

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:

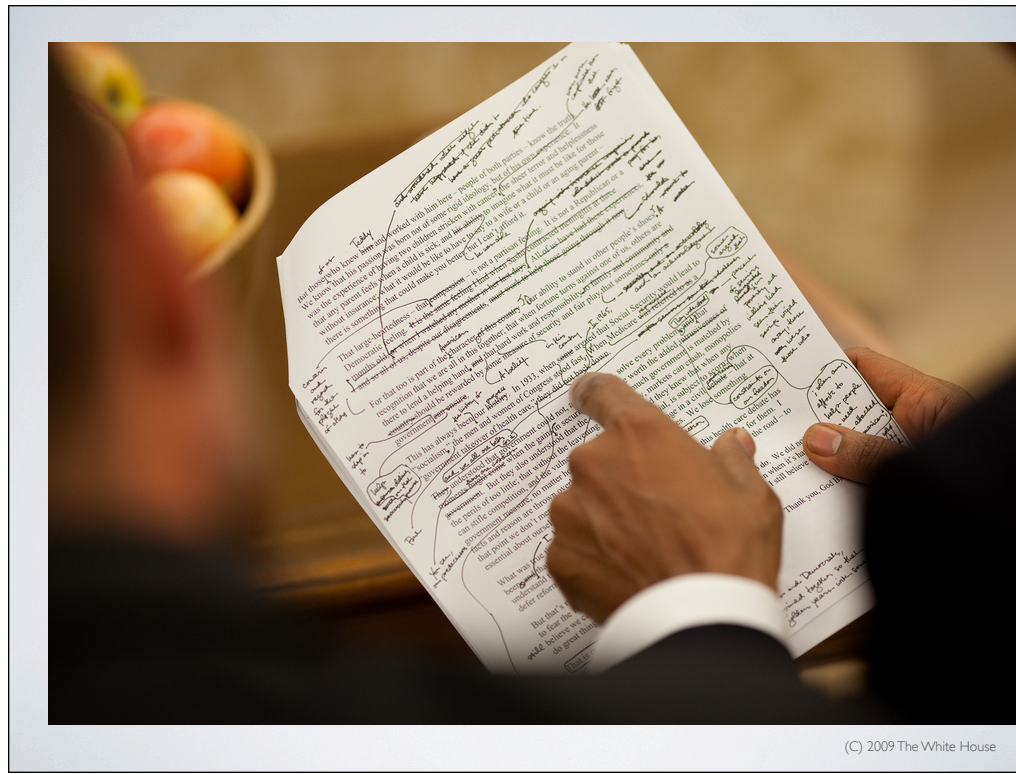
Having strong belief, firm *trust*, or sure expectation. [OED]

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."



(C) 2009 The White House

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.

Effective documents:

- Point First
- VISUAL / VERBAL
- Purposeful redundancy

- no little annoying errors

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

As snow and ice accumulate progressively equatorward, they reflect an increasing amount of sunlight back to space, further cooling the planet until it freezes into a “snowball earth.” It used to be supposed that once the planet reached such a frozen state, with almost all sunlight reflected back to space, it could never recover; more recently it has been theorized that without liquid oceans to absorb the carbon dioxide continuously emitted by volcanoes, that gas would accumulate in the atmosphere until its greenhouse effect was finally strong enough to start melting the ice. Thus, death by ice can result from another runaway feedback.

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.

Death by ice can result from another runaway feedback. As snow and ice accumulate progressively equatorward, they reflect an increasing amount of sunlight back to space, further cooling the planet until it freezes into a “snowball earth.” It used to be supposed that once the planet reached such a frozen state, with almost all sunlight reflected back to space, it could never recover; more recently it has been theorized that without liquid oceans to absorb the carbon dioxide continuously emitted by volcanoes, that gas would accumulate in the atmosphere until its greenhouse effect was finally strong enough to start melting the ice.

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.

The Engineering Advisement Center at MIT
(12-132)

http://eng***fakesite.edu

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 (updates posted online):

Monday-Thursday	9:00 pm - 9:00 am
Friday	9:00 am – 10:00 am
Sunday	8:00 am-12:00 pm

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.*

SLIDES are:

- not a memory aid
- not a version of a written report
- not the last part of your prep

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.

SLIDES are:

- unambiguous
- purposefully redundant
- a second channel for the message

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.

