Seven Principles of Successful Proposal Writing
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Thesis proposal (I propose you admit me to candidacy)

Thesis Defense (I propose you give me my degree)
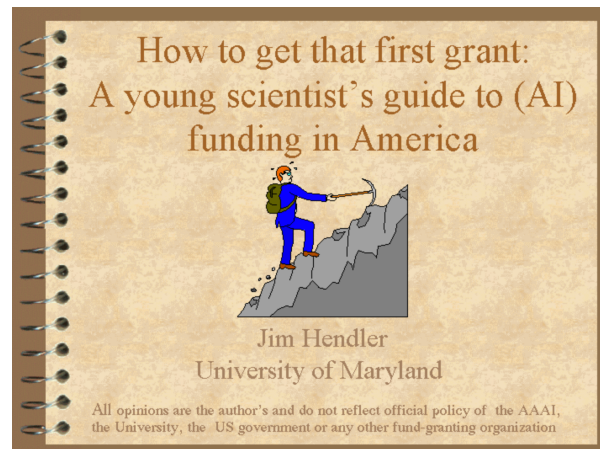
Grant Proposal (I propose you give me some research $$)

Grant Report (I propose you give me more $$ next time)

And many others*…

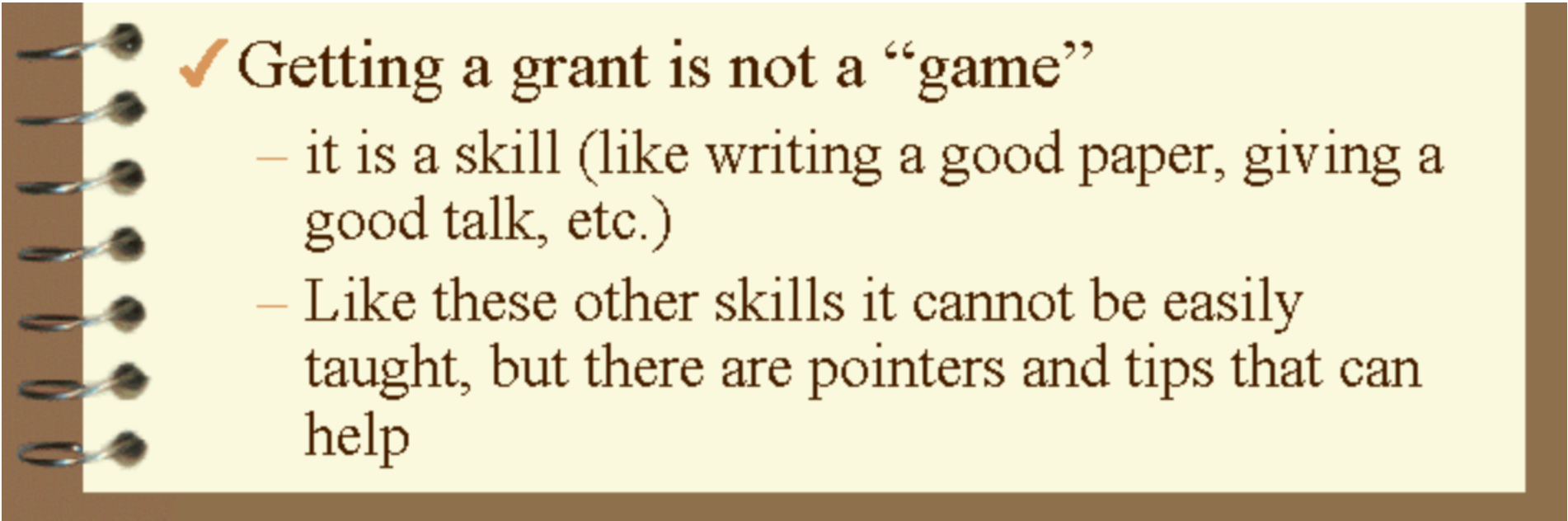* You're on your own for marriage proposals and the like…

Slides today will include some from

- A talk on proposals from 1999
  - http://www.cs.rpi.edu/~hendler/funding-talk/index.htm
  - My most downloaded presentation ever
  - Updated periodically, but very minor changes

- I'm going to select some relevant slides – those are the ones that look like this:

How to get that first grant:
A young scientist's guide to (AI)
funding in America

Jim Hendler
University of Maryland

All opinions are the author's and do not reflect official policy of the AAAI,
the University, the US government or any other fund-granting organization

Before we start:

✓ Getting a grant is not a "game"
  – it is a skill (like writing a good paper, giving a good talk, etc.)
  – Like these other skills it cannot be easily taught, but there are pointers and tips that can help

- And like any skill, practice is important!
- But also there are some "rules" to performing

RULE 1: A good proposal tells a story...

