Squawk: "Evidence of hydraulic leak on right main landing gear."

Reply: "Evidence removed."

Squawk: "Something loose in cockpit."

Reply: "Something tightened in cockpit."

Squawk: "The autopilot doesn't"

Reply: "IT DOES NOW."

# WHAT ARE YOU TAKING AWAY FROM TODAY?

## Confident:

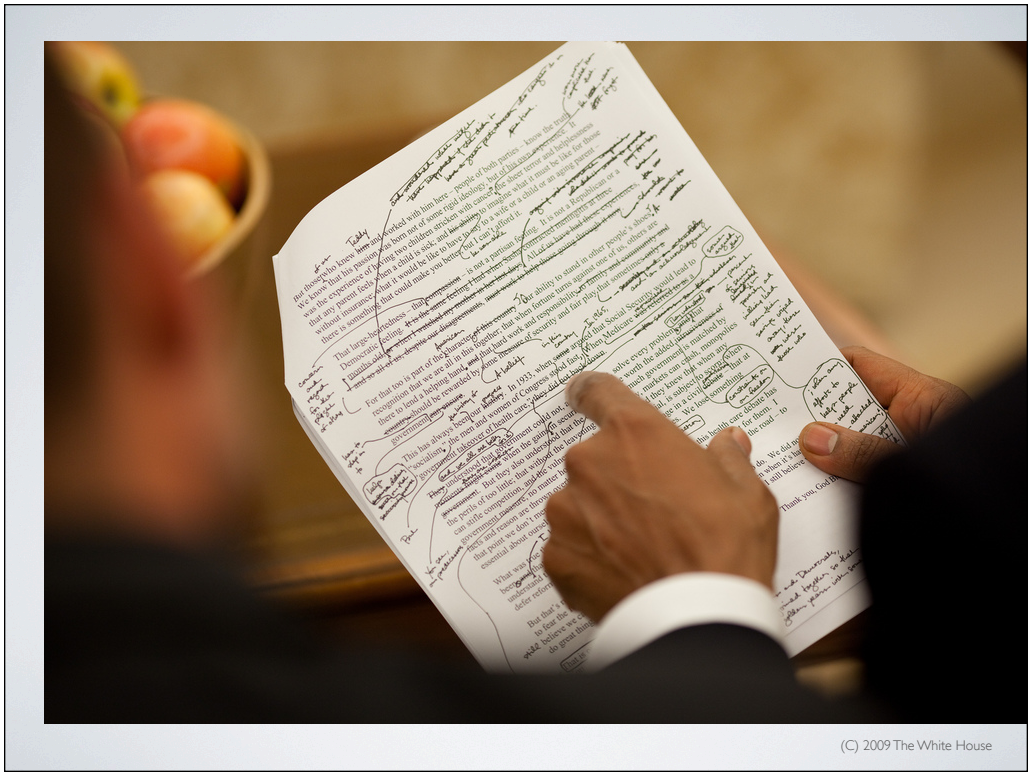
**Having strong belief, firm trust, or sure expectation.** [OED]

**from** Latin *com-* intensive prefix, + *fidere* "to trust".

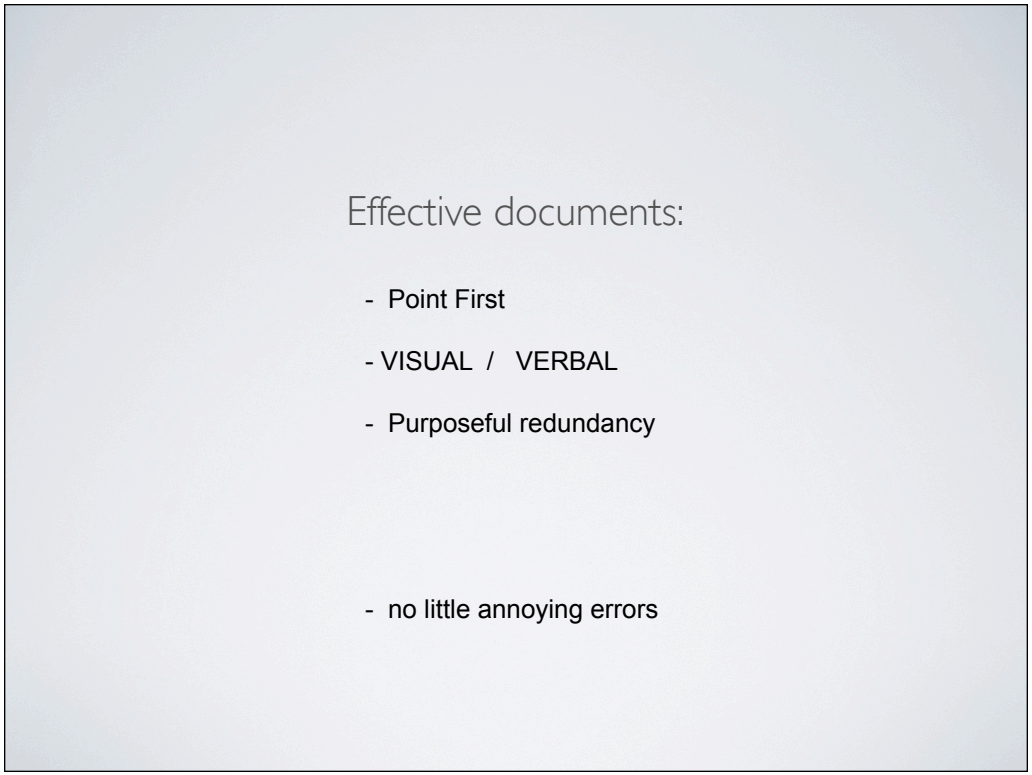
## ARROGANT:

