ADVICE FOR WRITING A RESEARCH-BASED SENIOR ESSAY

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Choosing a topic:

- Make sure to choose a problem/topic that you actually like since you'll be spending a lot of time with it. (This should be obvious.)
- For a research thesis, choose an area with at least *some* approachable open questions. You don't have to know at the outset exactly what these are, but a general sense will help you identify a more specific line of inquiry later on.

Writing:

- Write as you go. At the very least, keep an informal record of your progress. It's even better if you can start the formal writing process early on. This will make your life more pleasant in the final weeks of the semester.
- Put in the time to craft nice prose—especially for the introduction of your paper.

Work-flow:

- It's natural for research progress to ebb and flow from week to week. When it's ebbing, find other ways to be productive, such as doing background readings, running numerical experiments, and working on your write-up.
- Reading about previous work is a double-edged sword. On the one hand, it can give you insight into a problem and expose you to the sorts of ideas that have been effective in the past. On the other hand, it can prejudice you towards certain approaches and, in turn, actually stifle creativity. Think about whether your problem requires more deep understanding of existing ideas or entirely "fresh" insights. If you choose not to read at the beginning of your research endeavor, then returning to the literature later on can provide an infusion of new inspiration.

Trial-and-error:

- Often, there are many (say, a few dozen) a priori reasonable approaches to a problem. Usually, all but a few of them are destined to fail. So your job as a researcher is to look at the problem from as many different angles as possible until something works. A "negative result" about a technique that doesn't work is still valuable because it shrinks the remaining "search space" of possible solutions. Don't be discouraged if early attempts fall flat!
- Sometimes, a failed attempt to solve one problem reveals a way to tackle a different (usually, closely related) problem. Following where your progress leads—even if this means pivoting mid-semester—can help you obtain more interesting results in the end.