Goldilocks jumped off quickly and went over to the middle-sized chair. But this chair was far too soft, and when she tried the porridge from the middle-sized bowl it was too cold. So she went over to the little chair and picked up the smallest spoon and tried some of the porridge from the tiny bowl

Mother Bear said in a quiet gentle voice. "Somebody has been sitting in my chair. Then little Bear said in small squeaky baby voice. "Somebody has been sitting in my chair and has broken it!"

Then Father Bear looked at his bowl of porridge and saw the spoon in it and he said in his great big growly voice,

He squeaked so loudly that Goldilocks woke up with a start. She jumped out of bed, and away she ran, down the stairs and out into the forest. And the three bears never saw her again.

One morning, their breakfast porridge was too hot to eat, so they decided to go for a walk in the forest. While they were out, a little girl called Goldilocks came through the trees and found their house. She knocked on the door and, as there was no answer, she pushed it open and went inside.

...

Compare this

RULE 1: … in a **coherent** (ordered) way

Once upon a time there were three bears who lived in a house in the forest. There was a great big father bear, a middle-sized mother bear and a tiny baby bear.

One morning, their breakfast porridge was too hot to eat, so they decided to go for a walk in the forest. While they were out, a little girl called Goldilocks came through the trees and found their house. She knocked on the door and, as there was no answer, she pushed it open and went inside.

In front of her was a table with three chairs, one large chair, one middle-sized chair and one small chair. On the table were three bowls of porridge, one large bowl, one middle-sized bowl and one small bowl – and three spoons.

Goldilocks was hungry and the porridge looked good, so she sat in the great big chair, picked up the large spoon and tried some of the porridge from the big bowl. But the chair was very big and very hard, the spoon was heavy and the porridge too hot.

Goldilocks jumped off quickly and went over to the middle-sized chair. But this chair was far too soft, and when she tried the porridge from the middle-sized bowl it was too cold. So she went over to the little chair and picked up the smallest spoon and tried some of the porridge from the tiny bowl.
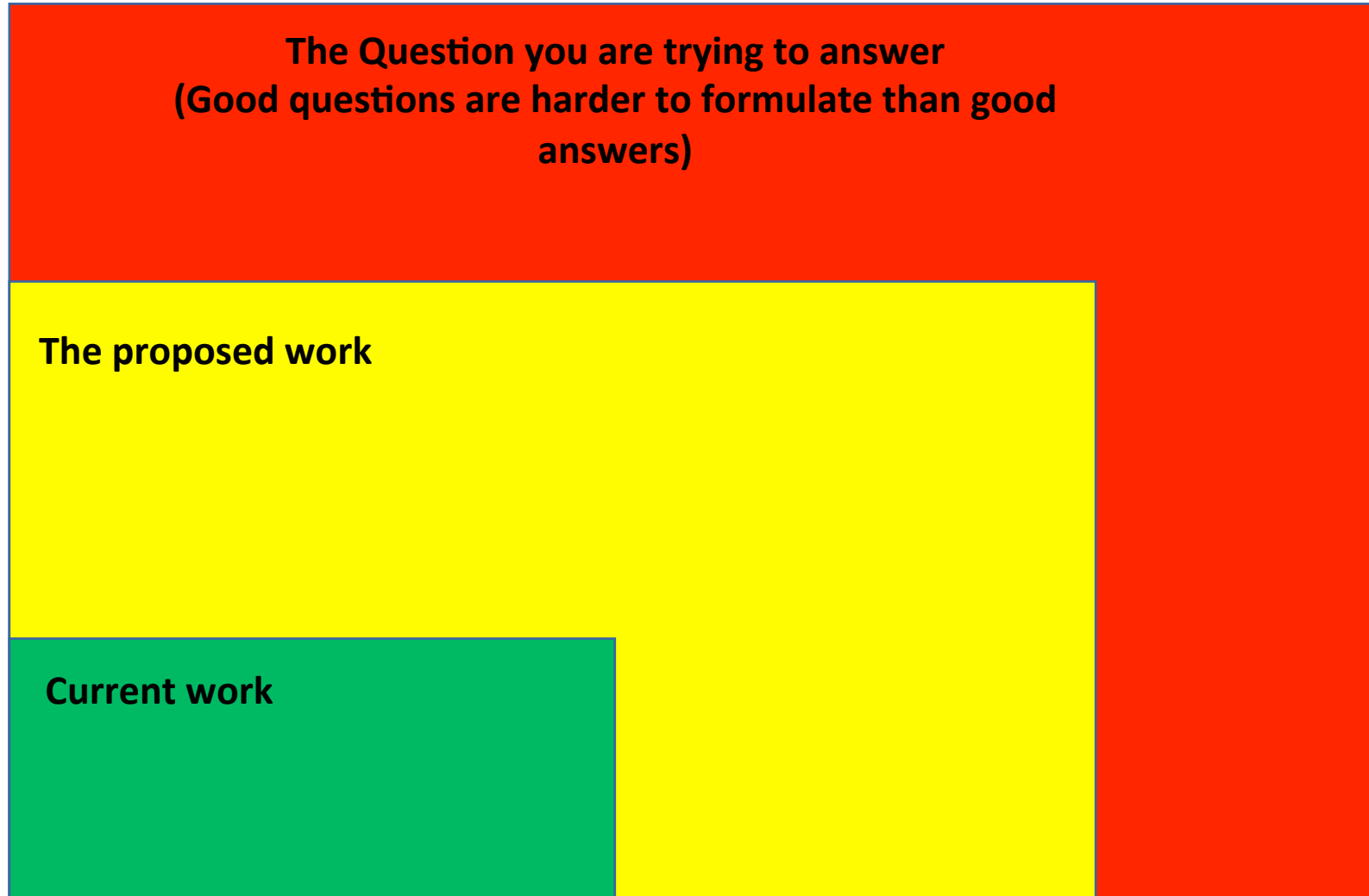
…

