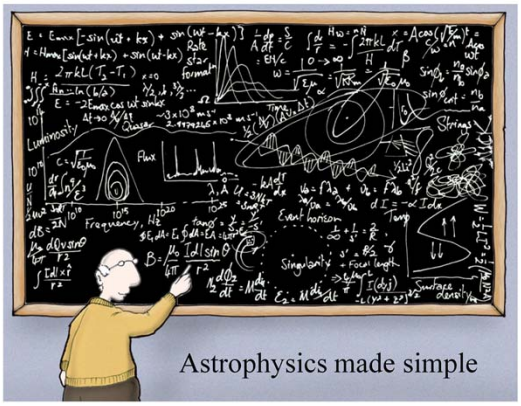
What makes a good talk?



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One of our goals for this class is not only to teach you how to present good talks, but also how to listen to them.

It fulfills its purpose—to tell a meaningful, accessible story of the science

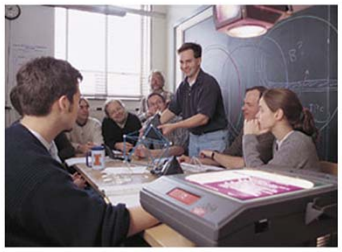
This fundamental goal should govern *every aspect* of the design and presentation of a talk!

The speaker at a conference or seminar is not there to tell the audience everything that is in his or her paper. The goal is to get audience members interested enough and fluent enough in the topic so that they want to look up the paper and read it!

Every speaker must, however, give the audience one or two important ideas to take with them when the leave the lecture room.

It is presented at a level appropriate for the audience

A successful talk is tailored to the listeners' wants and needs



Group meeting
Conference talk
Public lecture
Report to funder
Job interview
Lecture

A good communicator recognizes the three major constraints on speakers and plans his talk with them in mind:

1. **Who is the audience?** What is their level of expertise? How motivated are they to listen? What is likely to confuse or bore them?
2. **What is the purpose of the talk?** To present new results? To inform? To solicit feedback on a new idea? To entertain? To get a job?
3. **How much time has been allotted?** It takes about 5–7 minutes to adequately motivate, explain, and summarize one main point in an oral talk. A speaker cannot cover six main points in a 10-min. APS-style presentation, no matter how fast he talks.

As you listen to a talk, ask yourself how well the speaker planned for these three constraints.

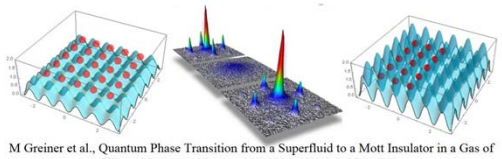
The important points are previewed at the beginning of the talk

Adhere to the speaker's "Rule of 3":

- tell 'em what you're going to tell 'em
- tell 'em
- tell 'em what you told 'em

An outline slide can be used for longer talks

Superfluid to Mott Insulator Transition in Ultracold Atoms



M Greiner et al., Quantum Phase Transition from a Superfluid to a Mott Insulator in a Gas of Ultracold Atoms. Nature, 415(6867):39-44, JAN 3 2002.

Outline

- History and Background
  - What are superfluids and Mott Insulators?
  - What work led up to this paper?
- Theory
  - Bose-Hubbard Model (*BH*)
- Summary of paper
  - Experimental Realization of *BH*
- Critique
- Citation Evaluation

Example from a PHYS 596 journal club talk

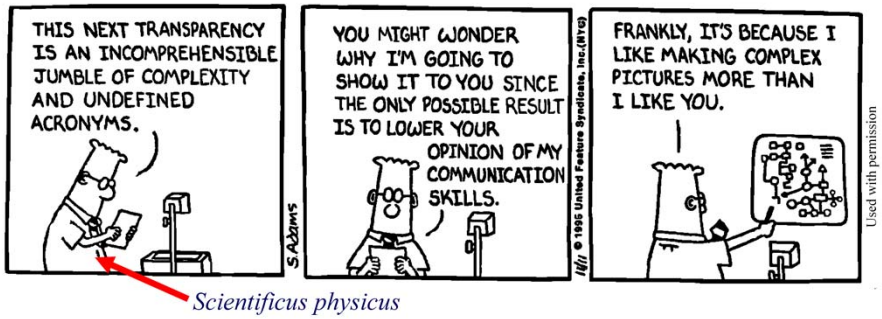
Unlike printed materials, where we can flip back and reread something if we need to understand it before proceeding, we cannot "rewind" an oral talk. Good speakers anticipate this need and tell you the important points more than once.

