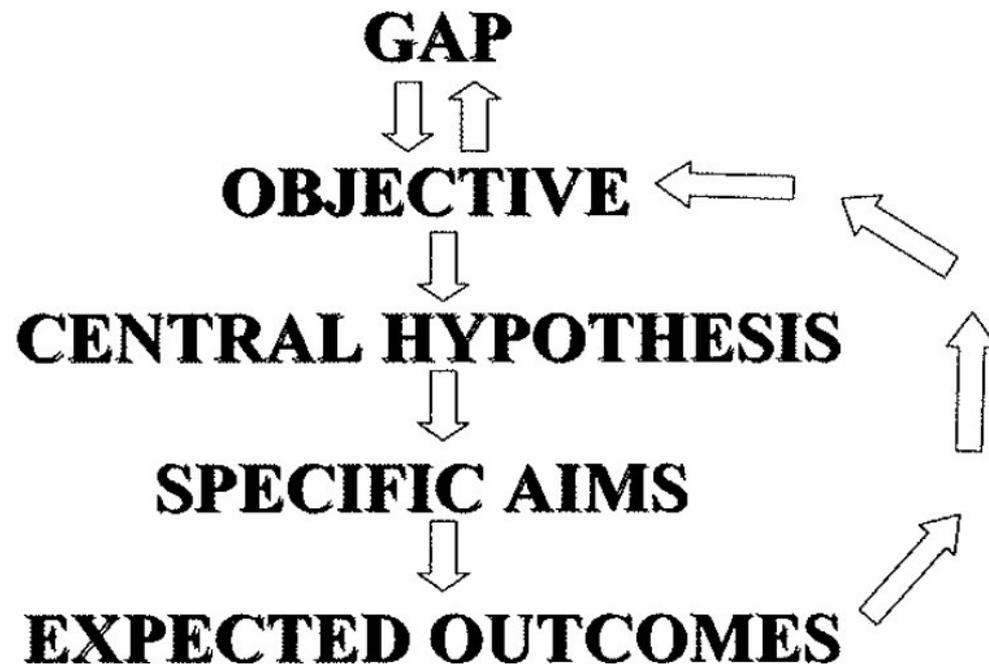
Comment on the Gestalt of this template from Peter Drain at U. Pittsburgh:

- *"Grant writing is getting the money. Science is what you do when you get the money.*

- *Two distinct activities: First, get the money. Second, decide on the best science to do with that money.*

- *Getting funded and the science done with the funds are not the same.*

- *The bottom line is that grant writing is a learned skill with some key components that are not scientific but rather based on relating the study to the reviewers goal, in a word, <u>relationships</u>."*

In sum, the Specific Aims must:

- Tell a *readable* story (some white space is a good thing):
  - <u>S</u>ituation
  - <u>P</u>roblem
  - <u>I</u>mplications
  - <u>N</u>eed
- Engage both sides of the brain – logic and emotion
- Show clear logic for addressing a *critical need* (perhaps do four separate literature reviews on the questions in your topic area):
  - Why
  - Who
  - What
  - How
- Supply enough information to the customer that the supplier is able to deliver the product

From a seasoned grant writer

As a grant writer, I strive for several things in my specific aims:

1. Clarity – I try to lay the aims out so clearly that the reviewers understand them without having to read things more than once or struggling.

2. Obligation – I try to lead the reviewer down a trail of ideas (propositional argument) that makes the conclusion that what I am proposing needs to be done inescapable. I often begin with a quotation from NIH (e.g., a strategic plan or statement from the Director) if I can find one which says that the question I am addressing is a priority area.

3. Intrigue – I try to pique the reviewer's interest helping them share my sense that there is a mystery waiting to be solved.

Build your story from the bottom up

- Find the right thing for you to do and the right funder to pitch.
- If you have a product you want to sell but have no clear customer identification or ability to establish a relationship, no amount of flowery language will overcome a skeptical audience.

If you put lipstick on a pig, it's still a pig