Effective Presentations

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EPFL
Why am I giving this talk?

- Observations at Alba
  - Some presentations could be more effective
  - We represent the lab when we present
- Focus is on style, but
  - Helps to bring out important content
- Most important questions:
  - Who is my audience?
  - What is the main point of every slide?
An effective presentation…

• Makes sure that everyone learns something
• Answers these questions:
  - What problem did I work on?
  - What did I do?
  - What is significant?
  - How has my work contributed?
  - Can I communicate?
**Structure of presentation - I**

- Limit your number of slides to avoid a rushed presentation!

<table>
<thead>
<tr>
<th>Section</th>
<th>Time (min)</th>
<th>Slides</th>
<th>Target audience</th>
<th>Time (min)</th>
<th>Slides</th>
<th>Target audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>45</td>
<td>18-21</td>
<td>Who?</td>
<td>20</td>
<td>8-12</td>
<td>Who?</td>
</tr>
<tr>
<td>Background</td>
<td>12</td>
<td>3-4</td>
<td>Layman</td>
<td>2</td>
<td>1</td>
<td>Colleagues</td>
</tr>
<tr>
<td>Approach</td>
<td>10</td>
<td>3-4</td>
<td>General technical</td>
<td>2-3</td>
<td>2-3</td>
<td>People in your area</td>
</tr>
<tr>
<td>Results</td>
<td>15</td>
<td>7-10</td>
<td>People who know the field</td>
<td>10</td>
<td>4-6</td>
<td>Experts in the field</td>
</tr>
<tr>
<td>Summary</td>
<td>5</td>
<td>2-3</td>
<td>Everyone present</td>
<td>2</td>
<td>1-2</td>
<td>Everyone present</td>
</tr>
</tbody>
</table>
Suggestions for prep and delivery

• Find 15-30 minutes alone before the talk
• Visit the room sometime; learn to use A/V
• Determine the halfway point in your talk
• Do not tell jokes!
• Practice your talk, but don’t memorize it
• Have a backup plan if something goes wrong
• Answer questions, but control the time
Slide preparation

• Choose level of detail carefully
  - Too much and people get lost
  - Too little seems superficial
  - Never “blow through” a mass of data – delete!!

• Every slide should have one clear main point

• Font selection
  - Choose a universally available font
  - Make size large for clarity, and to limit yourself
Presentation practices

• Visual aids should help, not be the focus
  - Your visual aids have to work for you
• Use simple layout, consistent colors and titles
• Using short phrases helps engage audience
  - Make eye contact!
• If you put bullet items that are long sentences instead of short phrases, you will be tempted to stand there and read them to an audience that is doing exactly the same thing!
Some do’s and don’ts…

• Software presents opportunities and problems
• Never, ever, use sound effects!
• Resist temptation to add one line at a time
  - It slows things down
  - Engage the audience, not the computer
• Going backward and forward is cumbersome
• Learn how to jump to a particular slide
• Use animations for clarity, not for show
Mechanics of presentation

- Carry your talk with you when you travel
- Personal laptops can usually be used, but...
  - Have a backup plan, e.g., USB stick
  - Beware the font replacement issue if you transfer
    \[ \partial_t \psi = -D \nabla^2 \psi \implies ?_{t\Box} = -D\#^2\Box \]
  - Bitmaps always work, e.g., LatexIt
  - PDF’s are portable, but don’t embed videos
Videos

• Videos often fail
  - Be ready to show them another way
  - Sometimes laptops won’t drive both screens
• Transferring files with video between machines
  - Videos may be links, rather than embedded
    • Must delete and re-insert after transfer
  - Codec must be on the projecting machine!
    • E.g., more than one “standard” for .avi
    • Many different .mpeg formats
    • QuickTime (.mov) standard, but not always present!
About graphs and figures

• Graphs and charts convey information

• They must:
  - Be readable
  - Highlight the point you are trying to make

• Software defaults are often poor choices
  - Make templates for yourself
  - Fonts and lines shrink when graphs are re-sized
  - Some colors combinations are almost invisible
The eye’s spectral sensitivity

• Combinations that work:
  - (Blue, red, black) / (white, yellow, green)
Using equations effectively

