Thoughts on Research Interests, Topics, Questions, and Problems

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• This is an excellent book. I highly recommend it.
• Students of mine have (sometimes) found these ideas helpful when they are thinking about research and how to choose research questions.

Some Central Premises

1. Research, understood broadly, is an important part of almost any field of study or line of work.
2. Research is not a solitary activity. It is a dialog, often implicit, among a community.
3. Your research should contribute to a dialog that helps build a community of researchers.
4. Research is not a linear activity.
5. Research is not fact collecting.
6. There is no research without an audience.

Interests, Topics, Questions, Problems

• It may be useful to think about four categories of research ideas:
  1. Interests
  2. Topics
  3. Questions
  4. Problems

• This is, in a sense, a model of the production of research knowledge.
• Like all models, it is only useful when it is useful.

Interests

• These are things you're interested in.
• Stuff you like to do, learn about, think about.
Topics

- More narrow than an interest
- Are specific enough for you to master a reasonable amount of information.

Questions

- A question is a question.
- Ask questions about your topic until you find one that is interesting and significant.
- Determine what kind of data or evidence your readers will expect to support your answer to your question.

Problems/Larger Significance

1. Practical problems.
2. Research problems.
3. Problems usually relate to Big Ideas.
4. What is the cost of not being able to answer your question?
5. How does your question relate to other, more important questions?

Example 1

1. Interests: Diversity in the animal kingdom
2. Topics: Giraffes
3. Questions: Giraffes are tall, but why aren’t they even taller?
4. Problems: How do bio-mechanical principles constrain evolution?
Example 2

1. Interests: Computer programming and networks.
2. Topics: Useful algorithms for analyzing network properties.
3. Questions: Can I come up with an algorithm that outperforms the Girvan-Newman algorithm? How would I decide how many clusters is optimal when doing clustering on a network.
4. Problems: How can statistical inference techniques be adapted to apply to network problems? The issue of tradeoffs between model size and predictive ability is fundamental to all of statistical inference.

Some useful sentences:

1. I am studying __________________________ (topic) because I want to find out why/why/how __________________________ (question) in order to help my reader better understand __________________________ (significance).
2. If we can’t answer the question of __________________________, then we can’t answer the more important question of: __________________________.