Experiences in Astronomical Observing
Astronomy 460, Spring 2010
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About live presentations
- Philosophy of displaying information:
  Content is paramount!
  Format (PowerPoint, Keynote, blackboard) is just a vehicle.
  Don’t get format get on the way.
  Content/purpose should determine the format (e.g. a PPT presentation or a technical report)
- Prof. Alyssa Goodman: “PPT does not kill your presentation, but bullets do!”
- “PPT is like the weather. Everybody likes to complain about it, but nobody does anything about it.” Stephen Kosslyn’s book on presentations ‘Clear and to the point’
- Useful presentation tips at: www.presentationzen.com

Concerns about PPT, or things to be aware of

“When we understand that slide, we’ll have won the war,” General McChrystal from “We Have Met the Enemy and He Is PowerPoint”, New York Times (April 27 2010)

“It’s dangerous because it can create the illusion of understanding and the illusion of control,” General McMaster said. “Some problems in the world are not bullet-izable.”

“Cognitive (involving perception, reasoning) style of PPT” by Edward Tufte
- Billions of slides are made and used every year at all levels (from schools to government agencies and military).
- Good points about PPT: enforces organization and structure; flexible image import, manipulation, labeling; easy modification, creation, archiving; great image display.
- Bad points about PPT: encourages abbreviated thought and over-simplified information (many almost content-free slides); time synch for perfectionists; hierarchical single-path structure (hard to see connectivity); sales-pitch style (one-way flow of information); slides often go too fast with too much information.
- PPT helps ~10% of presenters, does not affect ~10% of presenters, but ~80% of presenters may be affected negatively.
- Content and purpose of presentation should determine the style and format. PPT is not the best vehicle for all presentations (public talks vs technical reports).
- Often a permanent record of presentation is needed: gives a reference for the future and also allows audience to control the pace of learning. Another good way: show multiple images to encourage comparison.

Assessing quality of technical reports
- 2006: Nearly all engineering presentations at NASA are made in PPT!
- Example: Jan 2003 Columbia accident and analysis of the debris impact by Boeing Corporation engineers
- Slide on page 10:
  - PPT reports resulted in mixed readings of the threat
  - Optimistic executive summary at the top not in agreement with comments below
  - “Flight condition is significantly outside of test database” — how can we then trust the data? Debris hitting Columbia is 640x larger than what was used for the tests! Note cryptic language making it much harder to understand.
  - “significant” used 5x on this slide: 640x is a huge difference.
  - The same unit for volume (cubic inches) shown in 3 different ways, confusing
  - Bulleted style fragments thoughts and filters out key explanations and supporting information. Columbia accident investigation board said: “The Board views the endemic use of PPT briefing slides instead of technical papers as an illustration of the problematic methods of technical communications at NASA.”
- PPT slides should not replace or even supplement formal technical reports!
- For serious presentations, paper handouts and reports with full sentences, numbers, and data graphics are superior.
How can we make effective presentations?

Guidelines on how to communicate content properly:

1. Keep slide design simple. Do not distract audience with busy backgrounds and no-content images. Make your own templates tailored for your needs.
2. Limit Bullets and Text: bullets are essential for outlines, but too many are distasteful and boring.
3. Use clear and high-quality visuals: images, graphs and animations. Combine graphics and text, use visual variety to show & tell. Proper labels, make graphs easy to read. Maximize information, minimize mess. Safer to avoid making tables. Use graph layering to enhance comparison of information.
4. Confidence: The more you are on top of your material the less nervous you will be.

Useful info: “Presentationzen” at http://www.garrreynolds.com/Presentation

Planning presentation:

1. Who is the audience? What is the purpose of the event?
   E.g. Public talk vs scientific conference vs technical meeting.
   People generally over-estimate human mental capacity to receive information.
2. How much time have we to speak (and questions)?
   ~1.5-1.2 minutes per slide. Make sure there is enough time for questions.
   Practice your talk to make sure you don't go over your allocated time.
3. What is exactly that you want to explain? OR
   What are the 3 things you want people to remember from your talk?
   Make an outline/sketch/structure on the paper: think about what are the main ideas/topics you want to talk about, and connections between them. Make a beautiful story, with all parts fitting nicely into a logical flow.
4. CONTENT CONTENT CONTENT CONTENT CONTENT
5. Handouts:
   “Viewgraphs leave no trace.” Edward Tufte
6. How much referencing should I include? Give credit where credit is due!

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5. Think about fonts (emphasis on simplicity and consistency):
   San-serif fonts are generally best for PowerPoint presentations.
   E.g. Gill Sans, Verdana, Arial vs Scal (Times)
   Make sure text can be read from the back of the room.
6. Think about color choices (emphasis on simplicity and consistency):
   Set of colors that is unambiguous both to colorblind and non-colorblind

Example of redundantly coded drawings

A few examples:
An example clear outline:

What’s this “VDQI” for?
- Data exploration
- Hypothesis testing
- Making a point
- Illustrating/demonstrating an idea
- Condensing information
- >1 of the above (best answer)

Does my display pass the “impact test”?

An example graph:

An example layered graph

Predicted velocity gradient along the MS
### Velocity gradient along the MS

- Show multiple images/objects to encourage comparison and connection. Also, redundant coding.

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### Bad table example

- Harlies & Troland (03); Begum; SS+09

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### A good table example:

<table>
<thead>
<tr>
<th>Simulation</th>
<th>Input Energy</th>
<th>Driving Mechanism</th>
<th>Self-Gravity</th>
<th>Magnetic Fields</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) decaying</td>
<td>E(k)~k-2</td>
<td>(1) decaying</td>
<td>(1) ideal MHD</td>
<td>(1) isothermal</td>
</tr>
<tr>
<td>(2) both driven &amp; decaying considered</td>
<td>P(k)~k-4</td>
<td>(2) both driven &amp; decaying considered</td>
<td>(2) ideal MHD</td>
<td>(2) isothermal</td>
</tr>
<tr>
<td>(3) stellar feedback (outflows)</td>
<td>E(k)~k-2</td>
<td>(3) stellar feedback (outflows)</td>
<td>(3) ideal MHD</td>
<td>(3) isothermal</td>
</tr>
<tr>
<td>(4) random driving</td>
<td>P(k)~k-4</td>
<td>(4) random driving</td>
<td>(4) ideal MHD</td>
<td>(4) isothermal</td>
</tr>
</tbody>
</table>

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### Radio Spectral-line Observations of Interstellar Clouds: an example illustration

- Courtesy: Alyssa Goodman