Math Forum Reflective Essay
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Prompt. Write a 750-1000 word reflective essay about your growth as a speaker in Math Forum. Successful essays will incorporate specific examples of lessons learned, together with accompanying allusions to your own talks as evidence. Readers of your essay should easily be able to sense the extent to which you have been engaged in Math Forum.

Please note that the audience for your essay is primarily your instructor, but every member of the mathematics faculty should be able to read (and enjoy) your essay. Finally, to submit your essay, please upload a PDF copy of your essay to your drop box, and please name your file lastname-essay.pdf.

Response.

      I've really enjoyed my time in Math Forum. I've learned a lot about public speaking, managing my verbal/physical tics, and presenting technical information in a non-interactive setting. Honestly, I wish there were a sequel course — I'd be really excited to try my hand at a full-hour lecture, or something like that. I guess I could always try making YouTube videos or something. . . but yeah, anyways, here are some of my big takeaways from the class:

1) I find non-technical talks much harder than technical talks. This was a huge surprise for me.

2) Giving a talk is a very different experience from presenting material in an interactive setting (e.g. tutoring). In the latter, you can sometimes rely on your audience to signal where you need to slow down, what you need to make clearer, and so on. Because talks are more static and non-interactive, you have to put in a *lot* of work ahead-of-time to identify places where your audience could get lost.

3) Knowing how to explain a topic well is *not* the same thing as knowing how to give a good presentation on it. The latter requires a lot more work, including (but not limited to)

   (a) doing extensive meta-analysis of your own understanding of the subject,

   (b) compressing that understanding into an easily-digestible model that you want to communicate to your audience, and

   (c) finding ways to efficiently translate that model to words, pictures, and any other medium of communication.

I'll offer some brief thoughts about the first two points, and focus the remainder of this essay on the third.

1 Why is non-technical exposition harder?

I was pretty shocked by how much I struggled with the non-technical talks. A priori, I had assumed that it'd be *easier* to speak about non-technical subject, for a number of reasons:

  (i) There's less jargon/conceptual scaffolding that you need to provide to get your audience primed.

  (ii) Non-technical topics are closer to what people interact with on an everyday basis.

  (iii) People have told me I'm a good storyteller. I thought this would translate particularly well into non-technical exposition.

In reality, I found that my non-technical talks tended to be rushed, rambly, unfocused, and a bit overwhelming. Speed was a particular concern, as evidenced by my feedback forms (all of the following are from talk 1):

- "The talking speed was a little fast to make it hard to follow [. . .] It seemed to be just a blob of information at times[. . .]"

- "Forest was very fast, which disrupted the flow of the talk [. . .]"

- "Sometimes I had a hard time understanding some of the words you were saying which I think was mainly due to the speed of your talking as well as your tone."

- "I didn't know where you were actually going at times, which made it feel like I was doing more work to keep track of what was going on."

For the speed part: I think a big contributing factor here was that I simply wasn't used to conveying narrative in a 5-minute time frame. But I think a bigger issue was structural. In these talks, I had a really hard time figuring out how to order things, as well as where/when to emphasize transitions, and so on. Without an explicit structure to follow, I resorted to throwing a high volume of information at the audience with the expectation that they'd be able to piece it together themselves.

So what makes the technical talk different? Essentially, I think that the rigidity of my definitions did a lot of "work" in determining the overall structure of the talk. But that's a story for §3. . .

2   Why is talk different
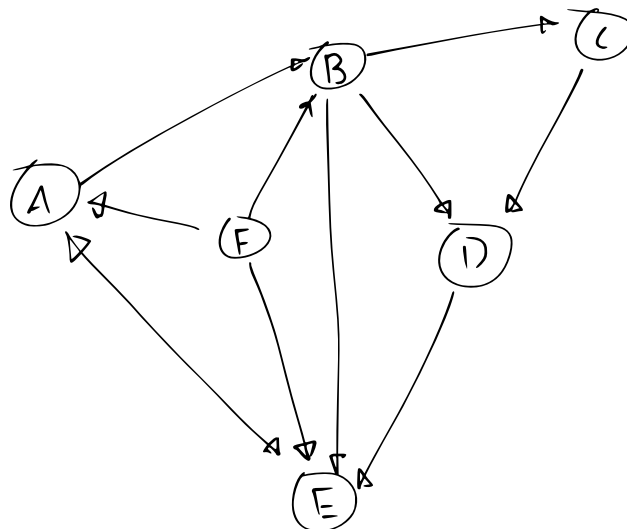
3   How to make a talk accessible and/or engaging

Figure 1: Example of a conceptual digraph

Key: everything should be justified and motivated. Problem should always seem like path of least resistance has been taken. Need to *justify* to the audience why we've done stuff.

The key in a good talk is to focus on polishing the intro and conclusion. The technical details are certainly important, but provided the audience has a good understanding of the big-picture,

they'll ultimately be secondary — with a large-scale perspective, audience can reacquire whatever knowledge they need at some point in the future.

Most audiences are surprisingly capable of grappling with abstract technical material, provided it's *interesting*. This is what you have to focus on. Motivate everything, make everything feel gratifying and sensible, and so on.

Problem is *not* quite "people aren't great at abstract reasoning." People do plenty of abstract reasoning — it's a very human thing, in fact. The problem is that abstraction is often *uninteresting* to people. Evolutionarily, this would make sense, maybe. I really am not an evolutionary psychologist, but I imagine that if you were part of a hunter-gatherer society, it wouldn't be beneficial to get caught up in ruminations about the universe.