- Stress physical meaning of terms

\[ F = \int_V \left( \frac{1}{2} |W \nabla \psi|^2 + \left[ -\frac{\psi^2}{2} + \frac{\psi^4}{4} \right] + \lambda \theta \left[ \psi - \frac{2}{3} \psi^3 + \frac{\psi^5}{5} \right] \right) dV \]

- W sets \( \gamma_{sl} \), double well sets \( T_f \) and \( \Delta S_f \)
• Find at least 5 things wrong with this figure

USN&WR Ranking History

Mechanical Engineering

- Spelling
- Thin lines
- Colors lost
- Missing data
- Dates crowded
- **Main point??**
Ranking history for top ME depts

- UIUC falling, Caltech soaring!
I know this is a busy slide, but...

<table>
<thead>
<tr>
<th>Mecha Drug</th>
<th>No.</th>
<th>N&lt;sub&gt;ME&lt;/sub&gt;</th>
<th>N&lt;sub&gt;ME&lt;/sub&gt;:SK</th>
<th>N&lt;sub&gt;ME&lt;/sub&gt;:ME</th>
<th>N&lt;sub&gt;ME&lt;/sub&gt;:SK-ME</th>
<th>N&lt;sub&gt;ME&lt;/sub&gt;:ME:SK-ME</th>
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<tbody>
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<td>Mitomycin</td>
<td>A2</td>
<td>5410</td>
<td>5.817549</td>
<td>4.854715</td>
<td>5.77834</td>
<td>6.438135</td>
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<td>5840</td>
<td>5.817549</td>
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<td>5.77834</td>
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<td>Carmustine</td>
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<td>5.60611</td>
<td>5.60611</td>
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<td>73754</td>
<td>3.52105</td>
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<td>3.384085</td>
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<td>2680</td>
<td>3.84696</td>
<td>3.50793</td>
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<td>Iproplatin</td>
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<td>56173</td>
<td>5.0067</td>
<td>5.323755</td>
<td>4.28786</td>
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<td>Mechloretamine</td>
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<td>84625</td>
<td>4.51915</td>
<td>4.27896</td>
<td>4.43541</td>
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</tr>
</tbody>
</table>
Graphics files

- Bitmaps: store RGB data at every pixel
  - TIFF: Lossless, no compression
  - PNG: Lossless, compressed
  - GIF: Lossless, 256 colors, compressed
  - BMP: Uncompressed, proprietary Microsoft
  - JPG: Lossy compression
    - Good for photos
    - Terrible for line art, such as graphs
  - EPS: Lossless, stores as ASCII data (large files)
  - PDF: Lossless, compressed
Graphics files - continued

• Vector graphics
  - EPS, PDF (can also store images)

• Choose appropriate format
  - Vector graphics for line plots
  - JPG ok for photos, *never* for line art
  - PNG for screen images
  - PPT scales down well, scales up very poorly

• Resolution of your screen: 1280x960 or better

• Beamers: 800x600 or 1024x768
Precipitation at plate center
Results: Plate center

Precipitate density/rate

Particle volume fraction

Strength size fraction

Note: Fonts still too small
**GP zones $\eta'$**

Table 1: Cluster size, morphology and chemistry evolution during 1440 mins ageing at 121 °C