This presentation shows transformations of slides from the traditional to the assertion-evidence design

Before

U.S. Resource Use

- The United States uses:
 - 42% of all the aluminum produced worldwide
 - 31% of all the petroleum
 - 29% of all the phosphate
 - 27% of all the copper
 - 27% of the nitrogen
 - 25% of the zinc
- Approximately 30% of all resources

After

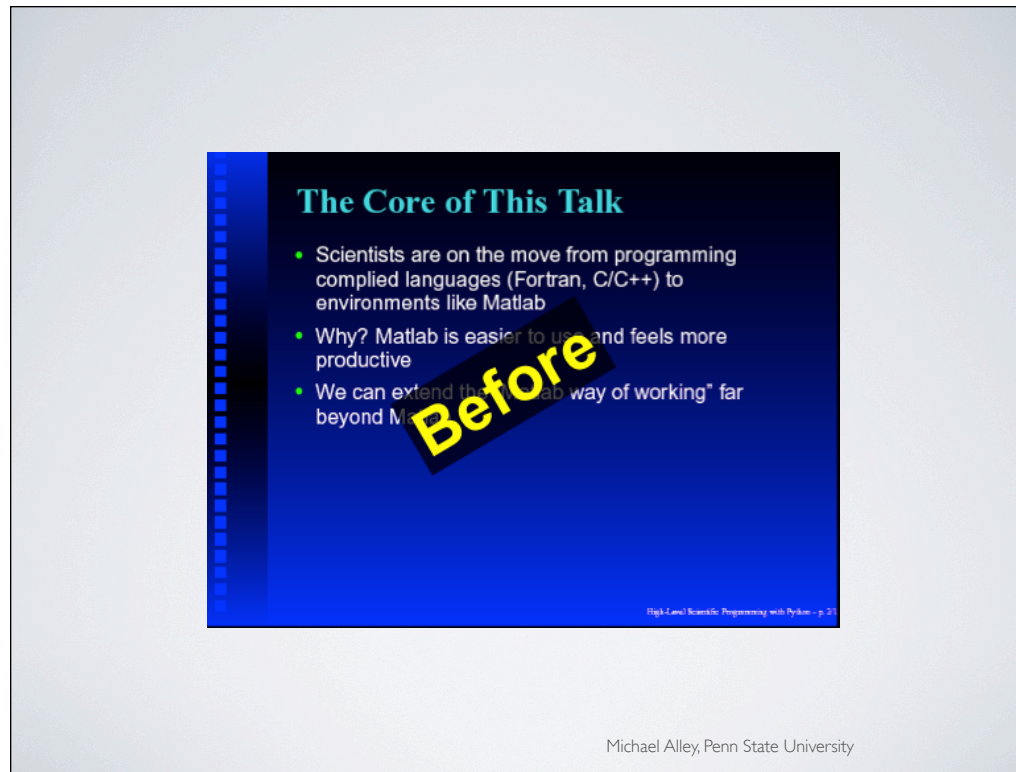
Although the U.S. has 5% of the world's population, we use an average of 30% of all resources

Resource	U.S. Use (% of worldwide use)
aluminum	42%
petroleum	31%
phosphate	29%
copper	27%
nitrogen	27%
zinc	25%

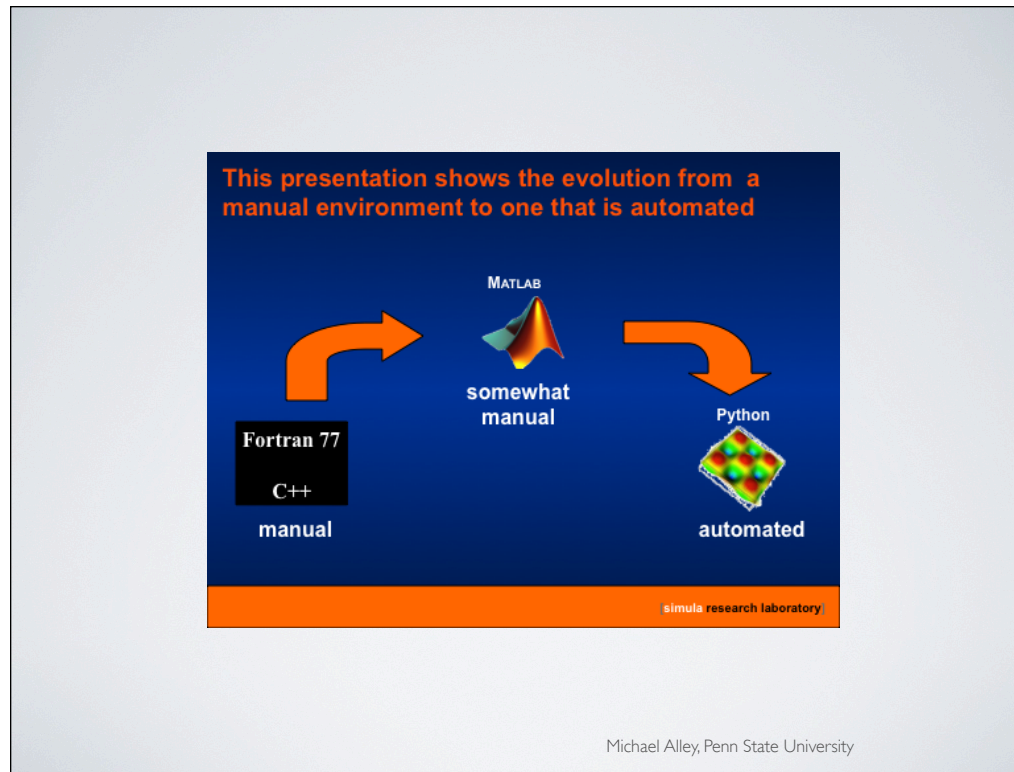
United States use of specific resources (percentage of worldwide use)

