

Lecture 14

Effective scientific presentation

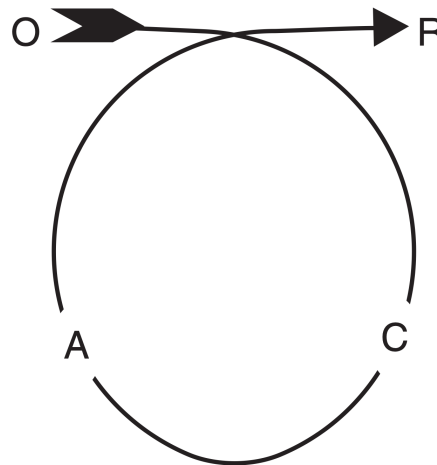
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Presentation is storytelling

- An effective presentation should tell a story that attracts the audience. It thus follows a typical story structure.
- The classic opening, challenging, action, and resolution (OCAR) structure applies to presentation.
- Key to presentation: opening should lead to challenge; resolution should address the challenge and move us forward.



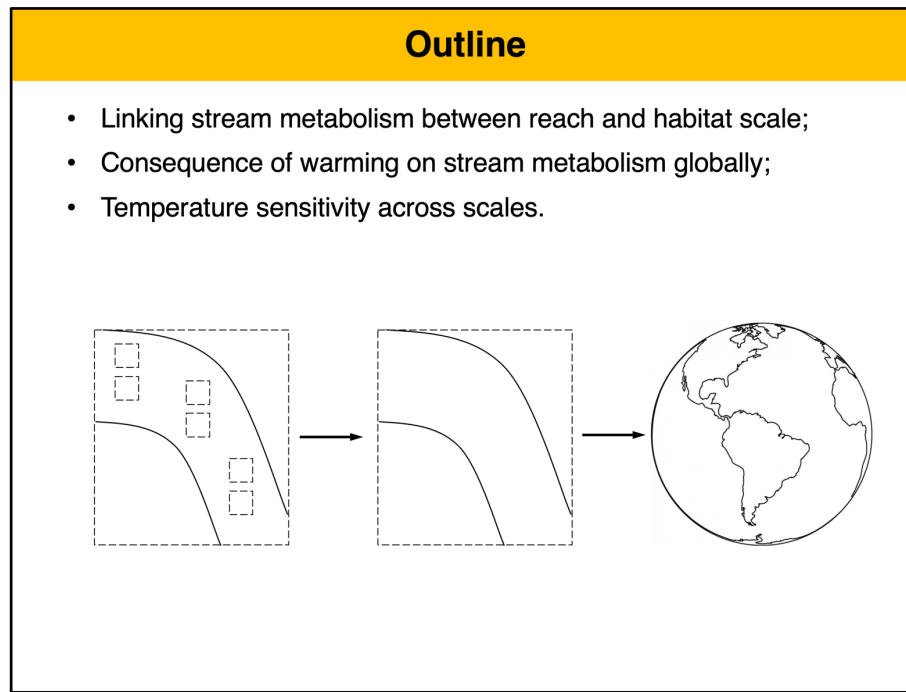
(Schimel 2012, Writing Science: How to Write Papers That Get Cited and Proposals That Get Funded)

Structure of a presentation

- **Background**: introduce relevant background, highlight research questions
- **Results/discussions**: main body of presentation, can be divided based on different parts of the work to be presented;
- **Conclusions**: succinct take-home message, need to directly address research question

Presentation needs a hook

- Each presentation should have a hook – a central question/theory – that goes through the entire presentation;
- Have **a central diagram** and use it repeatedly throughout the presentation helps keep your audience on the hook.



(An example of using central diagram in presentation. This is from a talk about how carbon flux change with spatial scales.)

An outline may help

- An outline along with a central diagram can help audience understand the structure and follow you during the talk;
- Avoid useless and uninformative outlines

Outline
<ul style="list-style-type: none">• Introduction• Methods• Results• Discussion• Conclusions

(An outline like this contains little useful information and should thus be avoided unless required)

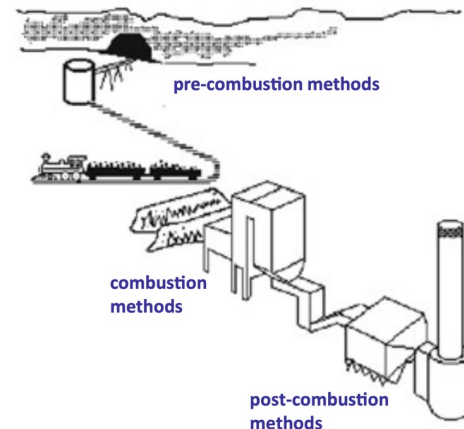
Example: a theme diagram approach to outline

- Combine text with a central diagram makes the talk outline much more appealing and engaging.

