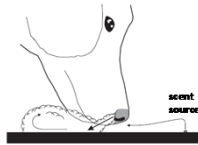
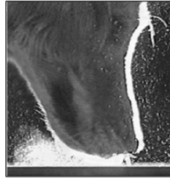


Rethinking Scientific Presentations: The Assertion-Evidence Approach

The way a dog sniffs does not contaminate
the vapor stream from the scent source

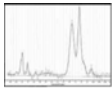


[Dettlars et al., 2002]

Michael Alley
College of Engineering
Penn State

[Alley, 2013]

Slides influence the preparation, delivery, and
understanding of a scientific presentation



$$\int f(x) dx = F(x)$$



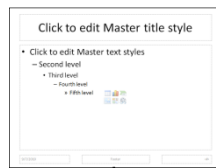
[Alley, 2013]

PowerPoint's defaults arose before much research on slides
and have not changed significantly



1987

2003

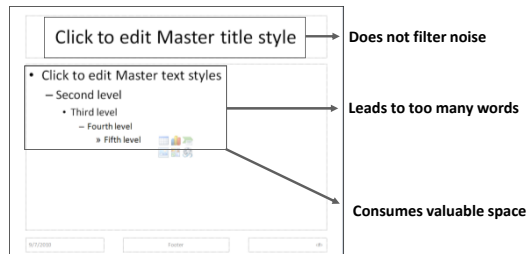


2007

[Gomes 2007]

[Alley, 2013]

PowerPoint's defaults run counter to how people learn



[Alley, 2013]

[Garner et al., 2009]

A key assumption is that slides are needed for that part of the presentation



[Alley, 2013]

Another assumption is that the slides we project should differ from our handout

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



≠

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



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

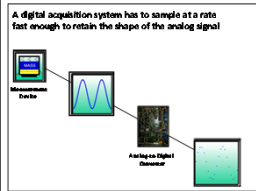
Our research question is whether the dunnets of Iceland and the dunnets of the Baltic Sea are different subspecies. At present, the Dunnets of Iceland and the dunnets of the Baltic Sea are considered one subspecies. However, if the dunnets of Iceland and the dunnets of the Baltic Sea are in fact different subspecies, then the subspecies of the Baltic Sea might be a threatened species because their numbers are declining.

Collaborators: Jan T. Lofstad and Iyv Westendorp of the University of Oslo "Population Differentiation in Dunnets of Iceland and the Baltic Sea" (2010, Norway: Zoological Museum, University of Oslo, 8 June 2010).

References:
Photo of Baltic dunnets by Lars Erik Jonassen @
Map of Norwegian Sea from Wikipedia Commons:
http://commons.wikimedia.org/wiki/File:Skandinavia_Sea
Principal Researchers: Gunnvildur Martinsson, University of Oslo

[Alley, 2013]

Another assumption is that the slides that we project are for our audience, rather than for us



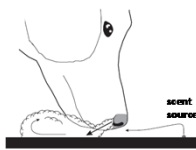
≠



[Alley, 2013]

The assertion–evidence structure consists of a message headline supported by visual evidence

The way a dog sniffs does not contaminate the vapor stream from the scent source

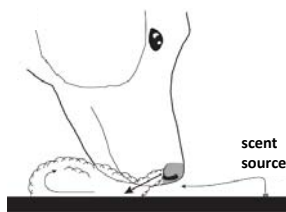


[Settlis et al., 2002]

[Settlis, 2002]

[Alley, 2013]

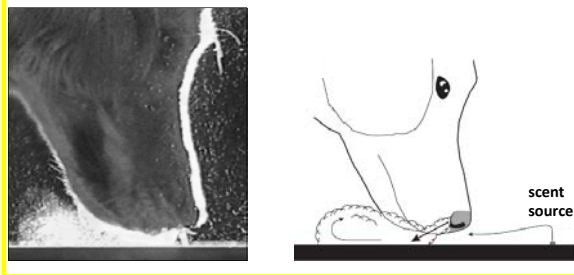
The way a dog sniffs does not contaminate the vapor stream from the scent source



[Alley, 2013]

[Settlis et al., 2002]

The way a dog sniffs does not contaminate the vapor stream from the scent source



[Alley, 2013]

[Settles et al., 2002]

The first step is to write a sentence headline that states the main message of the slide

