Better Conference Talks

The best advice for presenting a better talk? Respect your audience.

By Emily Lakdawalla

Here I am talking up robotic exploration at the USA Science and Engineering Festival in April 2012. This article, and the blog entry on which it is based, came about because of my frustration at how bad presentations can get in the way of really exciting science. [Courtesy The Planetary Society.]

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I’ve been to a lot of conferences and seen a lot of talks, and it’s amazing to me how a bad presentation can get in the way of really exciting science. This article is a response to my frustration about bad conference presentations. I do feel a little hesitant to set myself up as an expert on this, because I know I have a lot of work to do to improve my talks. Still, I think I have useful advice to offer.

I can summarize that advice in three words: **Respect Your Audience.** All those people in the room in front of you — they are not you. But their time is as valuable as yours. Work to deliver them a presentation that is designed for them, to inform and interest them in your work, to leave them pleased that they spent that five or 10 or 50 minutes of their valuable time listening to you. Here are five key questions to consider as you prepare your talk.

**Whom Are You Speaking To?**
Most scientists at conferences appear to be speaking to themselves, or, perhaps, to the people who will eventually be reviewing their paper. Perhaps that’s all you care about, in which case you can stop reading this article right now. But if you actually want people in the room to learn anything from you, you need to think about who they are and what they will come in to the room knowing and not knowing.

The wider an audience you are addressing, the more contextual information you will need to provide to them. Deleting necessary context from your talk, in order to present more of what you did, cuts out large swaths of audience. It is an act of disrespect to your audience.

If you do not provide the people in your audience with information that they require in order to understand you, it is the same as telling them that you do not care if they understand you or not!

Please note that I am not speaking of intelligence here. I am speaking of background knowledge. Still, context trumps data, every time. You can spend a whole conference presentation talking about TLAs to an audience of incredibly intelligent people, but if
they don’t know what a TLA is, it’s likely you won’t have communicated a danged thing. (And what, you ask, is a TLA? A Three-Letter Acronym, of course.)

Really good speakers are ones who manage to communicate something to everybody in the room, no matter who they are or how much they already know. To the relatively ignorant, you should at least convey the driving questions behind your work. At the same time, to the well informed, you should convey how your work has added to or broadened or contradicted what has come before it.

If this is overwhelming, pick somebody in the middle of the ignorance/specialty spectrum to pitch your talk to. At a conference, I imagine a graduate-educated person whose specialty is not the same as mine. And then I ask the next question.

**What Do You Want Your Audience to Learn?**

It amazes me that people prepare talks without ever asking this question, but they appear to. A lot of people spend a lot of time describing their research methods: what you did is, after all, what you spent most of your time doing. But the whole point of your work was to learn something that you could then communicate to others. Don’t force the audience to go through the same process you had to, in order to get to the result. You can save your audience all that work by telling them what it was you learned.

Here’s an exercise that I highly recommend. Compose a Tweet summarizing your talk. You get 140 characters. You don’t get to use text-speak or Esperanto. It needn’t have perfect grammar, but it needs to be sensible, comprehensible English. In that limited space, you are not likely to say a whole lot about your methods! If you do, you are boring. “I mapped clay minerals on Mars.” Who cares? “Large areas of Mars experienced rainfall over tens of thousands of years.” Cool.

Make that Tweet your conclusion slide. Make sure that your talk delivers that conclusion. How are you going to do that? Well…. 
What Is Your Story?
It is impossible to overemphasize the importance of narrative in a talk. You, standing up in front of an audience, are telling a story in which you are the principal character. What’s your motivation? What are the big questions that drive your professional curiosity? Did you answer your questions, or was your search fruitless?

There are several fairly standard kinds of stories that work great for scientific talks. The easiest ones for space science? You are solving a mystery, or you are an intrepid explorer who has gone to a place no one has gone before. Maybe you have fought a pitched battle with a legendary monster of a data set.

Stories are fun. If you tell a good story, you hook your audience, and then they will willingly follow you even into dark corners of your subspecialty.

Stories are also functional, especially for people in the audience who may be struggling to follow you on that journey. If, for example, you tell your audience that this is a crime story, pretty much everybody in the room should be able to understand what the crime was at the beginning of your talk. Then, if you lose them while you’re talking about evidence gathering, you still have a chance of picking them up again when you tell them: that was the evidence, and this piece of evidence led me to the perp. Even if an audience doesn’t get spectroscopy or understand what a general circulation model is, they probably get how crime stories work.

Narrative is not just helpful to your audience; it’s helpful to you, too. It provides a structure for your talk and helps you determine what is crucial to conveying your message — and what is not. Which is very important when you consider the following question....

How Long Do You Have to Speak?
You cannot say all the same things in a 15-minute talk slot as in a one-hour colloquium. You just can’t. Don’t even try.

However, you can tell the same story, which is why I put story before talk length in this article. Do you have a favorite novel that’s been made into both a miniseries and a movie, and maybe even a one-hour show? Think about the differences in story among these. As you go from longer to shorter versions, you see reductions in characters, in settings, in subplots, and finally in the main plot line itself. Yet the story (usually) remains recognizable. Exactly the same process is necessary to go from a scientific paper to a colloquium to a long conference talk to a short presentation.