**Making or implying unwarrantable claims to dignity, authority, or knowledge.** [OED]

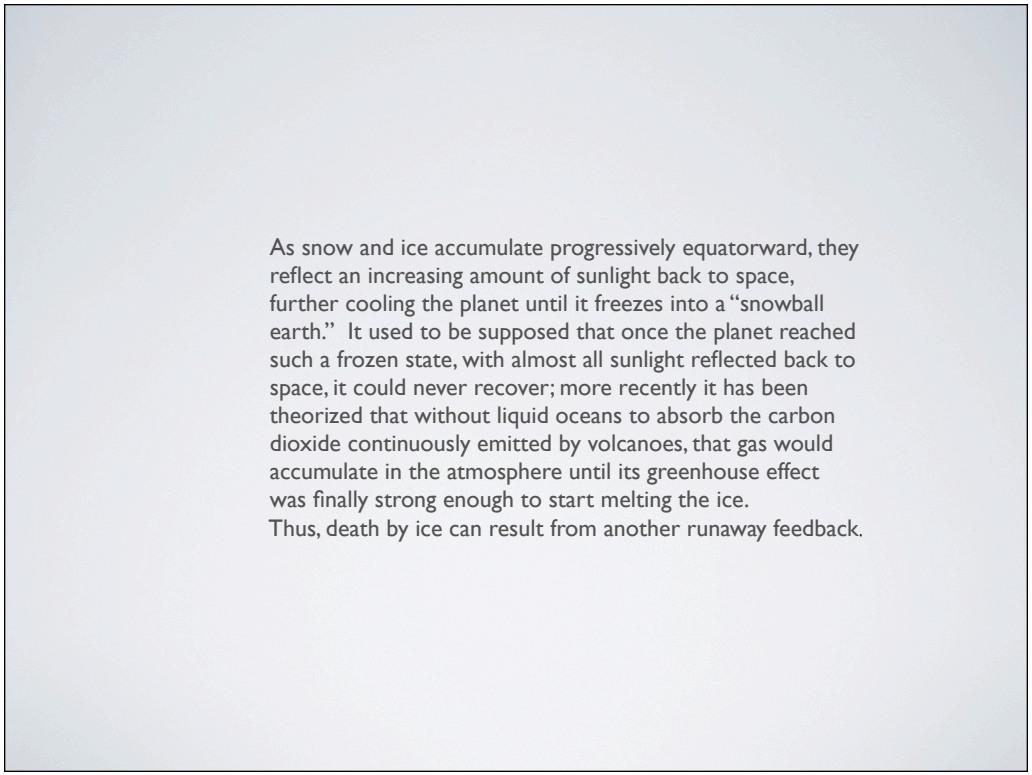
**from** Latin *arrogare* "to claim for oneself, assume.




Revision is, in general, the part of the writing process that puts the audience first.  You get your information out in your draft; you revise it to make it easier for your audience to read it efficiently and accurately.

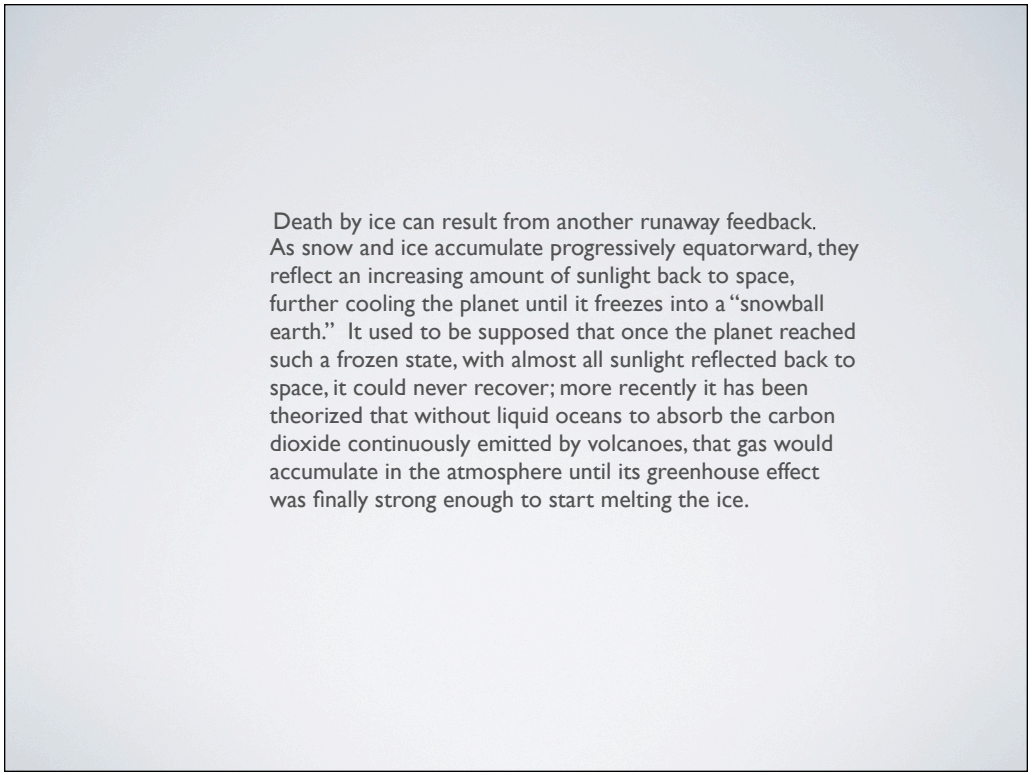



There are four ways to make most documents more user-friendly. We'll look at three of them today.




Key point first! When you revise, for each paragraph find your key point--the single thing that your reader *must* take away from that paragraph--and put it at the top of the paragraph. Your reader should be able to read just the first sentence, and know whether or not to read the rest.

Often, the key point is written at the end of the paragraph, because that's when you arrive at it. Find it, and move it.




Sometimes, you'll discover that there is no key point in a paragraph, in which case rethink the paragraph and either eliminate it, or write its key point and place it at the top.