Common advice to speakers is to tell the audience your important points three times:

1. Tell them what you're going to tell them (preview).
2. Tell them (body of the talk).
3. Tell them what you told them (summary at the end).

Take it from a mother, telling somebody something important three times is ***not*** overkill.

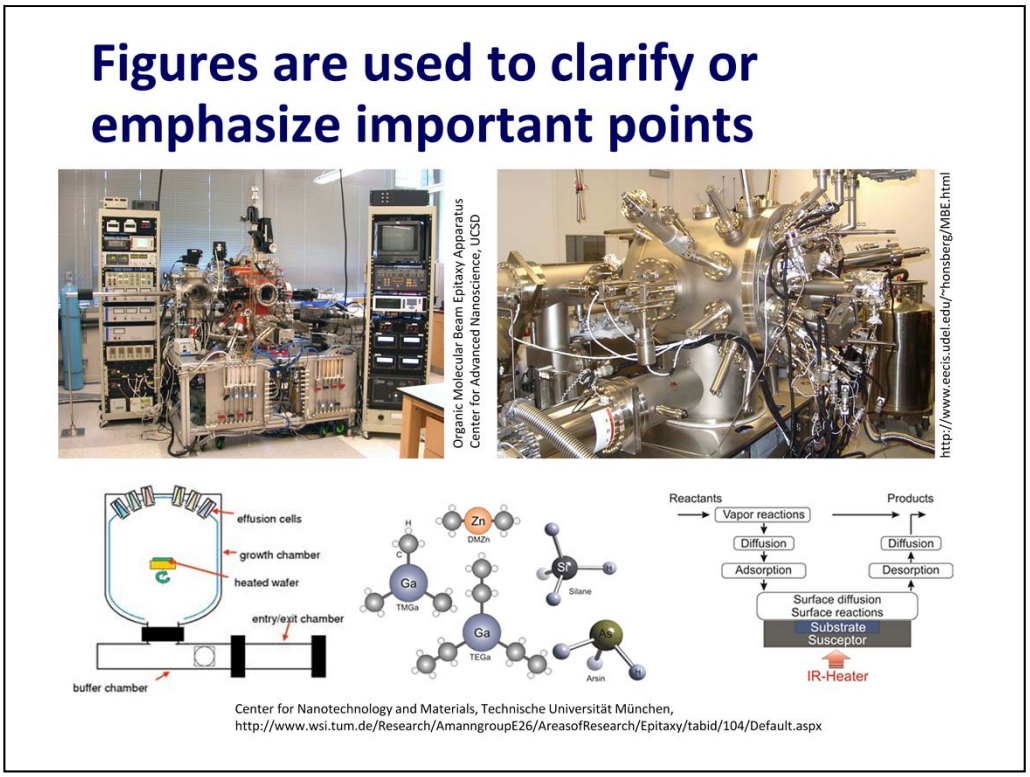
The important points (IPs) are clear



Scientificus physicus

- **Language and detail are appropriate for the audience**
- **Speaker emphasizes IPs and explains *why* they are important**
- **Talk is logically structured around the IPs**
- **Figures are used to make IPs memorable**

Every aspect of a talk should be evaluated in light of the overarching goal for giving the talk: How well does this aspect (the title, the appearance of the slides, the structure of the talk, the language, the figures, the summary) help my audience understand the important points that I'm trying to communicate?