It is especially important for very short talks to practice your talk and then, if it is too long, cut out information that is not needed to tell your story. You cannot solve the problem of a too-long talk by talking faster. You must simplify the story that you are trying to tell. It is only now, once you have identified your audience, your take-home message, and your story, that you should begin to think about making a PowerPoint presentation.

What Visuals Will Amplify Your Story?
I’ve observed that a lot of people use the phrase “prepare a talk” as though it is synonymous with “compose a PowerPoint presentation.” Don’t do that.

I don’t hate PowerPoint. PowerPoint doesn’t kill scientific conferences. People kill scientific conferences with bad PowerPoint presentations. PowerPoint — or any other means of projecting visual content in front of a large audience — is a tool, and like any tool, it can be used for good or for evil.

When PowerPoint is used for good, it serves to emphasize or amplify points that you, the speaker, are making with your voice and your body language. No matter what, your slides should serve to enhance your presentation, not to distract from it.
What is the number one error that almost everyone makes with PowerPoint presentations? There are too many words on their slides.

We use the same parts of our brains to process spoken language and written language. If you show me a slide containing more than a few words, I must choose between reading your slide and listening to you speak. I am physically incapable of doing both at the same time. If I try, I am liable to jump between reading some text and listening to some speech and then I miss things and I get lost.

Try this. Put words on your title slide — your title, name, coauthors, and acknowledgments. Put words on your conclusion slide — that Tweet I suggested earlier, and your name and contact information. On all the slides in between: no words, just pictures...and pictures only when necessary. If a picture would not help me understand your point, put in a blank slide. Yes, I’m quite serious.

There is a great deal of power in a completely blank slide. Put one up and watch the entire audience suddenly make eye contact with you. I like to put blank slides in places where I am making transitions in talks. It is a reminder to me to remind the audience where we came from, and inform them where we are going. I can look them in the eye and check in with them to see if they are still with me.

Now that I’ve gotten my lecture on talk organization out of the way, here are bits of advice gleaned from personal experience, from the advice of friends, and from a wide variety of sources on the Internet.

Speak Differently Than You Write
Do not use acronyms in your speech, unless you are confident that everyone present understands them. Look suspiciously at any abbreviation that you are tempted to use. Ask about each one: Will everyone in my audience know what I mean when I say this? If not, then I’m sorry but you can’t use it. You don’t have to say “Mars Reconnaissance Orbiter” instead of “MRO” every time. You can just say “the spacecraft” or “the ship” or “the orbiter.” More people will understand what you mean by that than will understand “MRO.”
I hate talks where people define a new acronym in the beginning of the talk and then carry on using it throughout the rest of their talk. If you are writing a paper that is all about something called recurring slope lineae, it’s okay to define “RSL” early and then use the acronym to refer to the features in the rest of your paper. However, it is bad, bad, bad to do this in a talk. If someone misses your definition, they will spend your entire talk wondering what the heck an “RSL” is, and they will learn nothing from you.

The same goes for any piece of technical jargon. Just like an acronym, jargon acts as shorthand, making communication among people who know the jargon more efficient. But jargon is an impenetrable barrier to people who can’t translate it. And if the piece of jargon that you are using is the subject of your talk, and you insist upon using it, you’ve just walled off a big chunk of your audience. Don’t disrespect your audience by using jargon they won’t know…and it’s not good enough to define it once in the beginning of your talk.

Related to this, here’s a cool trick: Don’t use polysyllabic Latinate words when you can use Anglo-Saxon ones. Speak these two sentences: “The compressive stress resulted in a crustal length reduction of thirty-one percent.” And: “The crust got squished to just two-thirds as wide.” Use the first one in your paper. Speak, and gesticulate, the second one.

Whatever you do, don’t call this “dumbing down” your language. You are not dumbing it down; you are oomphing it up. Language is a tool for the communication of information. Use the words that will produce the strongest signal in your audience’s receiving brains.

Simplify your sentence structure. In a technical paper, a single sentence can span a whole paragraph. Modifying clause piles on top of modifying clause. But excessive dependent clauses are deadly in speech. If I lose track of which noun your lengthy list of clauses is modifying, I lose the whole sentence.

If a point is important, repeat it. You can’t bold it or underline it when you’re talking. But you can repeat it; repetition is verbal underlining. It also functions like putting up a blank slide. Repeat something and you’ll start making eye contact with your audience again.
Say something three times and they’ll all be looking at you.

**Don’t go over your time.** Do *not* go over your time. Speaking so long that there is no time for questions informs your audience that you do not care what they think of your work or whether they understood your presentation. Speaking so long that you run into the next speaker’s time informs your audience that you think you are more important than the next speaker and more important than anything else the audience had been planning to do at that time.

Both are insulting and disrespectful. If, when you talk, you seem to vary widely in your talk length, bring your smart phone to the podium, run a countdown clock app, and make sure the screen will stay on through the length of your talk. If you seem to be running long, do not talk faster. That will reduce, not increase, what audiences take away from your talk. Skip ahead and finish on time.