Topics to be Covered

- Introduction
- Background
- Pre-Combustion Methods
 - Coal cleaning
 - Coal switching
- Combustion Methods
 - Atmospheric fluidized bed
- Post-Combustion Methods
 - Absorption
 - Adsorption
- Conclusion
- Acknowledgments
- Questions

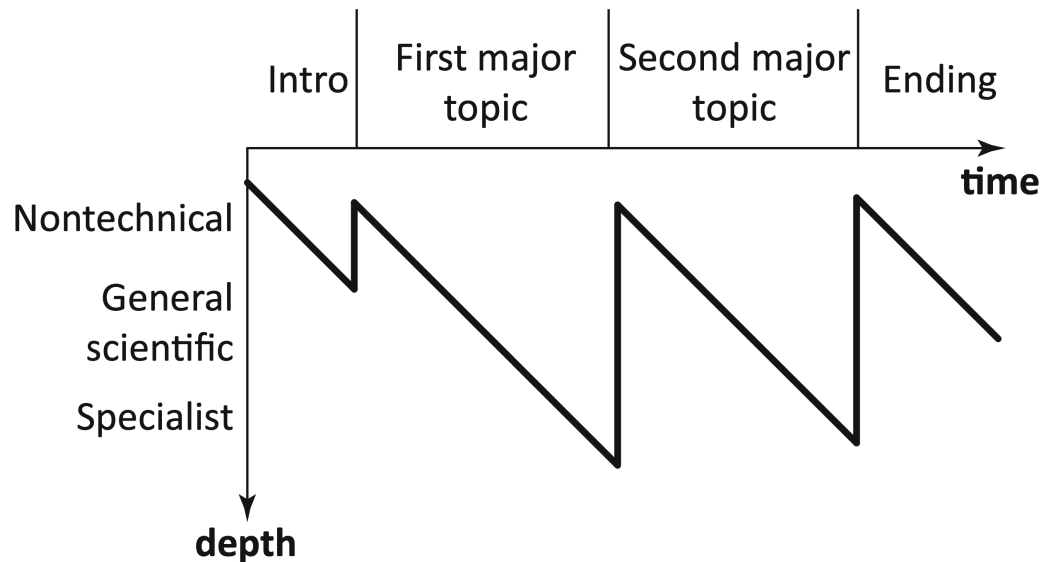
This presentation compares methods for reducing emissions of sulfur dioxide from coal power plants



(Use a diagram with text makes the outline much easier to follow)

Presentation needs a hook

- Throughout the presentation, come back repeatedly to the central diagram and remind the audience where you are on that diagram, this helps you keep the audience with you.



(Alley 2013, The Craft of Scientific Presentation)

Layout and design

- Keep the layout and design element consistent: background, visual element, font, color etc.
- **Flat minimalist design** usually works better for academic talk than lots of shade, shadow, glow, and reflection.

Title slide

- Title slide should contain basic information such as title, author names, and affiliations;
- Title slide can use art/photo relevant to the topic of the talk;
- Title slide often contain institution logos and similar elements;