Xenon headlights illuminate signs better than halogen headlights do

← sentence headline

Halogen Headlight



Xenon Headlight

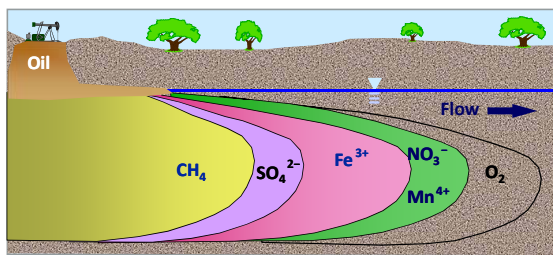
[Alley, 2013]

[Sylvania, 2008]



[Alley, 2013]

A succession of electron acceptors occurs when an aquifer becomes contaminated with oil



[Alley, 2013]

Digital Acquisition System Sampling

- Vibration measured by accelerometer
 - Analog voltage produced
 - Sinusoidal shape
- Analog signal converted to digital signal
- Signal sampled at a specific rate
- Rate → high enough to retain analog shape

[Alley, 2013]

A digital acquisition system has to sample at a rate fast enough to retain the shape of the analog signal

[Alley, 2013]

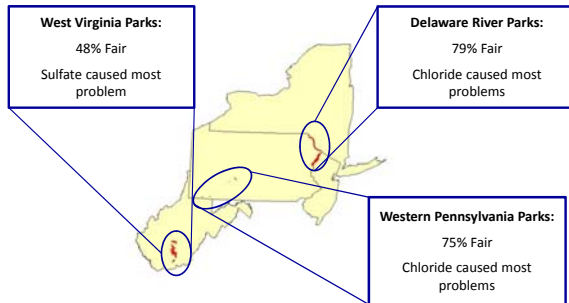
The second step is to find or create visual evidence that supports the sentence headline

The computer simulation of an event is an iterative process

[simula, research laboratory]

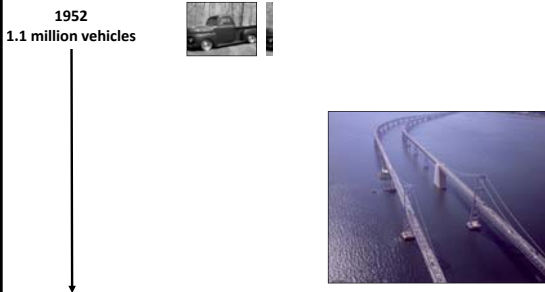
[Alley, 2013]

Most streams were classified in fair condition because of high chloride concentrations



[Alley, 2013]

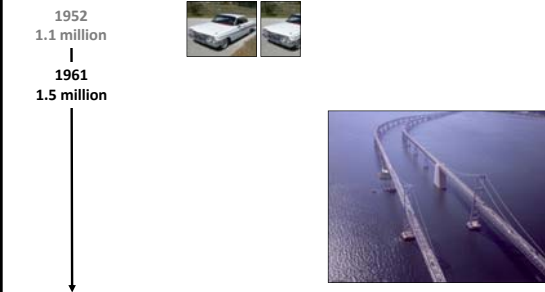
Since its construction in 1952, traffic across the bridge has grown exponentially



[Alley, 2013]

[Maryland Transportation Authority, 2007]

Since its construction in 1952, traffic across the bridge has grown exponentially



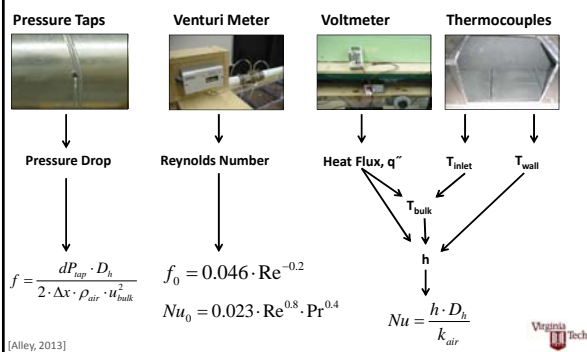
[Alley, 2013]

[Maryland Transportation Authority, 2007]

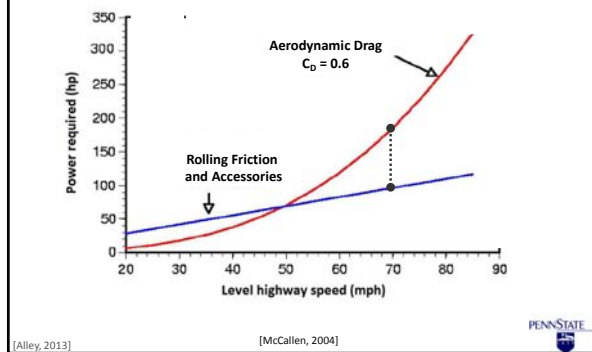
Since its construction in 1952, traffic across the bridge has grown exponentially



Normalized friction factors and Nusselt numbers correlated our data with the data of others



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



The third step in creating assertion-evidence slides is to change the defaults of PowerPoint



[Alley, 2013]

Tsunamis cause devastating destruction, especially to sparsely vegetated areas.