Explaining a technical subject

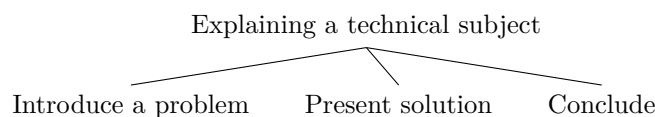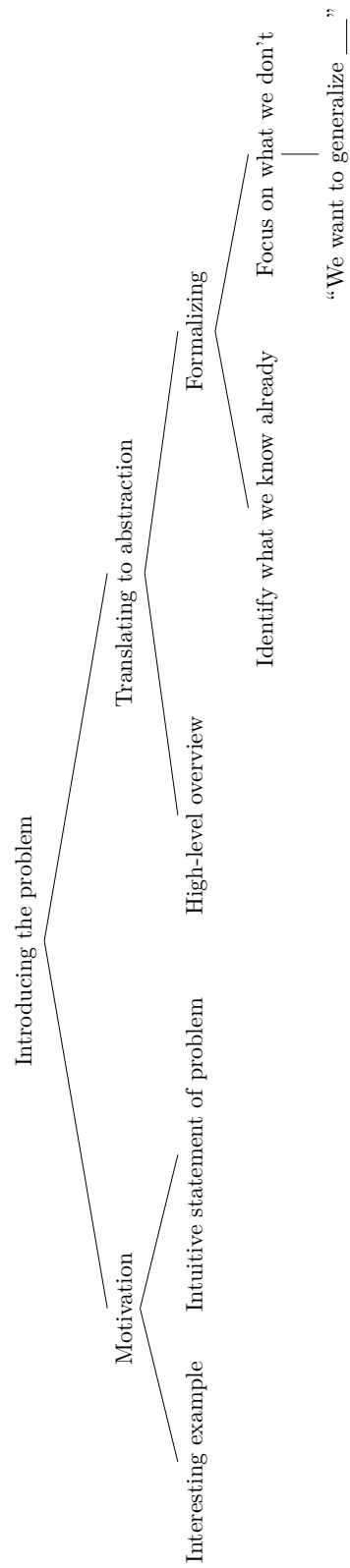Introduce a problem   Present solution   Conclude

Figure 2: Summary of

Figure 3: Introducing a technical subject
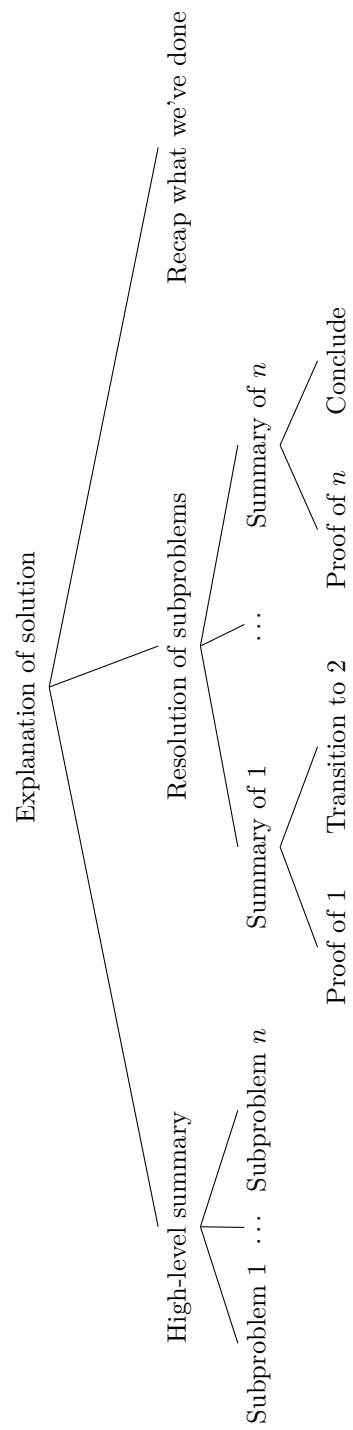
Figure 4: Explaining the solution

Concluding

Reinforcement

Benefits of abstraction

Unexpected result 1 ⋯ Unexpected result n

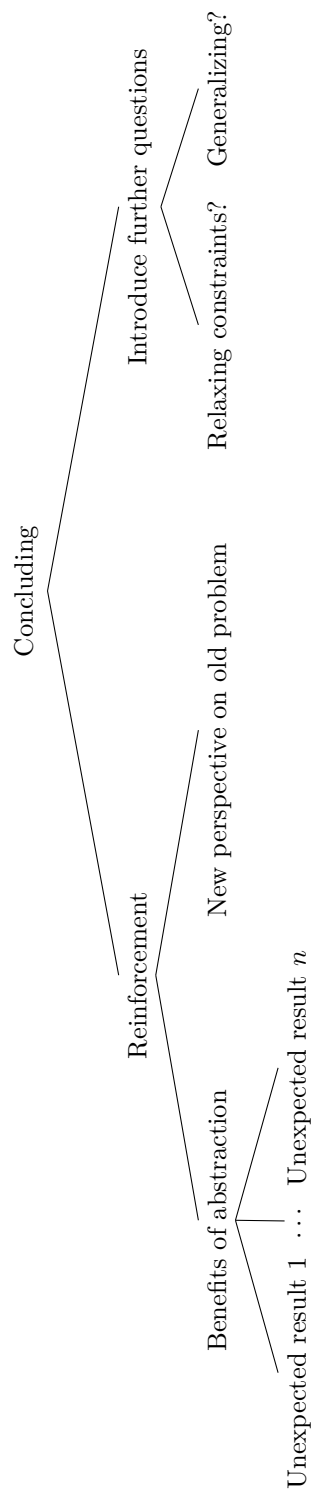New perspective on old problem

Introduce further questions

Relaxing constraints? Generalizing?

Figure 5: Wrapping things up

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