Michael Alley, Penn State University

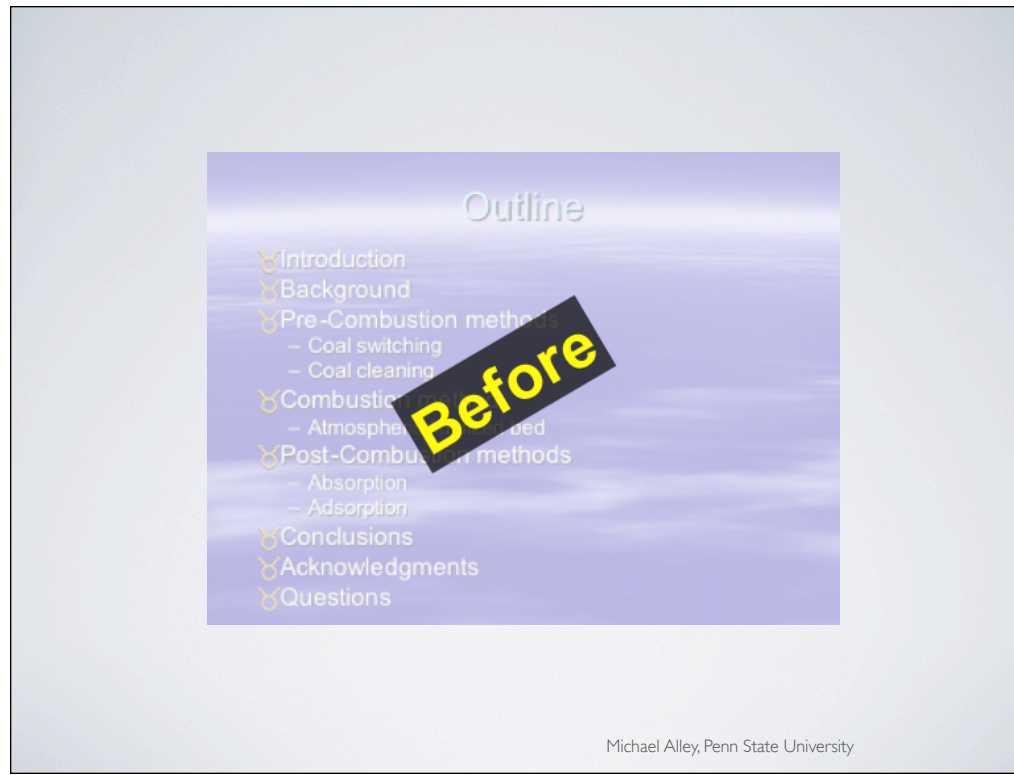
The following slides are taken from a presentation published by Michael Alley at Penn State. He calls this format “Assertion–Evidence,” because the assertion of the slide is given as a complete sentence in the title, and the rest of the slide is visual evidence for the validity of that assertion.



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.

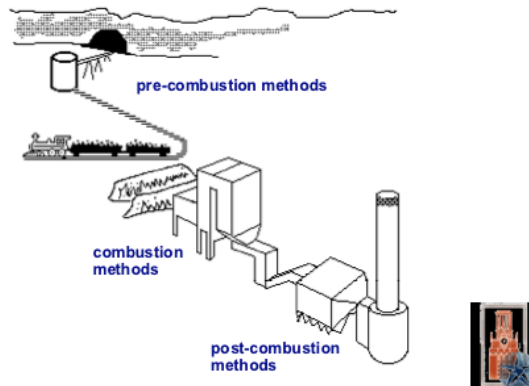


Here, the title is a sentence that is similar to the key point as it is spoken. Then, the rest of the discussion of the slide does not require the audience to *listen* and *read* at the same time--a feat that most people can't accomplish. The visuals can be studied while the speaker speaks; the two channels 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 presentation compares methods for reducing emissions of sulfur dioxide from coal power plants



Michael Alley, Penn State University

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.