<table>
<thead>
<tr>
<th>Ageing time (min)</th>
<th>Morphology</th>
<th>Size range (atoms)</th>
<th>Mean composition (at.%: Zn, Mg, Cu)</th>
<th>Composition range (at.%: Zn, Mg, Cu)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quenched</td>
<td>Blocky</td>
<td>10–30</td>
<td>40 ± 4, 47 ± 4, 12 ± 2</td>
<td>19–62, 30–75, 0–29</td>
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<tr>
<td></td>
<td></td>
<td>30</td>
<td>46 ± 1, 46 ± 1, 8 ± 1</td>
<td>21–69, 23–63, 0–17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14–30</td>
<td>42 ± 5, 46 ± 5, 12 ± 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>140–738</td>
<td>46 ± 2, 46 ± 2, 8 ± 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elongated</td>
<td>32–50</td>
<td>48 ± 6, 42 ± 6, 10 ± 3</td>
<td>31–59, 31–59, 10</td>
</tr>
<tr>
<td></td>
<td>$\eta'$ Platelet</td>
<td>191–229</td>
<td>46 ± 3, 42 ± 3, 11 ± 2</td>
<td>43–50, 46, 10–13</td>
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<tr>
<td>60</td>
<td>Blocky</td>
<td>Total</td>
<td>48 ± 1, 45 ± 1, 7 ± 1</td>
<td>40–57, 35–51, 0–13</td>
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<tr>
<td></td>
<td></td>
<td>19</td>
<td>42 ± 15, 58 ± 17, 0</td>
<td></td>
</tr>
<tr>
<td></td>
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<td>81–555</td>
<td>48 ± 1, 45 ± 1, 7 ± 1</td>
<td>42–59, 41–47, 0–21</td>
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<tr>
<td></td>
<td>Elongated</td>
<td>27–145</td>
<td>47 ± 4, 44 ± 4, 9 ± 2</td>
<td>46–50, 43–47, 6–11</td>
</tr>
</tbody>
</table>

*$\eta'$

Table 2: Estimation of precipitate composition (at.%) and volume fraction (%) based on the Atom Probe Tomography analyses, making the assumption that the Mg content is 33 at. %

<table>
<thead>
<tr>
<th></th>
<th>Zn</th>
<th>Cu</th>
<th>Mg</th>
<th>Al</th>
<th>$f_p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>7150 peak-aged</td>
<td>30</td>
<td>10</td>
<td>33</td>
<td>27</td>
<td>4.8</td>
</tr>
<tr>
<td>7449 peak-aged</td>
<td>42</td>
<td>7</td>
<td>33</td>
<td>18</td>
<td>5.7</td>
</tr>
<tr>
<td>PA peak-aged</td>
<td>41</td>
<td>5</td>
<td>33</td>
<td>21</td>
<td>6.3</td>
</tr>
<tr>
<td>7449 over-aged</td>
<td>45</td>
<td>10</td>
<td>33</td>
<td>12</td>
<td>7.1</td>
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</table>
Required input parameters

- **GP zone composition (mole fraction)**

<table>
<thead>
<tr>
<th></th>
<th>Zn</th>
<th>Mg</th>
<th>Cu</th>
<th>Al</th>
<th>Ref</th>
<th>Temp</th>
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</thead>
<tbody>
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<td>η</td>
<td>0.469</td>
<td>0.333</td>
<td>0.111</td>
<td>0.187</td>
<td>Thermocalc</td>
<td>121 C</td>
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<td>GP zone</td>
<td>0.46</td>
<td>0.46</td>
<td>0.08</td>
<td>-</td>
<td>Sha et al</td>
<td>121 C</td>
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</tbody>
</table>

- **η’ precipitate composition**

<table>
<thead>
<tr>
<th></th>
<th>Zn</th>
<th>Mg</th>
<th>Cu</th>
</tr>
</thead>
<tbody>
<tr>
<td>η</td>
<td>0.465</td>
<td>0.336</td>
<td>0.113</td>
</tr>
<tr>
<td>η’</td>
<td>0.42</td>
<td>0.33</td>
<td>0.07</td>
</tr>
</tbody>
</table>

- Model uses equilibrium conditions.
Validation: Rheological tests

Comparison of the simulated predictions with experimental data.

Validation: Stress-Displacement

• Model is great, but not perfect

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This figure was inserted in PPT as a PDF on a Mac. On some PC’s, the image is incomplete.
Validation: Stress-Displacement

- Model is great, but not perfect

\[ g_s = 0.98 \]
\[ g_s = 0.96 \]
\[ g_s = 0.92 \]

This figure was inserted in PPT as a PNG made from the PDF on the previous slide. On some PC’s, the images look different.

Validation: Fracture stress

- Apparatus affects experimental result!

Mathier et al, *MMTA*, 2009
Mathier et al, *MMTA*, 2008
Mathier et al, *MMTA*, 2008
Ludwig et al, *MMTA*, 2005
Summary

• Effective presentations teach people something
• Who is your audience?
• What is your “take home” message?
• For every slide you present, ask yourself:
  - What is the main point you want to make?
  - Is it clearly presented?
• Limit number of slides for time available