The Art of Giving Talks: Some Thoughts, Advice, and Lessons Learned the Hard Way

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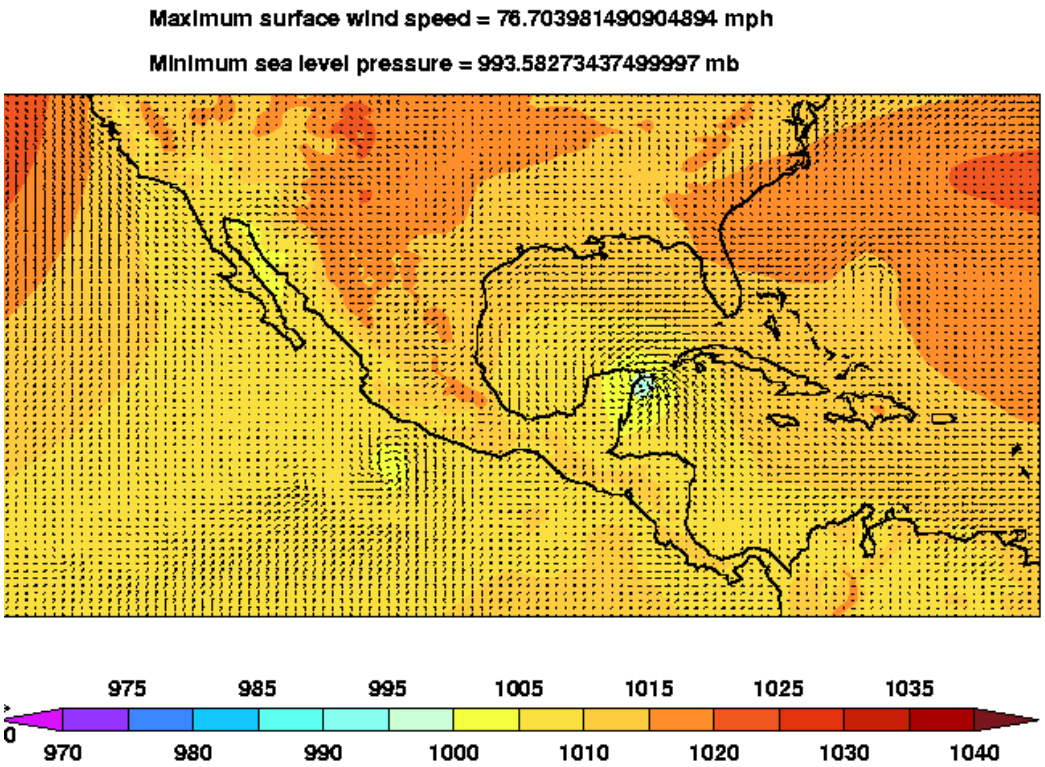
Your mileage may vary!

- This talk may not make you a gifted speaker
- None of the rules that I give you are iron-clad
- You will need to modify these rules to suit your personal speaking style

What is a talk?

A good talk is
nothing more than a story

Climate modeling and predicting hurricane patterns



- Tropical cyclones are not generally seen in integrations of global atmospheric general circulation models at climate model resolutions (~300km or T42)
- In CCM3 at 50km (T239), the lowest pressure attained is 995mb. No realistic cyclones are simulated.
- In high resolution simulations of the finite volume dynamics version of CAM2, strong tropical cyclones are common.

Michael Wehner, Scientific Computing, LBNL

Some reasons for sharpening your communication skills

1) Probably **the single most important** aspect in job hunting is your interview talk. The interview talk can make or break the interview.

2) Giving talks is expected in many jobs and is a critical factor in job success.

3) If you're heading into academia then you'll be giving talks almost every day!

What types of talks are there?

- Job interview
- Present a new result (e.g. at a conference) or a status report for a project
- Argue for/against something

Each of these talks will be different but the basic structure will be the same !