MIT's Engineering Advisement Center offers you free professional advice from professional engineers about all types of academic, creative, and professional engineering opportunities, as well as help with interviews and presentations to engineering organizations. Hours are Monday-Thursday 9:00 pm - 9:00 am, Friday 9:00 am – 10:00 am. Sunday 8:00 am-12:00 pm. Check online for updates. To make an appointment go to http://eng***fakesite and click on the yellow daisy. Appointment times fill up quickly. Don't wait till the day before your interview. If you can't find a convenient appointment time, there is an on-line Wait List, and 96% of clients who use the Wait List end up getting an appointment. To be placed on the Wait List, just click on the blue wrench icon that says, "Is the time that you want already reserved?" When a cancellation occurs, you will be notified by email. Claim an opening as soon as you can, because all Wait Listed clients are notified. If you can't find an appointment, try the Online Engineer at http://web.eng***fake.html.

Secondly, a document is both a verbal object and a visual object. Note how unappealing this chunk of text is. It's packed with information that is very hard to access.

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To make an appointment go to http://eng***fakesite and click on the yellow daisy.

Plan ahead: appointments fill up quickly. Don't wait till the day before your interview.

Can't find a time? There is an on-line Wait List, and 96% of clients who use the Wait List end up getting an appointment.

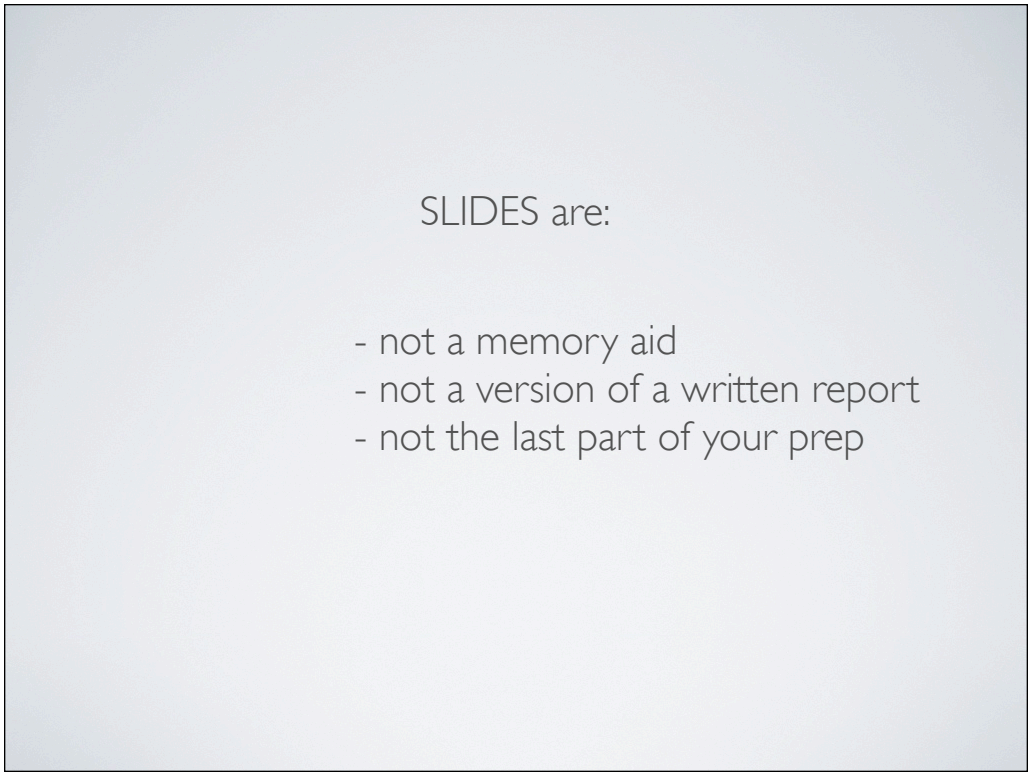
- θ To be placed on the Wait List, just click on the blue link that says, *"Is the time that you want already reserved?"*
- θ When a cancellation occurs, you will be notified by email.
- θ Claim an opening as soon as you can, because all Wait Listed clients are notified.

Online help: If you can't find an appointment, try the Online Engineer at http://web.eng***fake.html

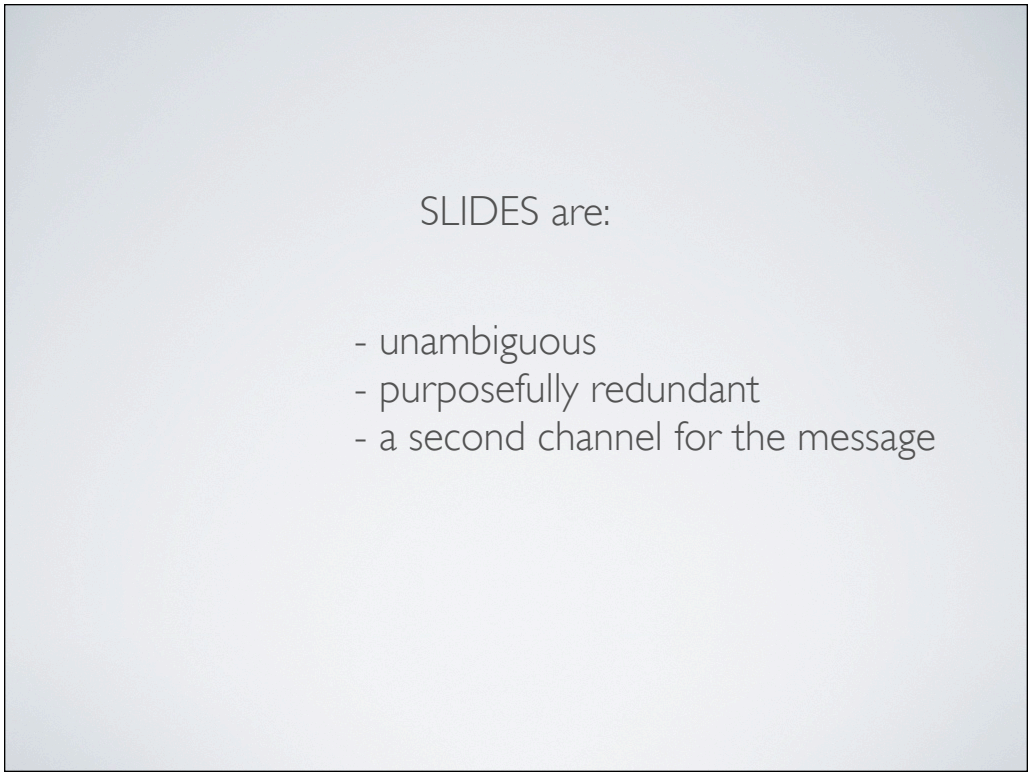
Here is the same information, but the visual elements of a document are used to convey it. So it is much easier for a reader to use.