To this

Rule 2: The story you MUST tell…

The Question you are trying to answer
(Good questions are harder to formulate than good answers)

The proposed work

Current work

Rule 2: ...and it's key points

What you have not done already, and will NOT do in this proposed work.

What you have not done already, but propose to do. *(Must be achievable in required time frame)*

What you have done already. *(Must provide evidence for yellow box)*

Rule 2: ...and it's key points

What you have not done already, and will NOT do in this proposed work.

What you have not done already, but propose to do. *(Must be achievable in required time frame)*

HOW IT WILL BE EVALUATED !!

What you have done already.
(Must provide evidence for yellow box)

Rule 3: You must include a work plan/schedule of some kind

NSF Open RFP

✓ Objective: Support best basic research
- Typically have one or two Pis
  - academic researcher
- generally small
  - $50-100k/yr
- Stress personnel support
  - PI support
  - Grad Students

✓ Review criteria: Scientific basis, work plan
- Lack of work plan is #1 rejection reason

Rule 4: Know your audience

A Funded NSF Proposal

✓ NSF grant on planning (Nau/Hendler):

– Developing control strategies which use knowledge about goal interactions to guide planning by making better selections among alternatives

– Exploring how limitations on goal interactions lead to characteristics of task networks which constrain the size and structure of the search space, thus enabling hierarchical planning to be done more efficiently

– doing a theoretical analysis of several competing planning strategies in terms of how knowledge about limited interactions can improve their search efficiency