**Slides With Too Many Words and Other Problems**

If you must put words on your slides, use very few, and do not use complete sentences. A title for a slide is okay. If you are talking about something that may be unfamiliar to some (say, recurring slope lineae), please show a photo of that thing and label it as being that thing. This will aid understanding. But don’t put a several-sentence definition of the thing on your slide.

No text below 20 points. If most of the audience can’t read it, why bother putting it on the slide?

**Graphs can be a big problem.** There is a tremendous amount of information in a graph. Think very carefully before you include one in your talk, and then be prepared to spend time explaining it. And take out every line or label that is not strictly necessary.

**Equations are even worse than graphs.** Seriously, don’t put equations on your slides.

**Data tables:** Bad. No. Don’t.

Approximately one in ten of the men in your audience are color-blind. What this means is: Never, ever, use a ROYGBV spectrum to represent a continuously varying property. [Vischeck](#) is a super website to use to ascertain whether your graphics will be...
incomprehensible to the color-blind.

**One thing per slide.** You can only say one thing at a time. What is on the screen should be emphasizing what you are saying right now. If it is illustrating something else, it confuses rather than aids people in understanding what you are saying. It works very well to start with a relatively empty slide to which things get added as you speak — for instance, starting with a photo and then adding circles around interesting features as you point them out.

**Without words, your slides will almost certainly not be able to serve as a stand-alone record of your presentation.** If your slides could stand alone, then your presence wouldn’t be necessary. Obviously this means that you can’t make a presentation by reading from your slides. People who read their slides to the audience are usually facing away from the audience. It is disrespectful to your audience, and moreover, it looks stupid. You’re going to have to have separate notes. I mostly don’t use notes when I speak, but I still have notes from when I was planning my talk, and I keep digital copies of those notes in a folder with my PowerPoint presentations.

**Put your name (maybe even your abstract number) on your slides.** I can’t tell you how much of my time in the audience at conferences I spend shuffling around the program trying to figure out the name of the person currently giving the talk so that I can find and read the abstract later. Put your name and maybe your abstract number in the corner and you make my life so much easier. You also make it more likely that you’ll be contacted after your talk is over by someone who was interested by it. If nothing else, make sure to put your name and contact information on your conclusion slide.

**Your last slide is the one place where you ought to have a sentence.** I like one Tweetable sentence that summarizes your talk. Don’t make your final slide say only “Thank You” (though there’s no harm in also putting that on the slide), and especially don’t make it say only “Questions?”

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**Humor is useful, but it should be topic appropriate.** At the 2012 SpaceUp Unconference in San Diego, my statement relating to this slide was: “Some of the moons of the solar system are larger than Pluto.” ([Planetary Society])
Some Final Thoughts

A word on the number of slides. It’s a commonly cited rule of thumb that you should have about one slide per minute. I think, though, that this assumes that people will be reading your slides. This one-per-minute rule doesn’t work as well if your slides aren’t word-heavy. And it makes the PowerPoint presentation drive your talk organization, rather than the other way around. So I don’t find that rule of thumb particularly useful. Focus, first, on what you want to say. Have slides at appropriate places to emphasize what you are saying. If you can’t say what you need to say in your allotted time, you need to say less. Eliminate slides or slide content that are no longer needed to support what you are no longer saying.

A word on animations. If your presentation contains an animation (and they can be awesome visuals), make sure you have tested that your animation works. I like animated GIFs in PowerPoint presentations because they always seem to work. If you know you will have control of the clicker, an even easier way to do a not-very-many-frame animation is just to put one frame per slide and advance them manually. That will work even if (horrors!) your PowerPoint is turned into a PDF.

A word on anxiety about forgetting your talk. I think a lot of presenters write their entire talk on their slides because they’re afraid they’ll stand up in front of all of those people and forget what they want to say. I have a lousy memory and find it impossible to memorize the specific words I want to use; getting away from using text on slides as a crutch was a serious challenge for me. Practice helps a great deal. Here’s a method I use, especially for short talks. I try to memorize the first sentence I intend to say about each slide or sequence of slides. Then I speak more off-the-cuff for a few sentences about that part of the story. While I am doing that, I visually check in with my audience to make sure they are with me. When I advance the slide, I glance at it, and that triggers the sentence I intended to say when I advanced that slide. If I have words on slides, they are usually just titles; those titles also serve as my cues to help me get my intended first sentence out.

You Respect Me, I’ll Respect You

Many scientists find presentations terrifying. The certainty that the audience is judging you can make you nervous, stiff, and defensive instead of natural, open, and engaging. But most people in the audience really just want to learn from you. Respect them, and they’ll give you the benefit of their doubt.

Pretend that there is only one person out there, and that you’re sitting at a bar or on a park bench with them, relating your work to them. Don’t be afraid to show your passion for your work, your excitement about a cool result, your confusion about something that didn’t work, or any other emotion.

Just talk to me. Tell me your story, and show that you are doing your best to help me understand you and learn from you. You respect me, and I’ll respect you!

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