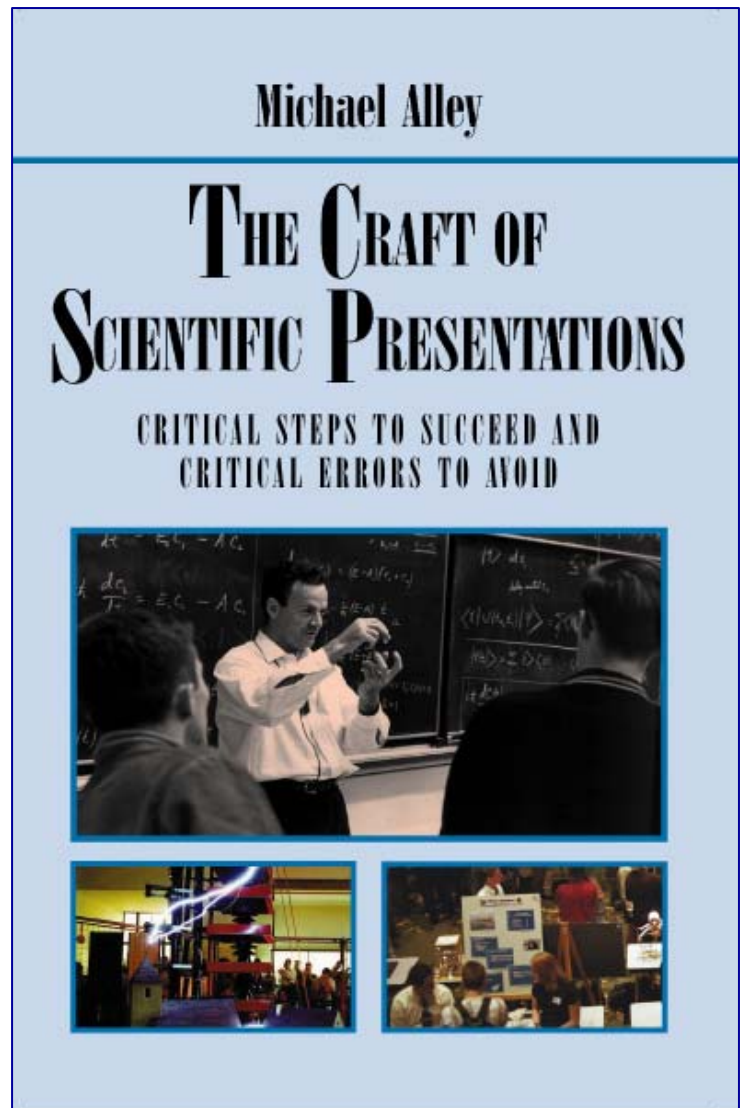


The Craft of Engineering Presentations:

A Workshop on Presenting Engineering

Michael Alley
College of Engineering
Pennsylvania State University
United States

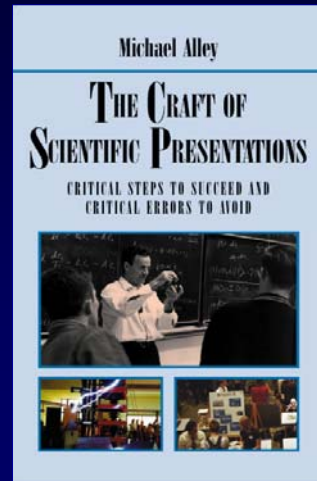


http://writing.engr.psu.edu/eye_presenting.pdf

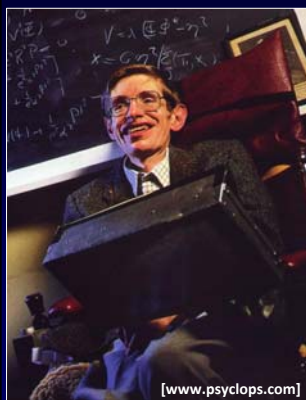
The Craft of Engineering Presentations

Michael Alley
College of Engineering
Pennsylvania State University

ASME-EYE Conference
Salerno, Italy
6 November 2010



**To excel in your presentations, you will need content,
passion, and an acute sense of the audience**



Slides affect a talk's success more than people realize



What the audience sees

Success of Talk

Many slides follow PowerPoint's topic-subtopic structure

40%

Cell Mutations

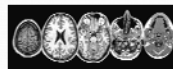
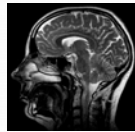
- Under normal conditions:
 - Cells divide in controlled manner
 - Occasionally, cells are damaged by mutation in DNA
 - In these cases, cells is programmed to die
- In a cancerous state:
 - Programmed cell death after mutation does not function
 - Mutated cells divide and spread
 - Eventually, a tumor grows

Many slides follow PowerPoint's topic-subtopic structure

25%

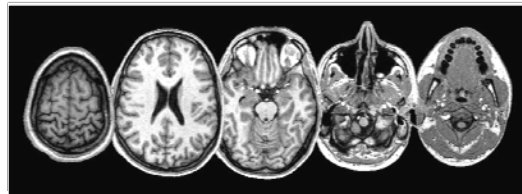
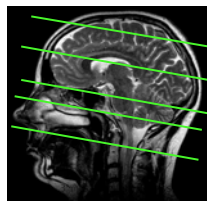
Creation of MRI Image