– implementing the results of the above research in a planning system for the efficient solution of problems of practical interest
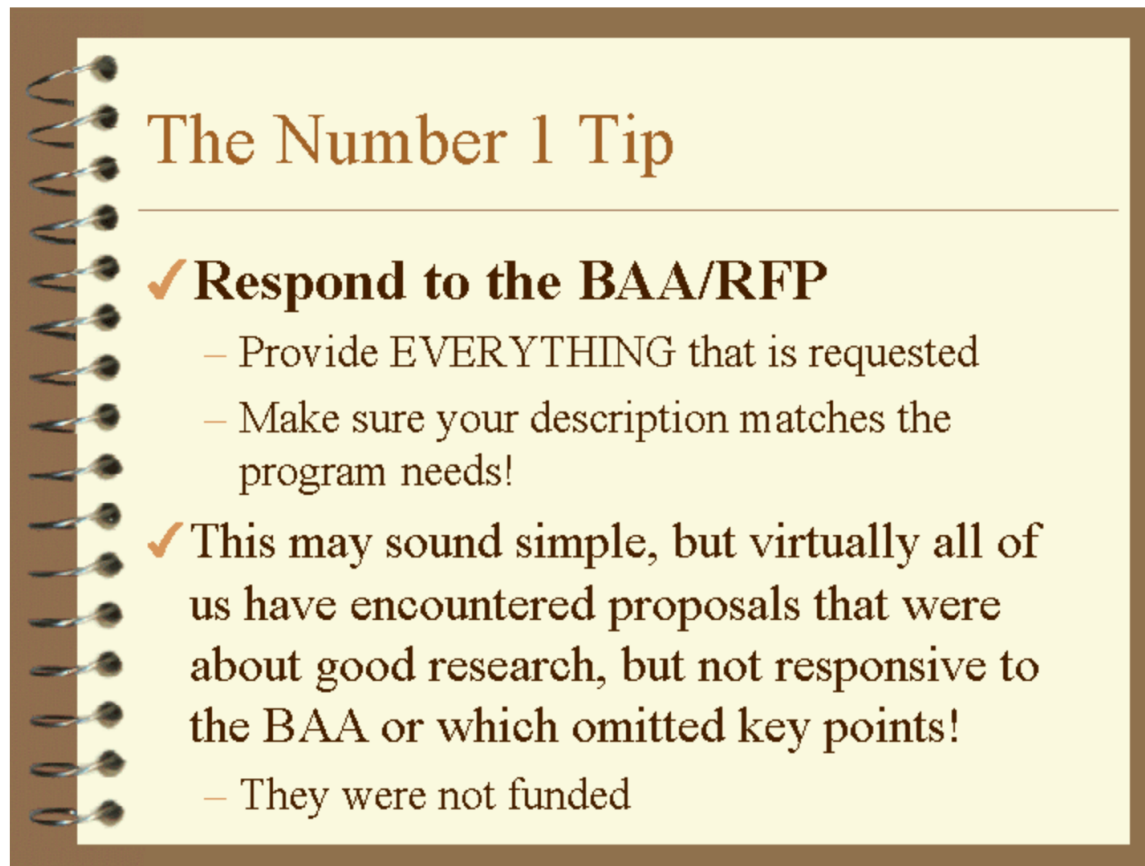
Compare this

Rule 4: Know your audience

A Funded DARPA Proposal

✓ DARPA grant on planning (Nau/Hendler):

- Make realistic manufacturing example problems and knowledge bases available to members of the <program> in a manner usable by the technologies being developed under current <program> support

- Develop an ontology of machining information in the standard ontology package being developed by <program> researchers

- Evaluate <program> work on realistic manufacturing problems…and provide comparisons with current tools used in manufacturing and manufacturing research

- Provide case-bases of manufacturing plans accessible to <program> participants …

- Make <program>-based manufacturing results and tools available to the manufacturing community via the NIST testbed

To this

Rule 5: Learn (and follow) the rules of the proposal

The Number 1 Tip

✓ **Respond to the BAA/RFP**
  - Provide EVERYTHING that is requested
  - Make sure your description matches the program needs!

✓ This may sound simple, but virtually all of us have encountered proposals that were about good research, but not responsive to the BAA or which omitted key points!
  - They were not funded

This is the number 1 response when I asked people about what to know about submitting grant proposals in 1999, 2005, 2010, 2015, and 2017.

Rule 5: Learn (and follow) the rules of the proposal

The Number 1 Tip

Note this is also true of thesis proposals and theses:
  There are required elements
        vary a bit between CS subfields
        ask your advisor
        get a copy of successful examples from your peers

