

Notes on preparing to give talks, or, how to (prepare to) give an invited talk at an APS meeting

Dr. Greg Severn

Physics 493, Seminar I

1. First you have to do the work, that is, have something to talk about
 - (a) Do the experiment, get it to work
 - (b) Make the graphs
 - (c) Model it, make sense of it, invest the results with meaning. This works best if you know why you did the experiment, why it was important to do (why it got funded). This works best if you wrote the proposal (or read the proposal)
 - (d) Now tell the story—the PI promised this would happen. If you are the PI, dude, you saw this coming. If you are taking Seminar I (the Craft of Scientific Presentations), Dude!! You really saw this coming.
2. Notes on Composition. Composition means crafting the slides themselves as well as the words you say in support of them. You've been asked to give a talk (someone connected with executive committee of DXX-APS sent you an invite via email, you MISTAKENLY SAID YES, or maybe you just registered for this class). Your talk will
 - (a) have a clear purpose & scope, and you will communicate this up front
 - (b) help people in the audience care (know why they might want to care) and know what the physics issue is (or issues are, what people are trying to find out, and why, and how your work contributes to the bigger story of that search for new knowledge.
 - (c) help them understand how you made your measurements, and
 - (d) what models you are using to understand your results, and
 - (e) what your results mean, and you're back to the why care at all and what the physics issues were driving the questions in the first place. How to do all of that? See #1 above, and then do #2 again until you are right back here again. At some point, you'll move on.
3. First, make a strong talk.
 - (a) make strong slides (message on top, and 'proof' in the form of single clear graph, or a simple calculation that everyone can follow, etc. below; DON'T pack the slides with proof (some's good, more's better doesn't work for talks when considering a single slide. . .)
 - (b) make natural connections between slides, craft a path along which it's easiest for the people new to your work to follow, try to make the transitions easy for them
 - (c) make a mapping slide that tells the purpose of the talk, clearly, explicitly, succinctly, and use pictures (annotated?) to indicate the sections of the talk. The purpose of your talk cannot be 'here's what I did' or 'I made these kind of measurements', or any sort of rudderless assertion like this, your purpose has to be to describe the contribution to the physics of your problem, the new knowledge that exists now (is defensibly if not demonstrably proved) by your work. Don't panic if you haven't done these experiments yet (proposal talks can be very fun). Panic if you don't know what the contribution to the physics of your problem is or should be.
 - (d) make a summary slide that has the couple (NOT 5 or 6, but 2 or 3) conclusions your work supports, these should be graphical, not bulleted, (text can go above or below the graphical image that supports it. . . the image should help the audience recall 'the proof' in some way. You will have not seen talk slides like this at research conferences.....
4. Next, make a strong 'talk', here 'talk' means the words you say in support of the talk. Although this looks like a serial process, you'll see that composing slides and composing the words you will say are highly highly interconnected, iterative processes.