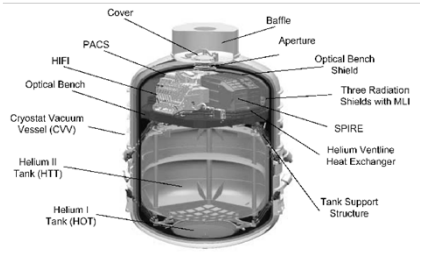


Most people remember images much longer and more clearly than they remember words. Every illustration shown in a talk should be directly related to one of the speaker's important points and should explain, amplify, or clarify it.

Not all figures are created equal, however. The two top figures in this slide convey zero useful information (other than that the speaker apparently has access to a lot of very expensive stainless steel). N.B. These figures were ***not*** taken from a scientific talk, and they are presented out of context here simply as examples of what not to use in a talk.

If somebody else's figure has been used, the speaker should at a minimum give credit for it and perhaps provide a URL or bibliographic reference for where the original may be found.

Another tip for ALL figures—a photograph or drawing of something should include some sort of visual clue to its scale. The audience may have no idea if the apparatus shown below is 50-cm long or 50-m long from just looking at this image.



Graphs and tables are kept simple

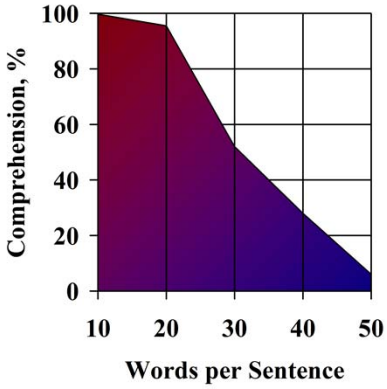


Illustration only, does not represent actual data

Women in Top-Ranked Physics Ph.D. Programs (1998)

University	NRC Rank/Score	PhD Students	Women %	PhD Recipients % Women
Harvard	1 / 4.91	149	13	14
Princeton	2 / 4.89	110	13	3
MIT	3 / 4.87	315	10	12
California-Berkeley	4 / 4.87	283	9	8
Cal Tech	5 / 4.81	154	18	8
Cornell	6 / 4.75	182	18	12
Chicago	7 / 4.69	154	14	6
UIUC	**8 / 4.66**	**295**	**8**	**7**
Stanford	9 / 4.53	135	13	12
California-Santa Barbara	10 / 4.43	117	13	5

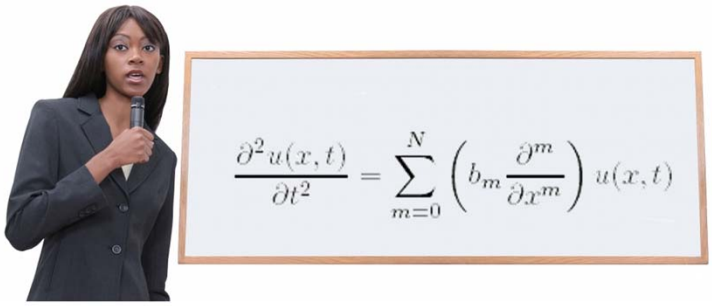
Regrettably, ***does*** represent actual data

The example on the left shows how a plot can quickly show a trend or reveal an underlying relationship. The actual numerical data are not as important as the slope of the line.

Note also that this plot has axis labels and tick marks that are large enough to be seen by somebody sitting in the back row.

The example on the right shows how tabular data can be presented in a form that people listening to a talk can immediately process. Highlighting the relevant line conveys the main idea—that Illinois was ranked far down the list. The audience probably doesn't care that Illinois's score was 4.66 and Harvard's was 4.91; they care that Illinois is ranked toward the bottom of its peers, and its percent of women was in single digits. (We've improved since 1998.)