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Rule 6: "Sell" it

More general grant tips

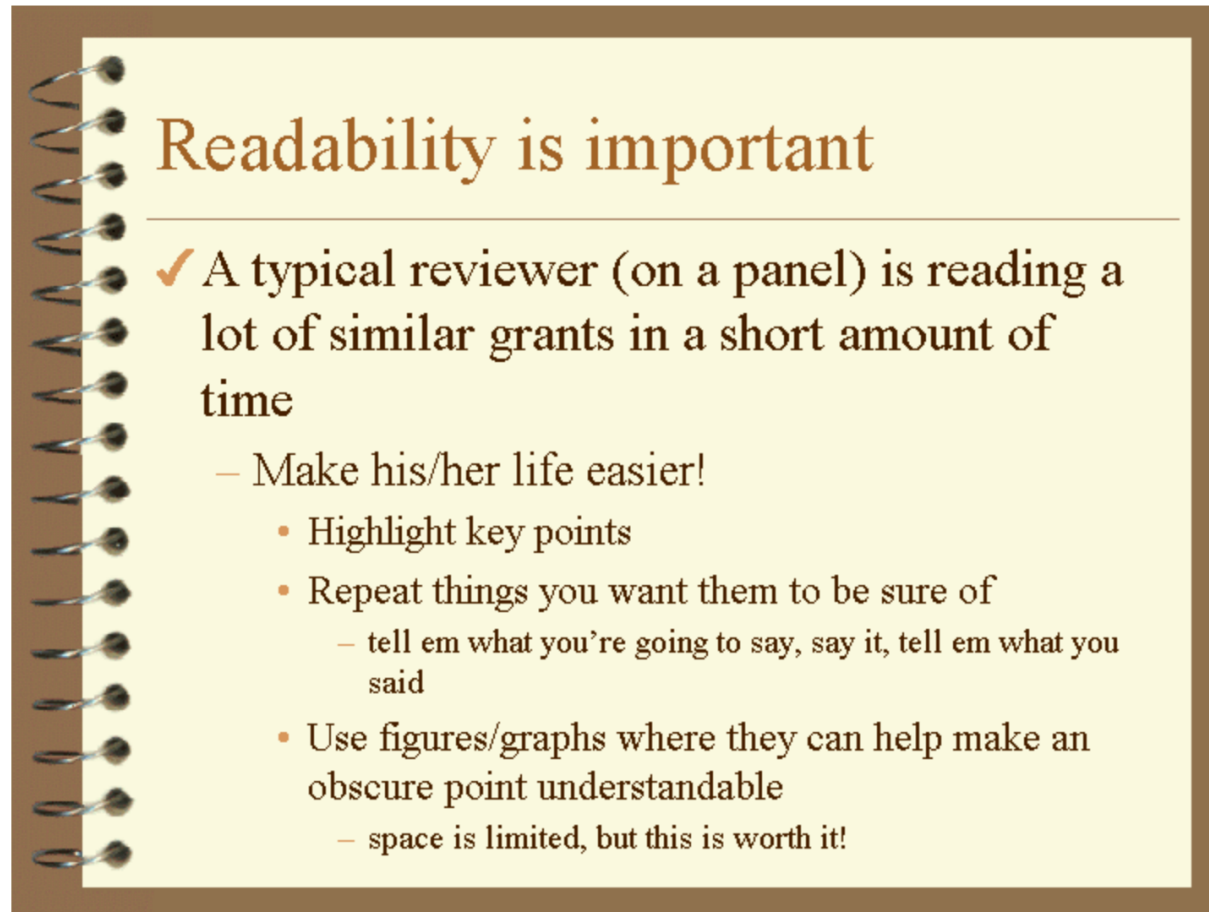✓ Back up what you propose to do with what you've already done

    – A funded proposal must describe work that doesn't yet exist, but at the same time, the reviewer must be convinced you can do it.

✓ Show enthusiasm for your work

    – if you don't love it, neither will the reviewers

(or professors on your committee)

Rule 7: Writing counts!!!!!!!!

Readability is important

✓ A typical reviewer (on a panel) is reading a lot of similar grants in a short amount of time

- Make his/her life easier!
  - Highlight key points
  - Repeat things you want them to be sure of
    - tell em what you're going to say, say it, tell em what you said
  - Use figures/graphs where they can help make an obscure point understandable
    - space is limited, but this is worth it!

Members of your committee are busy professors – your thesis proposal/thesis is a "book" – how much time do they have to read carefully?
(your advisor better read it carefully!)

Reviewing the rules

- Rule 1: Tell a coherent story
- Rule 2: Remember the three boxes (including what is beyond the current work) and esp. how it will be evaluated
- Rule 3: A time frame/work plan/schedule is crucial
- Rule 4: Know your audience
- Rule 5: Follow the rules of the proposal (and these rules too)
- Rule 6: You must convince people it is important
- Rule 7: Writing Counts!

GOOD LUCK!!

Http://www.cs.umd.edu/~hendler
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