- (a) make minatures of slides, with all the overlays, printed with 2 or more slides per page, and write out your talk, making your comments directly on the page next to the slides. These are the beginnings of your ‘talk notes’, comments you will actually say, that support, or demonstrate the message you are trying to get across. These are not final by any means, at first writing, so don’t stress about making it perfect (yet).
- (b) Keep the main thing the main thing. And these remarks are written with the time of the talk in mind. If there is a 12 minute talk, it should take 12 minutes once you are done talking it through. A reasonably significant slide should be dawdled over (2-3 minutes) and a ‘perfunctory’ slide can be gone through more quickly (30 sec, to a minute). The conclusion should take a bit, the key ‘steps’ or slides along the way shouldn’t go quickly. . . .
- (c) consider what prior understanding the audience has of your work. Go more basic than that. Be ready for questions on 2 levels: a) the non-practitioner (you were that, once), and b) the practioners, what questions interest them (you are becoming that now. . . what are the hot questions people are asking?)
- (d) some slides are perfunctory (acknowledgments, both to collaborators and to funding agencies), to be given quickly, BUT NEVER talk them through in a perfunctory way, be INTO every message, ESPECIALLY THE THANKS PART. Did you do this work without help, without training, without the inspiration of other people, without equipment acquired by someone else? Well, if not, you will want to share some emotion when you give thanks. And the PI who hired you isn’t paying you, NSF is, or DOE, maybe NIH is, and taxpayers fund them. But thank the funding agency who is the founder of the feast. . . .sorry for going off on this. Don’t put this last. Put it up front. This really is the season to give thanks (this season or stage of the talk)
- (e) are your comments a simple restatement of the text already on your slide? You can see this immediately. Avoid this. Is the message of the slide clearly stated succinctly in the title of the slide? Presume that the audience can read this at a glance. If there is a more informal way to say it, perhaps say that, but DONT READ YOUR SLIDE, and keep the text on the slide to a minimum. Fix this now. Are your spoken comments supportive, demonstrative, and helpful to the audience, crafted to help them grasp the message, understand how the graph makes the point, you are making? Work at making sure that this is so. Doubt yourself. Then overcome it.
- (f) Now you have a script, or a ‘talk’ to go with the slides. Read it out while advancing the slides. It should take the allotted time. It seems you have done a lot to prepare by now, but you are far from ready. Unless you intend to actually read the script instead of, more informally, giving the talk, you are very far from being ready to give it. There are conferences in which one reads a paper. APS conferences are typically not like that. So now what?
5. Prepare to give it—as with the previous step—preparing to give the talk affects every aspect of the whole talk, the graphics, the slides, the words, the whole thing. The following is A WAY, not the ONLY WAY.
- (a) Practice giving your talk. Talk out loud through your notes (while seeing or looking at the images of the slides—this is crucial—you want the sound of your own words and the images you’ve created to go together in your head. . . you will draw it out from there when you actually give your talk, so work on putting it in there). You can do this by yourself with or without your laptop, holding the hardcopy in hand, reading it out loud to your self. You should complete it in the allotted time.
- (b) The importance of practicing your talk in this way is at least four-fold:
- you want to be able to say it relatively comfortably
 - in the allotted time (25 min. for invited talks, 12 for contributed talks)
 - making all the transitions from idea to idea that welds the separate pieces into a story or narrative, a connected process of deduction (even if the discovery phase didn’t work this way. . .), a journey you want the audience to take with you. A 25 minute talk, is actually too short a time to tell the whole story—it’s highly edited (leaving out lots of actually taken steps, obviously) and a short talk (12 min) is complex enough to have a beginning, middle, and end. Help everyone through these vital transitions
 - and MOST IMPORTANTLY practicing helps you EDIT THE MESSAGE, BOTH TEXT & SCRIPT, to make ‘it’ clearer & shorter, to help you alter your graphs or plots to make them suite the message better, or to alter the message to suite the actual data you have, or to make either (images, messages) less complicated, showing only the point you are trying to make, maximally illustrative of the effect you are trying to point out or the message you are trying to send. This happens while practicing, and doesn’t happen whithout practicing.
- (c) Good practicing modifies the presentation itself. Hone the presentation, and the presentation of the presentation. You can only really do this by practicing the presentation and being aware of the pitfalls discussed in our text, in class, and in this highly simplified set of guidelines. Are you 2 min. under when you read it through? Maybe add a little context in a crucial place. Are you 5 min. over? Hmmm, what can you take out but without compromising the main message? This isn’t all there is to it, but you can see the use of knowing how long your presentation takes to present well in advance of the time you are supposed to give it.

- (d) Are we ready to give it yet? No, still very far from that. You are still going to be a like a deer in the headlights when it comes time to execute the presentation with all those strange and scary people in the audience, people who are judging your professional worth. Do you really know your stuff or are you posing? (It can feel like that sometimes). Sometime I'll tell you the Paris 2010 story. Maybe I did. See, it's hard to remember everything, even funny things when it comes right down to it. And you're a little scared. Not scared enough yet?
- You might not be able to see the screen and the audience at the same time. You may not be able to see your laptop screen (and the big screen, and so on). **DONT READ YOUR PRESENTATION OFF THE SCREEN** – try not to. Your audience thinks it's in your head. They need to be right.
 - Don't memorize your talk! you are sure to misremember or completely forget a word, and then you are stuck right there with all those important strangers looking at you, and you, searching for words and not finding them...every second makes it works.
- (e) Practice giving it until you are comfortable giving it with an absolute minimum of 'helps', like with maybe none. Do whatever it takes to be organized, but not too organized. When you are maximally prepared you can actually be yourself, and your aim is to be able to give the talk flexibly, making all the points, hitting all the messages, able to give all the reasons, making all the transitions, so, that if you give the talk 3 times, you'll give 3 slightly different versions, all different, but all essentially the same. For this,
- i. I need about 2 'write-throughs' and 5-7 'read-throughs' to get almost there, **AND STILL I'M** not ready
 - ii. I need to be able to say it all to myself, in my head, seeing the slides in my head, and feeling comfortable with the physics that supports the message, knowing the transitions, the ideas and words that move the talk from one slide to the next, from beginning to end, how it all fits together. So I
 - iii. say the whole thing to myself while I am falling asleep the night before (seeing the slides in my head, making the transitions, etc.) and
 - iv. say the whole thing while I am going down for a nap (or waking up from one).
 - v. then, when I can do all these things, I'm ready, and I can deliver the presentation and so be delivered of the burden. That relief, when the job's been done well, feels good.