- Radio-frequency signals converted to 2-D image with Fourier transform
- Resulting "slice" very detailed
- MRI process repeated at other places
- Slices combined to form 3-D image



My research shows that an assertion-evidence structure leads to significantly more comprehension and retention

By repeating the MRI process at different locations, we can compile "slices" into a three-dimensional image



[Yale School of Medicine]

Slides affect a talk's success more than people realize



How the speaker delivers and prepares

Success of Talk

We advocate the assertion–evidence slide structure, which calls for a sentence headline supported by visual evidence

Xenon headlights illuminate signs better than halogen headlights do

Halogen Headlight



Xenon Headlight



[Sylvania, 2008]



Xenon headlights illuminate signs better than halogen headlights do

Halogen Headlight



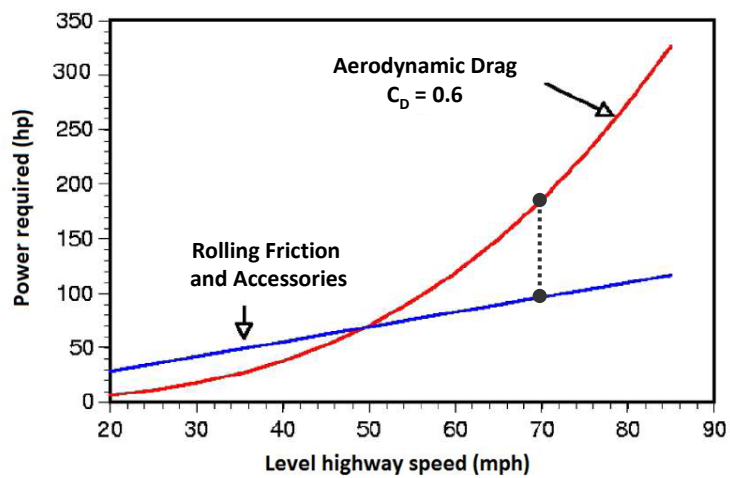
Xenon Headlight



[Sylvania, 2008]



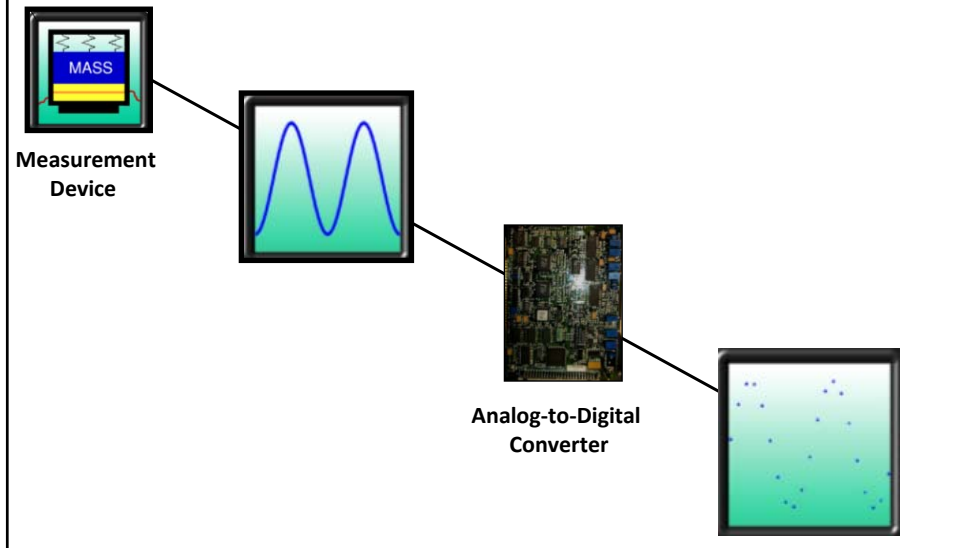
At typical highway speeds, overcoming drag requires about two-thirds of a truck engine's output



[McCallen, 2004]



A digital acquisition system samples at a rate high enough to preserve the shape of the analog signal



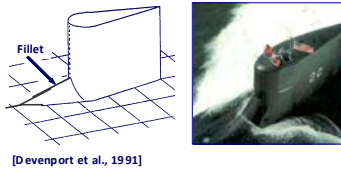
In summary, using assertion-evidence slides leads to more effective presentations

Fillets reduce leading edge vortices in nature and in engineering

Fillet on dorsal fin of shark



Fillet on Seawolf submarine



Rethinking the Design of Presentation Slides: The Assertion-Evidence Structure

Assertion-Evidence Models

[Penn State: Kirsch](#)
[Penn State: Fishbone](#)
[Sikorsky Aircraft](#)

Assertion-Evidence Templates

[Slide template: body slide](#)
[Slide template: full talk](#)
[Slide template: teaching](#)