Failure Analysis
of an Ice Detector
on the Austrian 13 Helicopter

Drew Whitcomb
Consulting Solutions
13 June 2011

**Failure Analysis of an Ice Detector
on the Austria 13 Helicopter**

Manning Stelzer
CURE / Engineering
Sikorsky Aircraft

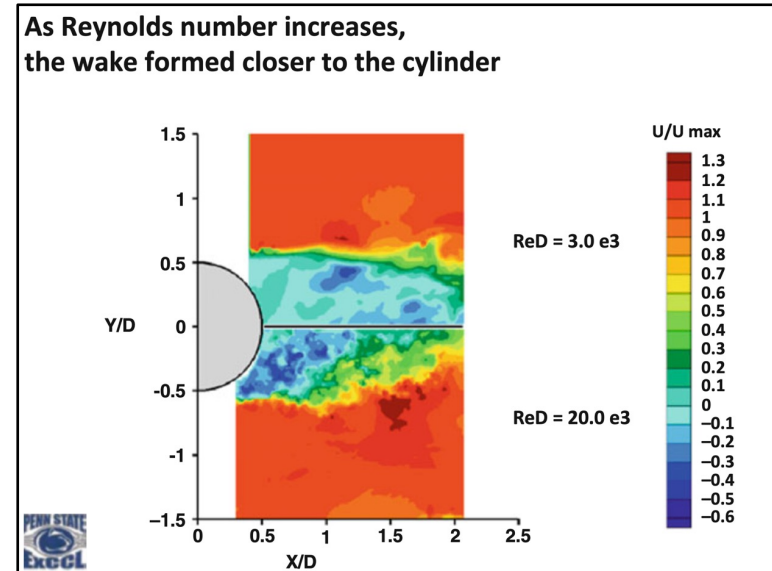
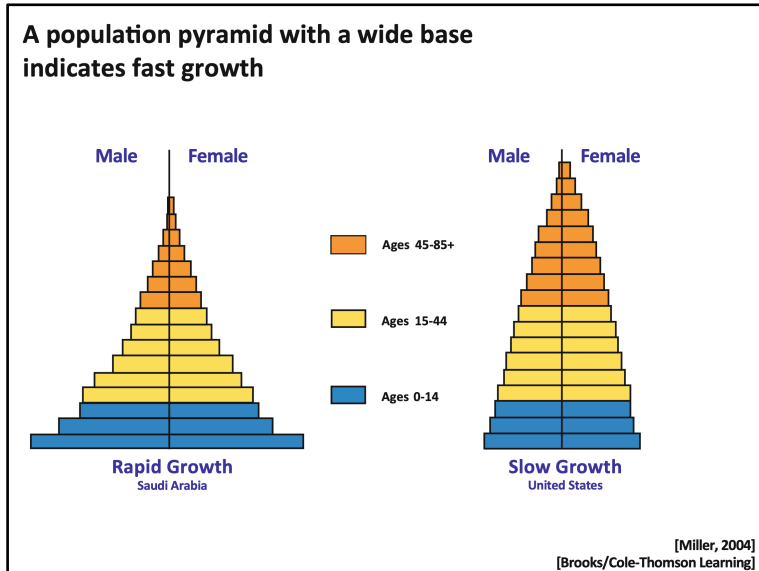
April 30, 2004



(Pictures help the title page be more engaging)

Layout and design

- Each slide should convey a clear message;
- Slide title can be used for that;
- Do not put too many stuffs in one slide.



(Example of concise and effective slide design)

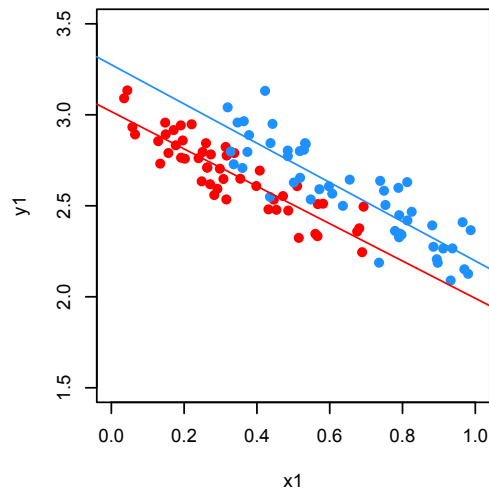
Layout and design

- Avoid using picture as the background and it makes text hard to read. If you must, change color saturation and transparency to make text legible.

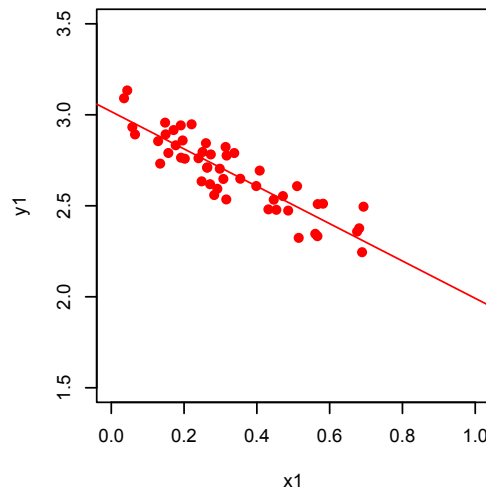


Presenting figures

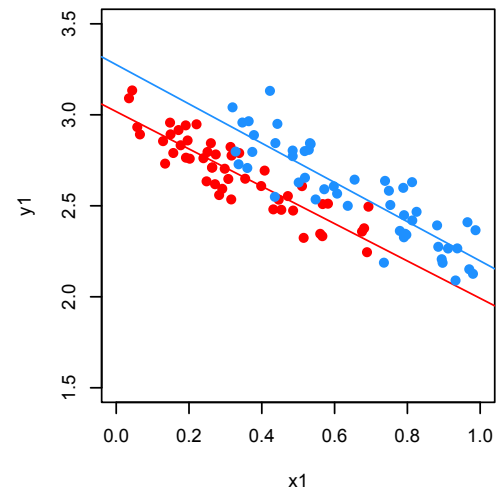
- Figures should be large enough to be eligible;
- Explain what the axes are and what the figure shows;
- Tell the audience what the figure means;
- Do not cram too many figures into one slides.
- Highlight the important part of the figure if needed;
- If the figure is complex, step through it in sequence.