Once you've written your content, consider how to use headings and subheadings, spacing and white space, fonts, lists, Figures and Tables, and other visual elements of a document to make your content easy for your reader to access.

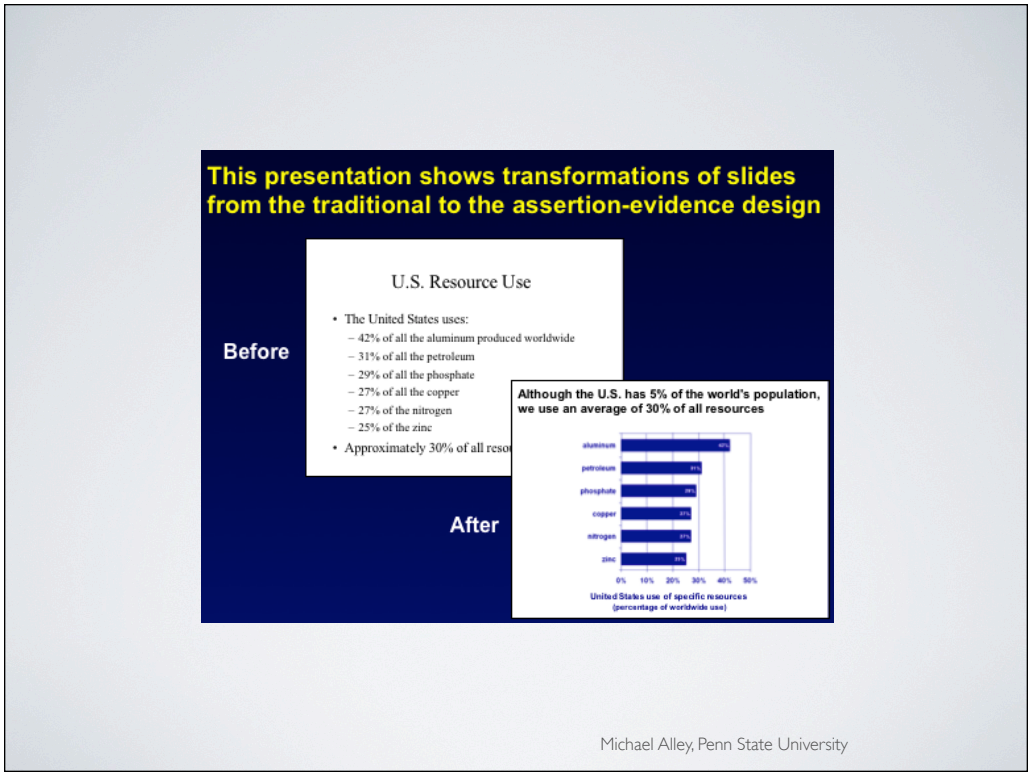
In fact, the principle of "purposful redundancy" is that your key points should recur in various forms, so that they are *impossible for your reader to miss.*



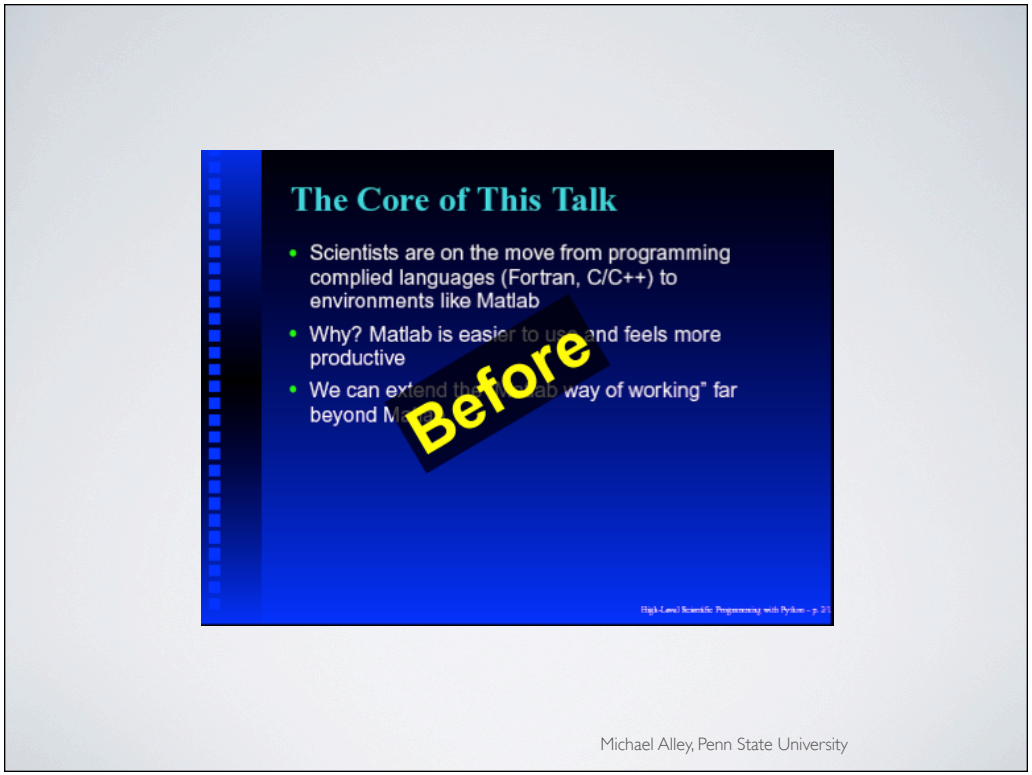

Common errors in the construction of slides are: that they are made as aids for the speaker's memory, rather than for the audience's understanding; that they are made by cutting and pasting from a written document into a slide format; and that they are put together at the last minute, as an afterthought.