Equations are tied to important points and are needed to understand them



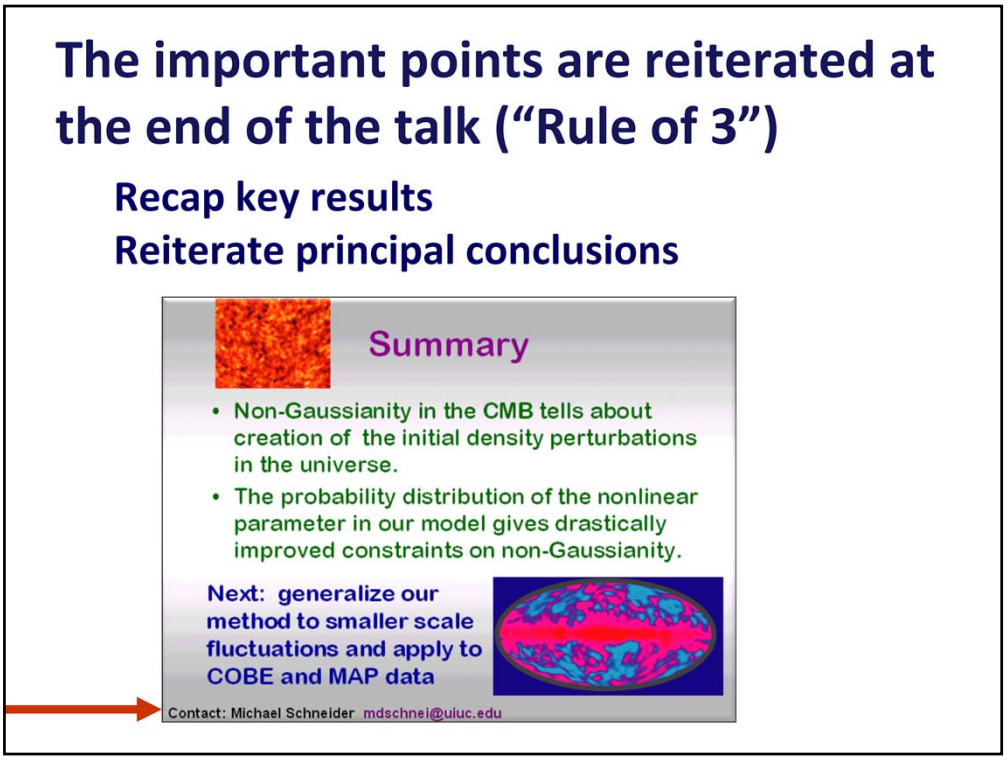
Did the speaker…

- **Define terms?**
- **Talk through step by step?**
- **Explain relevance?**
- **Make equations large enough to be easily read?**

Equations should not be sprinkled thoughtlessly through talks; they should be used only when they're essential to understanding one of the speaker's key points. It's often helpful to substitute words for blocks of standard terms in equations; words are usually easier for the audience to process.

Here's an example:

$\Gamma \propto$ (phase space) $\times M_{ij}$



The speaker should provide a summary slide that recaps key points and cues the audience that the Q&A is about to start. The summary slide should help people review what they've learned and remind them of questions they want to ask.

Questions are an essential part of a scientific talk

- Did the speaker ask for questions?
- Did the speaker repeat a question so everyone in the room heard it?
- Did the speaker treat questioners with respect?
- Did the speaker respond appropriately if he didn't know the answer?

Learning how to handle questions is an important skill for all speakers. Later on in this class we'll explore strategies for you to use to master questions.

Did annoying mannerisms detract?

- Pacing, arm-waving, distracting gestures
- Verbal fillers, "and, um, like…you know"
- Jingling keys or coins
- Fiddling with the microphone
- Forgetting to TURN OFF the damned cell phone or other electronica
- Turning away from the audience and reading off the screen
- Laser-pointer acrobatics

Did the speaker have any annoying mannerisms that made it hard for you to pay attention? Make note of them and resolve to correct your own bad habits.

For your first homework assignment:

- **Attend the Undergraduate Research Symposium, January 30, 141 LLP, 2:00 PM**
- **Listen actively and attentively**
- **Think critically about the science being presented**
- **Take notice of speakers' strengths and weaknesses**
- **Identify styles you'd like to emulate (or avoid)**
- **Ask questions**
- **Don't forget to rank the three best speakers and justify your rankings**

Download the "URS_Review" document to use for your review. See the course website for a complete description of Homework Assignment #1.