PROJECT PROPOSAL DEVELOPMENT, **Part One**

Over the next 5 weeks, you'll be doing research and writing geared toward the presentation of a formal Project Proposal. The project in question is the work that will consume you in the Winter Quarter: a substantial work of "Calculated Fiction."

Research Narrative The first step of your project development will be to choose some mathematics that will guide you as you build/develop/write your project. You're free to choose any mathematics that you like, as long as it's not too simple. Choose an idea with parts, with some sense of process, with an interesting amount of complexity. Most importantly, choose something that you think is interesting and that you'll be excited to learn more about.

Incidentally, you're not absolutely stuck with the choice you make now; in the course of writing your research narrative, you could discover the topic that REALLY motivates you and end up switching to that. But keep in mind that if you later switch topics, you'll have to write a research narrative about the topic you end up with, so please take some care with your initial choice. For instance, if you turn in a research narrative in week 7 about recursion, but you later switch to studying combinatorics, then your final project proposal must include a full research narrative on combinatorics.

Now that you've chosen your math topic, your assignment is to do research on that topic, immersing yourself in its ins and outs. Get to know the context of your topic, its applications, how it works, its gory details as well as its big ideas. Learn it so well that you can explain it to both a mildly interested 10-year-old and a very curious college professor (of a subject other than mathematics). Learn it so well that you can draw pictures of it—of its parts, of its processes, of the objects it deals with. Study it until you and it have pet names for each other.

Use whatever resources you can think of to pursue your topic. The web is a good place to start, but you'll need to broaden your search beyond that. Find books that will help you understand your topic. Then read them. Look for movies or instructional videos that can help you. Seek out professional journals related to the topic. Talk to people who might know something about it. Whenever you read/use/watch a source, add it to your bibliography along with a brief summary of the information contained in that source.

Once you've done your research and know your topic through and through, you're ready to attack the research narrative: spend at least two-three pages explaining your idea as clearly and as deeply as you can. Make these two-three pages the definitive two-three pages on your topic. Write them so that anybody who wanted to know about your topic would have only to read these two-three pages.

You'll need to use somewhat formal language for parts of your explanation, since you have to use the language that's relevant to your topic. However, you should also write in your own words. Remember that you're trying to explain this idea really clearly to nonmathematicians. What's most important is that you develop an ability to talk/write about your topic in your own words and in your own way of thinking.

A Look At the Weeks to Come

	Reading	Project-Specific Work	Other Submitted Work
5	*Godel, Escher, Bach: an Eternal Golden Braid*	Wiki Workshop (Wednesday) Begin Mathematics research	Seminar Notes Math Write-up 5 Seminar Paper on *GEB:aEGB*
6	*A Mathematician's Apology* + *The Mathematical Experience* (selections)	Wiki development (Wednesday) Mathematics *Research Topic* Due (Wednesday, due with math write-up) Writing Workshop: *The Uses of Mathematics*	Seminar Notes Math Write-up 6 Seminar Paper on *MA* & *ME* *No Essay*
7	*Ficciones*	Mathematics *Research Narrative* Due (Wednesday by 5pm, in lieu of math write-up)	Seminar Notes Seminar Paper on *Ficciones* *No Math Write-up* *No Essay*
8	*Einstein's Dreams* +selections from *Relativity*	Project *Proposal Part One,* Due Friday	Seminar Notes Math Exam (Wednesday) *No Math Write-up* Synthesis Paper #2 Due (Friday by 2pm)
9	*Arcadia*	Project *Proposal Part Two,* Due Friday	Seminar Notes Math Write-up 9 Seminar Paper on *Arcadia*
10	[t.b.d.]	*Final Project Proposal* Presentations & Discussion	Final Exams Self Evaluations & Portfolios