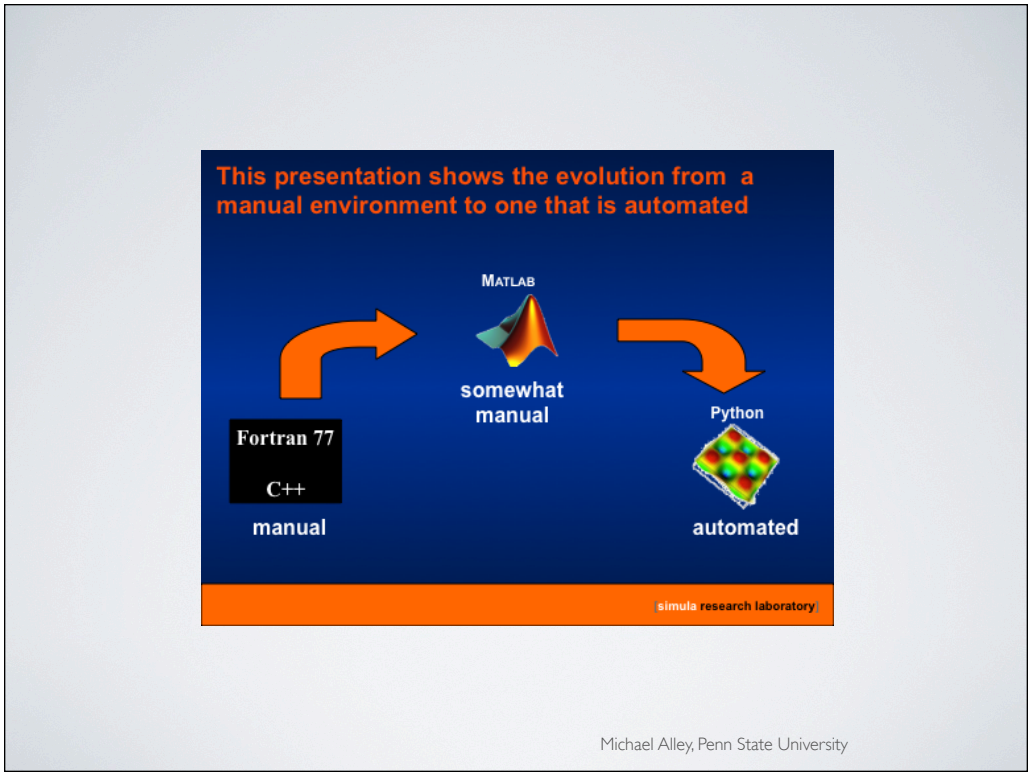

Effective slides--slides that *help* a presentation rather than muddy it--are simple and unambiguous. The content is unambiguous, and it is unambiguous what the audience is expected to understand from the slide.
They are purposefully redundant: they underline and support the main points of the talk, in titles and visuals.
They are a second *channel* for the message, rather than a repeat of what is spoken.



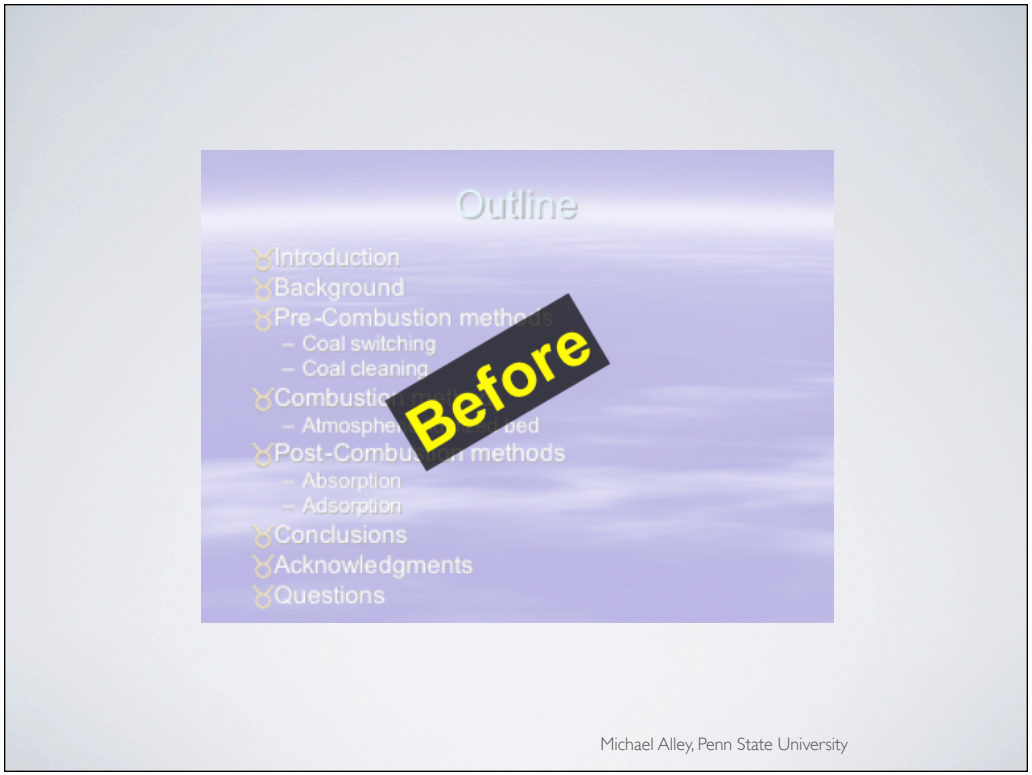

The following slides are taken from a presentation published by Michael Alley at Penn State. He calls this format "Assertion-Evidence," because the assertion of the slide is given as a complete sentence in the title, and the rest of the slide is visual evidence for the validity of that assertion.