(Show all at once)

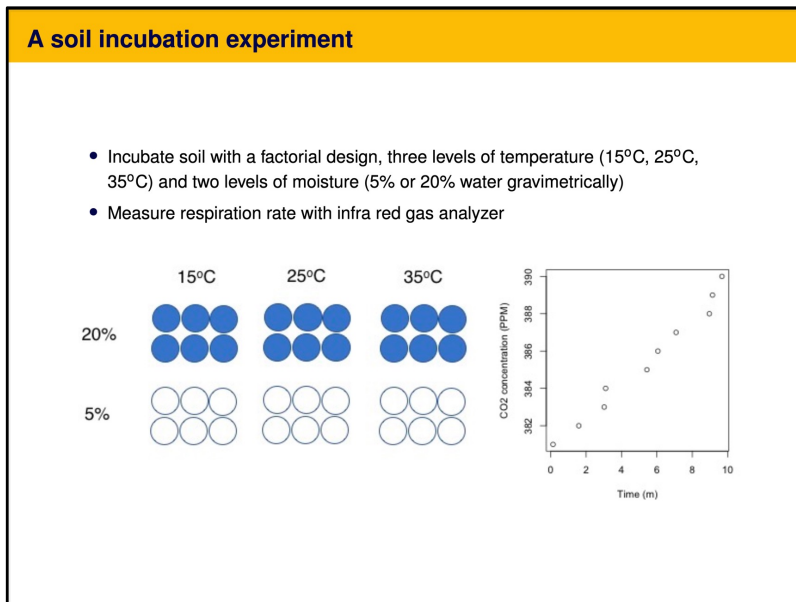


(Show in sequence)

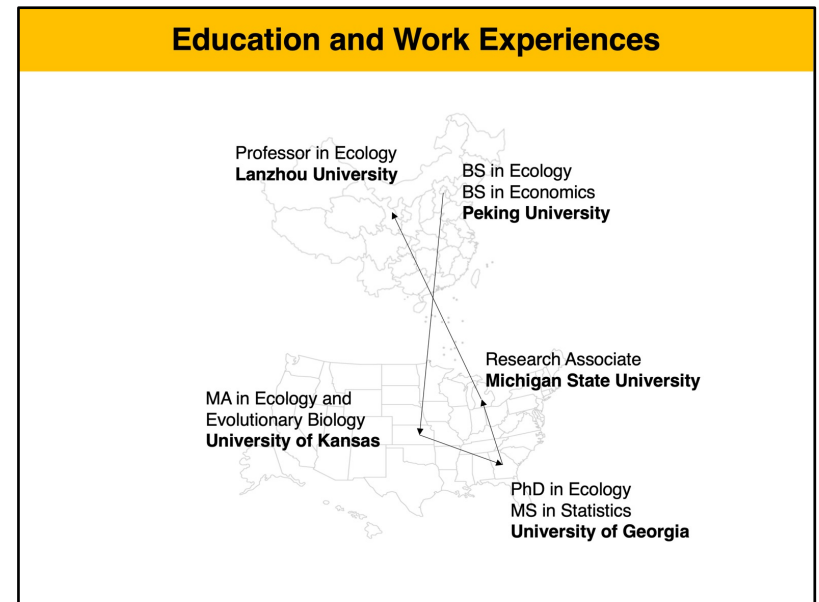


Use illustration

- Use illustration instead of text whenever possible. Illustration is easier to see and understand than text.



(Use diagram to illustrate experimental design)



(Use diagram to illustrate education experiences)

Text

- Avoid large block of text as they are hard to read and it distracts the audience; Use short phrases instead;
- Try to limit text blocks to two lines;
- When presenting long text, let them in the slides one by one;
- Text should be large enough (20-36 pt);
- Capitalize first word. No ALL CAPS!

Address questions

- Prepare for potential questions.
- Prepare additional slides that might be used to answer questions. Put them at the end of the presentation.
- Keep answers brief but to the point.

Tips for effective delivery

- Prepare well to ensure smooth delivery.
- Presentation is a performance. Show enthusiasm.
- Do not recite or read your notes.
 - Only write key piece of information in your notes so that you speak naturally in your presentation.
- Do not overuse laser pointer.
- Avoid filler words or other bad speaking habit.

Miscellaneous tips

- Acknowledge your collaborators;
- No animation for transition;
- Adjust the content of the talk based on who the audience are
 - Are they general audience or expert in my area?
 - What are the audience looking for in my talk?