Assertion-Evidence Workshops

Penn State (September to December)
Harvard Medical School (October 8)
ASME, Salerno, Italy (November 6)
ESO Paranal, Chile (November 23)

Commentary on PowerPoint

[Grant, *The Scientist*](#)
[Marshall, *Visual Aids*](#)
[Gomes, *Wall Street Journal*](#)
[Parker, *New Yorker*](#)

Films and Talks on PowerPoint

[Galloway, *Rethinking PowerPoint*](#)
[Alley, *The Scientist*, 2010](#)
[Doumont, IEEE-PCS Talk, 2007 \(audio\)](#)

Other Effective Slide Structures

[Presentation Zen \(Reynolds\)](#)
[slide:ology \(Duarte\)](#)
[Dick Hardt \(Lessig Approach\)](#)

New Documentary:



Recently, much criticism has arisen about the common practice use of Microsoft PowerPoint. This web page challenges PowerPoint's default structure of a single word or short phrase headline supported by a bullet list. Rather than subscribing to Microsoft's topic-subtopic design for slides, this web page advocates an assertion-evidence structure, which is shown in Figure 1 and which serves presentations that have the purpose of informing and persuading audiences about technical content. This structure, which features a sentence-assertion headline supported by visual evidence, is documented in Chapter 4 of [The Craft of Scientific Presentations](#), a November 2005 article in [Technical Communication](#), and the presentation "[Rethinking the Design of Presentation Slides.](#)"

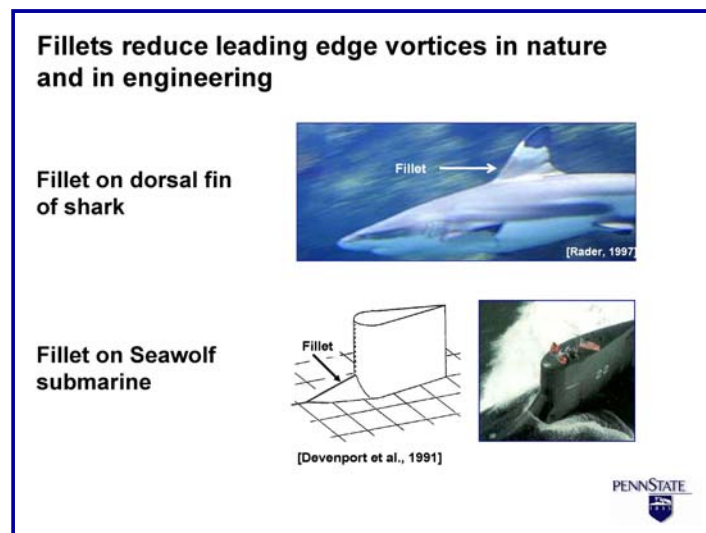


Figure 1. Example of a well designed slide [Zess and Thole, 2001].

Four key assumptions exist for using the assertion-evidence structure. The first is that slides are an appropriate visual aid for the presentation. Too often, slides are projected when no visual aid would better serve the presentation. Second, the success of the presentation hangs on the audience understanding the content. Third, the slides projected during the presentation differ significantly from the handout that a speaker might leave with the audience. For instance, the slides projected during the presentation cannot afford to have as much text on it as the handout does, because the audience is not only reading the projected slides, but listening to the speaker as well. Finally, the primary purpose of the slides is to help the audience understand the content, rather than to provide talking points for the speaker.

For a number of years, others have advocated an assertion-

Guidelines for Assertion–Evidence Slides

Style

1. Begin each body slide with a sentence-assertion headline that is left justified and no more than two lines
2. Support the assertion headline with visual evidence: photographs, drawings, graphs, films, or words and equations arranged visually
3. Design slides so that the audience reads no more than 15 words per minute

Typography

1. Use a bold sans serif typeface such as **Calibri**
2. Use 28 point type for the headline, 18–24 point type for the body text, and 14 point type for reference listings and call-outs
3. Avoid setting text in all capital letters, in italics, or with underline

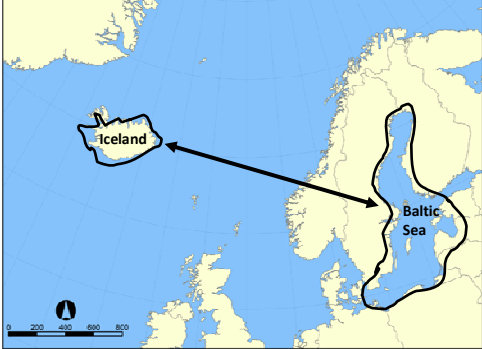
Layout

1. Keep blocks of text, especially the headlines, to no more than two lines
2. Keep lists to two, three, or four items
3. Use the entire slide, especially the top and the sides, so that you can insert white space between elements within the slide

Our research question is whether the dunlins of Iceland and the Baltic Sea are different subspecies




©Lars Erik Johannessen



[commons.wikimedia.org]

If so, because the population of the Baltic dunlins is declining, it may be a threatened subspecies



[Marthinsen et al., 2004]