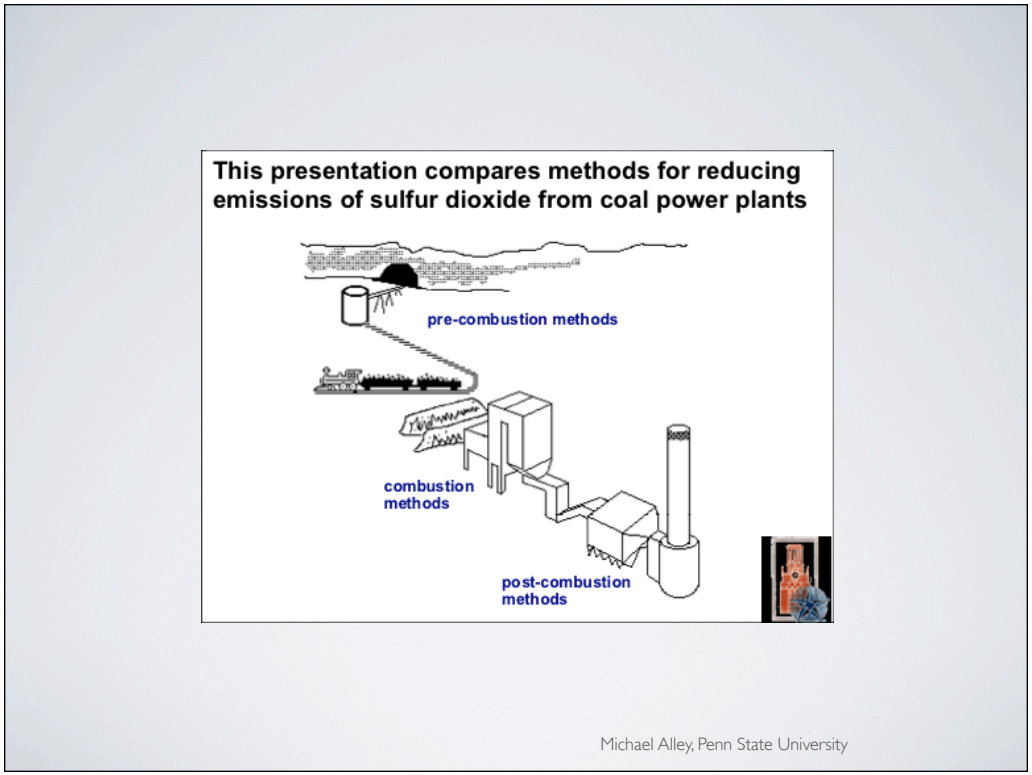

Assertion-Evidence slides can be very effective, because the text on them--the full-sentence title--does not require any extra cognitive processing of the language beyond what is spoken. And the evidence--the visual component of the slide, consists of images and only the most carefully selected text.



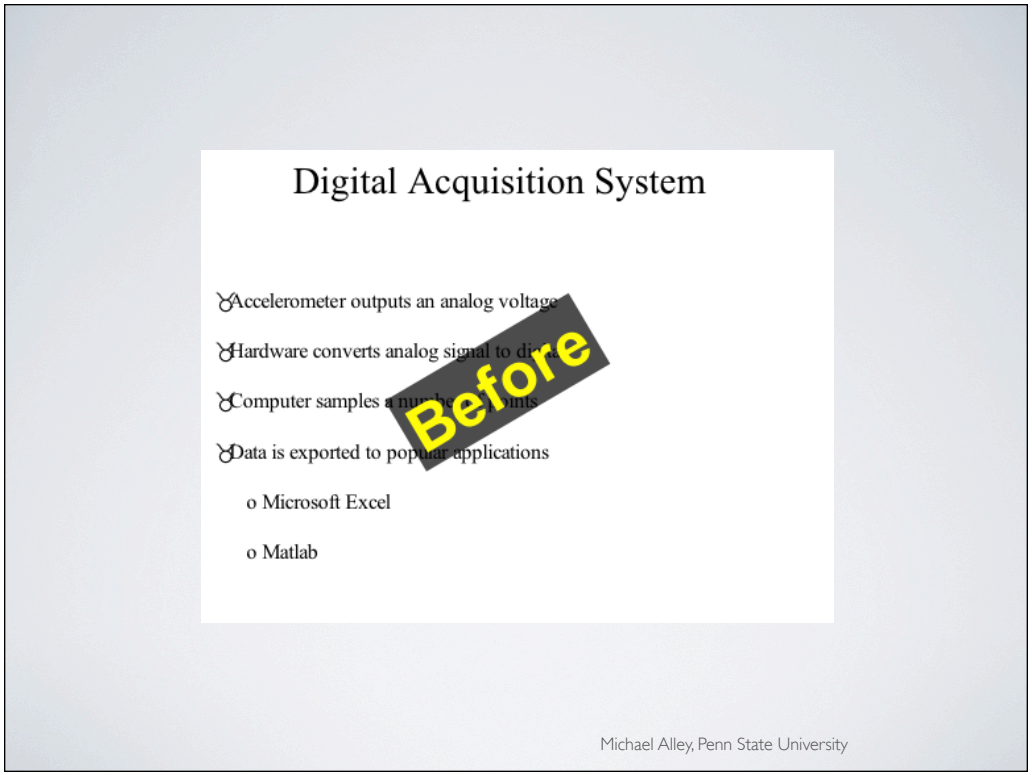

Here, the title is a sentence that is similar to the key point as it is spoken. Then, the rest of the discussion of the slide does not require the audience to *listen* and *read* at the same time--a feat that most people can't accomplish. The visuals can be studied while the speaker speaks; the two channels reinforce each other, rather than competing for attention.




What information does this slide convey? How useful is it to understanding the talk? What will the audience remember from it?