2004 Indian Ocean Tsunami: Gleebruk Village, Sri Lanka



[Alley, 2013]

<http://homepage.mac.com/demark/tsunami/14.html>

Tsunamis cause devastating destruction, especially to sparsely vegetated areas

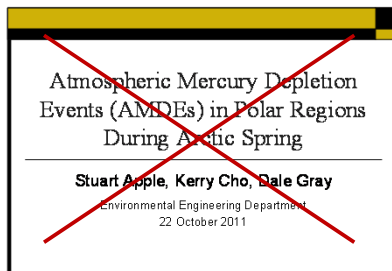


2004 Indian Ocean Tsunami: Gleebruk Village, Sri Lanka

[Alley, 2013]

[homepage.mac.com/demark/]

A common error in the beginning of scientific talks is to leave the audience behind



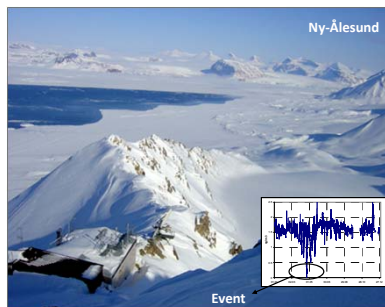
[Alley, 2013]

Determining Whether Atmospheric Mercury Goes into Surface Snow after a Depletion Event

Katrine Aspmo
Torunn Berg
Norwegian Institute for
Air Research

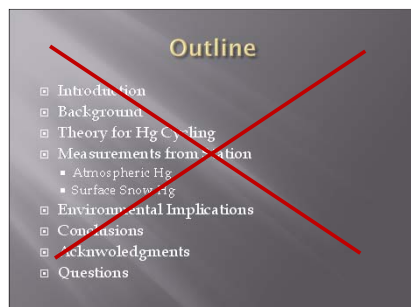
Grethe Wibetoe
University of Oslo,
Dept. of Chemistry

June 16, 2004



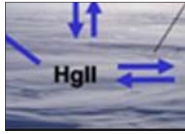
[Alley, 2013]

A common error in the mapping of scientific talks is to show a list that is not memorable



[Alley, 2013]

This talk traces what happens to mercury after it depletes from the atmosphere in arctic regions



Theory for mercury cycling



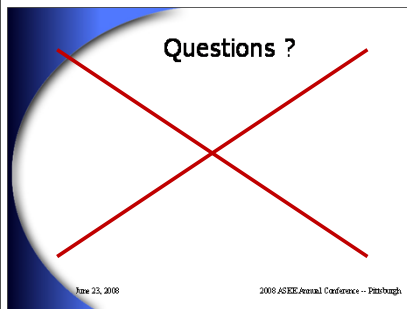
Measurements from Station



Environmental implications

[Alley, 2013]

A common error in the endings of scientific talks is to waste the last slide



June 23, 2008

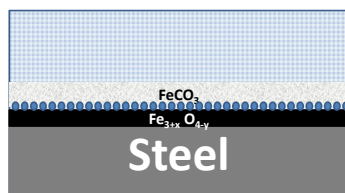
2008 ASDE Annual Conference - Pittsburgh

[Alley, 2013]

In summary, high concentrations of acetic acid help protect steel from corrosion

Adsorbed HOAc allows the growth of siderite

A thick siderite layer protects the steel from corrosion

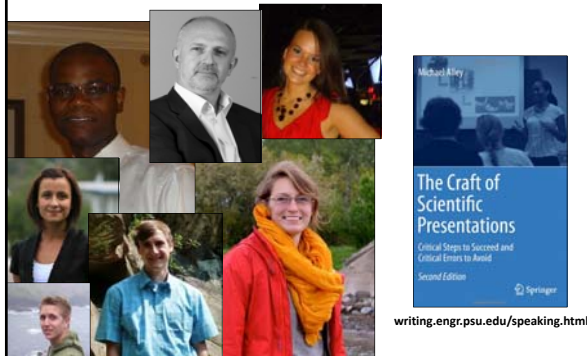


Questions?

[Alley, 2013]



Many engineers and scientists have had success using the assertion-evidence approach



writing.engr.psu.edu/speaking.html