The slide is titled "Digital Acquisition System" and lists the following steps:

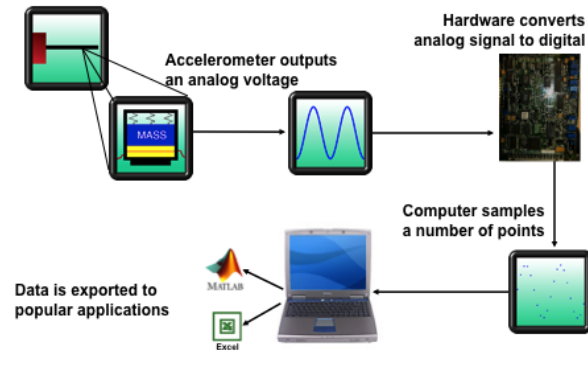
- Accelerometer outputs an analog voltage
- Hardware converts analog signal to digital
- Computer samples a number of points
- Data is exported to popular applications
 - o Microsoft Excel
 - o Matlab

A large, diagonal watermark with the word "Before" in yellow text is overlaid on the slide content.

Michael Alley, Penn State University

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

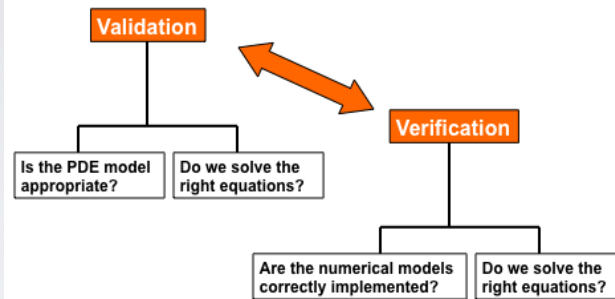
Validation:

- Is the PDE model appropriate?
- Or: Do we solve the right equations?
- Core interest among scientists and engineers

Verification:

- Are the numerical algorithms correctly implemented?
- Or: Do we solve the equations right?
- Attracts much less interest than validation
- Validation requires successful verification

Although researchers give validation more attention, validation requires successful verification

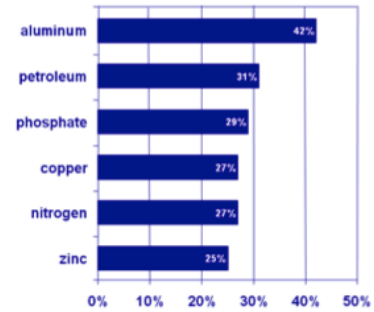


simula research laboratory

U.S. Resource Use

- The United States uses:
 - 42% of all the aluminum produced worldwide
 - 31% of all the petroleum
 - 29% of all the phosphate
 - 27% of all the copper
 - 27% of the nitrogen
 - 25% of the zinc
- Approximately 30% of all resources worldwide

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)**

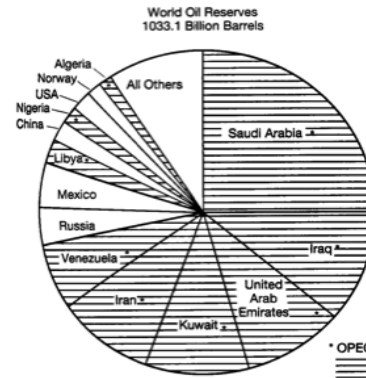
Fossil Fuels: Who has what?



Michael Alley, Penn State University

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

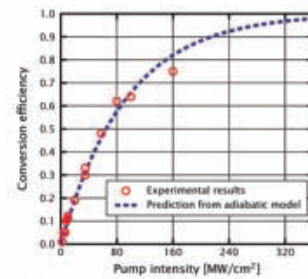
**OPEC countries control about 75%
of the world's oil**



Michael Alley, Penn State University

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

Efficiency of adiabatic frequency conversion



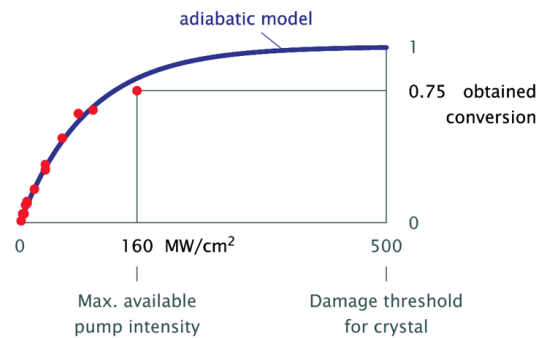
- Maximum pump intensity available experimentally: 160 MW/cm²
- $\lambda_1 = 1530$ nm; $\lambda_2 = 1064$ nm (Q-switched Nd:YLF)
- The maximum demonstrated conversion efficiency was 75 percent
- Periodically poled crystal can get damaged from 500 MW/cm² of pump intensity



ALPHA CENTAURI
LASER DESIGN INC.

Broadband nonlinear frequency conversion Mon 14 Feb 2011 Slide 17 of 43

The conversion approaches 100%
for high enough pump intensity.



Creating Effective Visual Presentations, Jean-Luc Doumont

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.

?