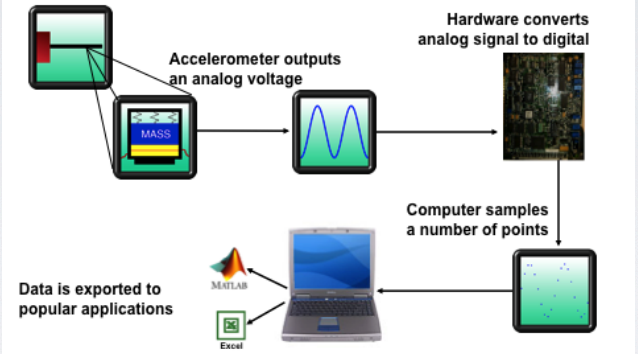


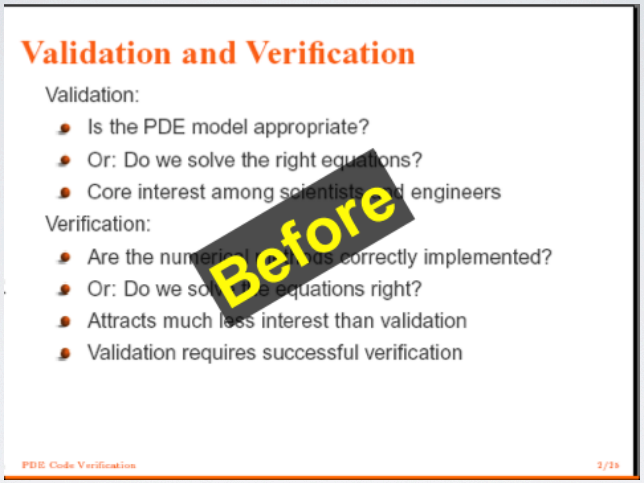

This slide, by comparison, gives the purpose and direction of the talk, so that the audience is meaningfully informed in advance of the talk's trajectory  and can therefore relax, listen, and think.



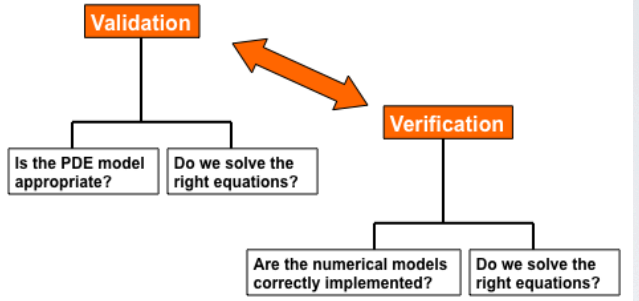

Again, compare this slide to the next in terms of how information is conveyed, and what is easy to grasp.

## Converting an analog signal to a digital signal requires a sampling of the signal




Validation and Verification
Validation:
Is the PDE model appropriate?
Or: Do we solve the right equations?
Core interest among scientists
engineers
Verification:
Are the numerical
correctly implemented?
Or: Do we so
equations right?
Attracts much less interest than validation
Validation requires successful verification
Before
PDE Code Verification
2/21

## Although researchers give validation more attention, validation requires successful verification

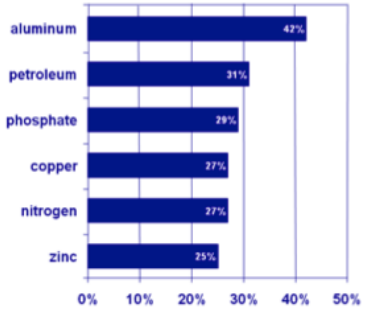


# U.S. Resource Use

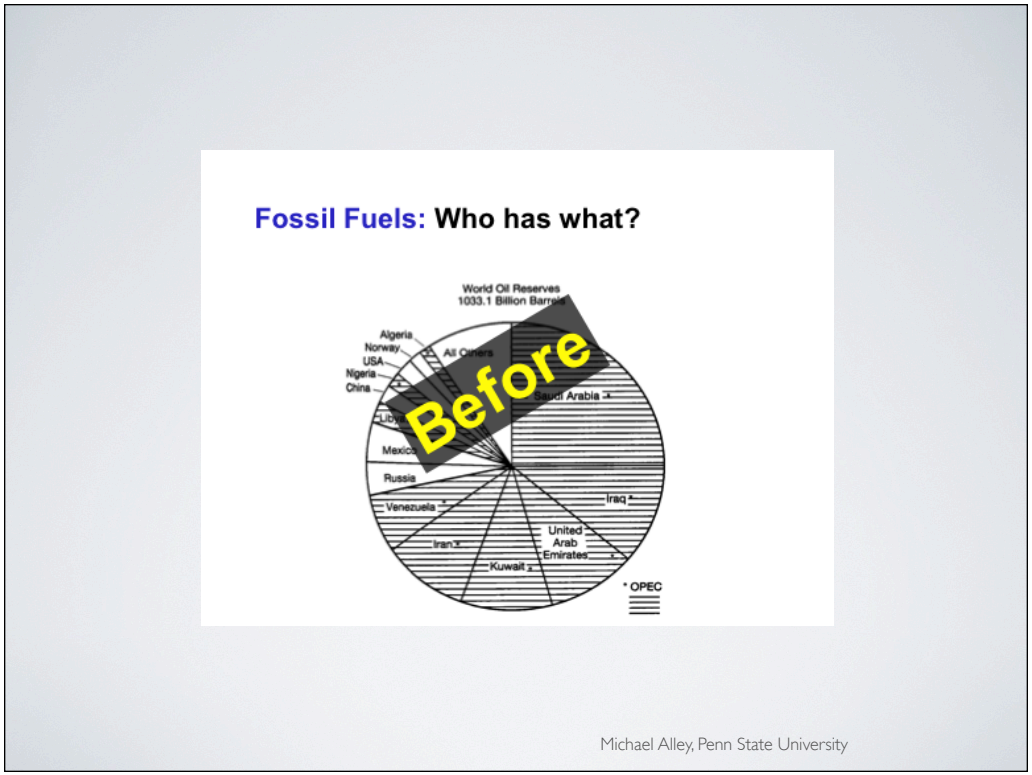
- The United States uses:
  - 42% of all the aluminum produced worldwide
  - 31% of all the pe[illegible]
  - 29% of all [illegible]sphate
  - 27% of all the copper
  - 27% of the nitrogen
  - 25% of the zinc
- Approximately 30% of all resources worldwide