There are three key elements

- The message - what is the main idea that you would like to get across to your audience
- The audience - who are the people that you want to give your message to
- The connections - how do the pieces of your talk fit together

The Message

or

What's your point?

What is your message ?

- You should be able to answer the question –
  What's your point?

- The message should be short, 2-3 sentences at most and understandable at a high level

- Short talks (15 minutes or less) should have only one message

Most common mistake in a talk is not having a clear message

Everything in your talk should support your message

- Start with the message and work backwards in developing your talk
- It's incredibly easy to fall into the trap of thinking that
  - _____ is just too interesting to let the audience miss
- If you're not sure, ask yourself once again – *What's your point?*

The Audience

You need to tune the talk to the audience

- You need to be able to answer the question – *Why should I care?*
- Find out what the makeup of the audience will be and why they are there
- Emphasize or de-emphasize parts of your argument to suit the audience - respect your audience

Second most common mistake is using the same talk for all audiences

The Connections: Putting it Together

Structuring your talk

- It's not enough to lay out the key elements – you need to show how the elements fit together
- Walk the audience through your key points and show them how they are related
- Most talks suffer from too much detail and not enough overview - **a *talk is not a paper***

Third most common mistake is to give details rather than showing the connections

Some Tips and Tricks

Lessons Learned the Hard Way

Keep your main points simple

- Use at most 3 main points at any given time
- Most people/societies/cultures have a hard time dealing with more than 3 ideas at one time
- Remember that for a large part of your audience the material is new

Give specific examples wherever possible

- Examples can be used to clarify a given point
- Examples can be used to create a big impact
- Most audiences relate to visual examples better than to written examples

Drug Design

- Drug design can be formulated as an energy minimization problem.
- A single new drug may cost between $800 million and $1.8 billion to develop from start to finish.
- The design process typically takes over 10 years due to the large number of trial drugs that need to be considered.
- There are various energy functions used to describe the molecules involved.
- There are thousands of parameters because the size of the drugs is large.
- Due to physical constraints the optimization problem contains numerous nonlinear constraints.
- It can be shown that there are thousands of local minima which makes it difficult for most optimization methods.
- We are working on special optimization methods to solve this minimization problem.
- By using visualization techniques we can speed up the optimization methods.

Protein T162 from CASP5

QuickTime™ and a
YUV420 codec decompressor
are needed to see this picture.

- A single new drug may cost over $800 million to develop and the design process typically takes over 10 years.
- Energy minimization computed using OPT++/LBFGS. Initial configuration created using ProteinShop (S. Crivelli et al)
- Total simulation took approximately 32 hours

Some essential elements that should be included in a seminar talk

- Why is this problem important?
  - Why should I care?
- What was the outcome/product/….
  - Is there a tangible result?
- What was your contribution?
  - Use words like, *"This is my main result"*

Handling questions

- Anticipate and prepare for the obvious questions
- Make sure you understand the question
- Try to answer all questions, but some questions can/should be deferred.

Don't Panic !

Top 10

1) Have a clear message you want to deliver
2) Prepare for your audience
3) Tie the pieces together into a story
4) Only use material that supports your message
5) Avoid unnecessary details
6) Use (visual) examples to clarify your points
7) State the importance of your problem
8) Present your contribution
9) Prepare for questions
10) Practice, practice, practice

The End

Sample 30 minute talk

- Set the stage (5-10 minutes)
  - Tell the audience what the main issues are
  - Lay out your problem/issue
  - Describe why it's important!
- What happened (10-15 minutes)
  - How was the problem resolved
  - Only need the key ideas here
  - Don't necessarily need chronological order
- Summarize (5 minutes)
- Questions?

Turbulent Premixed V-Flame

Experimental Turbulent V-Flame

(photo courtesy R. K. Cheng, LBNL)

Recent Calculations

QuickTime™ and a
BMP decompressor
are needed to see this picture.