Before

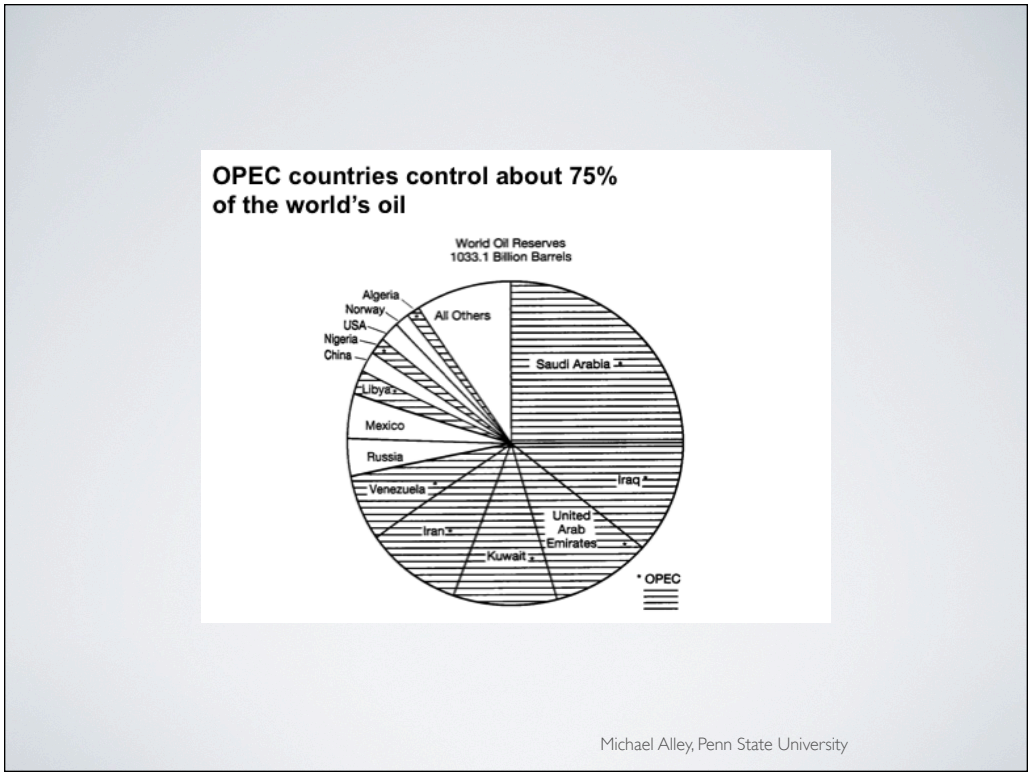
## Although the U.S. has 5% of the world's population, we use an average of 30% of all resources




United States use of specific resources
(percentage of worldwide use)

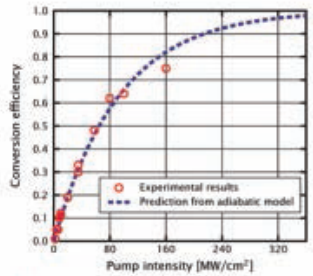



Rather than posing the question, why not give the answer?

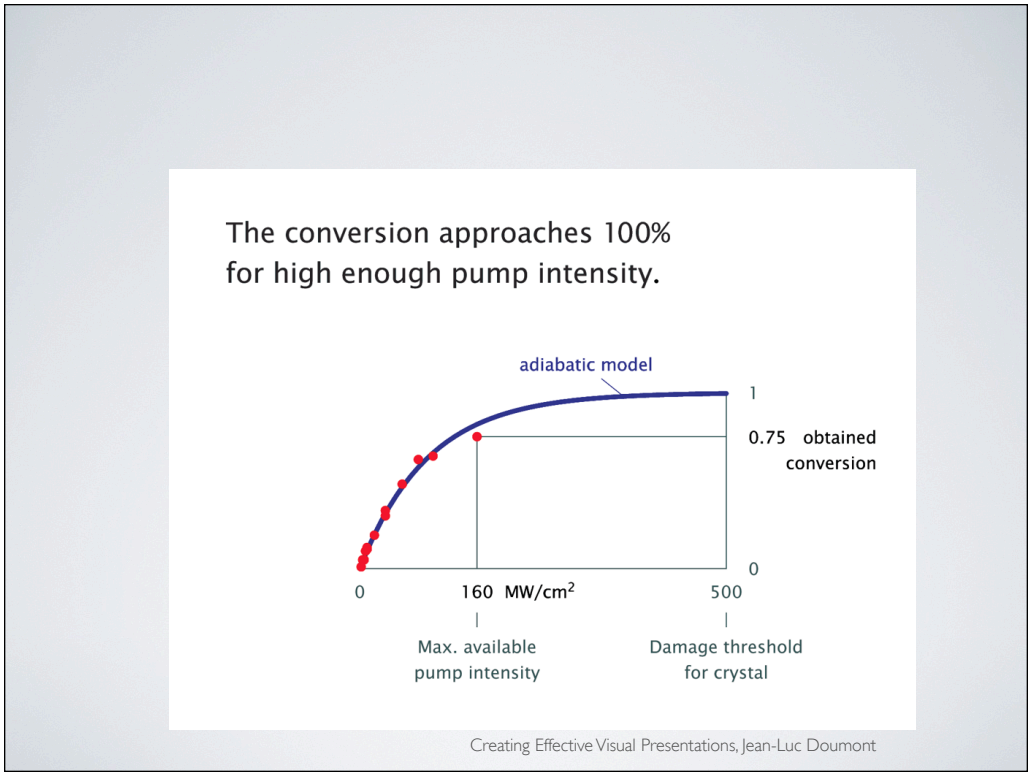



When you give the answer, your audience is more likely to understand and remember it.

## Efficiency of adiabatic frequency conversion




- Maximum pump intensity available experimentally: 160 MW/cm$^2$
- $\lambda_1$ = 1530 nm; $\lambda_2$ = 1064 nm (Q-switched Nd:YLF)
- The maximum demonstrated conversion efficiency was 75 percent
- Periodically poled crystal can get damaged from 500 MW/cm$^2$ of pump intensity




Use this class as an opportunity to experiment with different styles of slide, to learn about what is most effective for various kind of material.