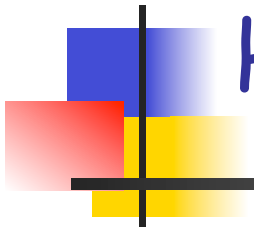


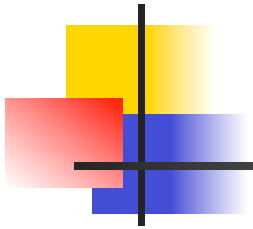
How to give a good research talk

Michael Granitzer

Based to a very large degree on slides of

Simon Peyton Jones

Microsoft Research, Cambridge

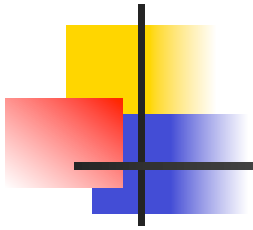


Research is communication

The greatest ideas are worthless if you keep them to yourself

Your papers and talks

- Crystalise your ideas
- Communicate them to others
- Get feedback
- Build relationships
- (And gatherresearch brownie points)

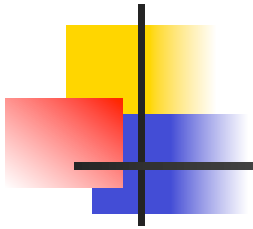


Do it! Do it! Do it!

Good papers and talks are a fundamental part of research excellence

- Invest time
- Learn skills
- Practice

Write a paper, and give a talk, about
any idea and question,
no matter how weedy and insignificant it may seem to you



Giving a good talk

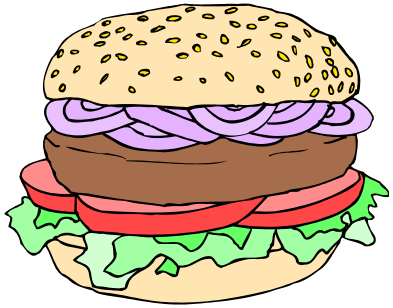
This presentation is about how to give a good research talk

- What your talk is for
- What to put in it (and what not to)
- How to present it
- How to structure it

WHAT YOUR TALK IS FOR..

What your talk is for

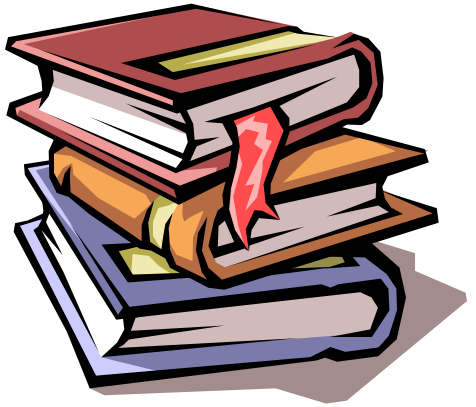
Your paper = **The beef**



Your talk = **The beef advertisment**

Do not confuse the two

The purpose of your talk…



..is not:

- To impress your audience with your brainpower
- To tell them all you know about your topic
- To present all the technical details

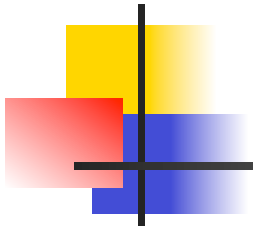
The purpose of your talk…

..but is:

- To give your audience an intuitive feel for your idea
- To make them foam at the mouth with eagerness to read your paper
- To engage, excite, provoke them

BUT

- Avoid trivial statements



Your audience…

The audience you would like

- Have read all your earlier papers
- Thoroughly understand all the relevant theory
- Are all agog to hear about the latest developments in your work
- Are fresh, alert, and ready for action

Your actual audience…

The audience you get

- Have never heard of you
- Have heard of some theory, but wish they hadn't
- Have just had lunch and are ready for a doze

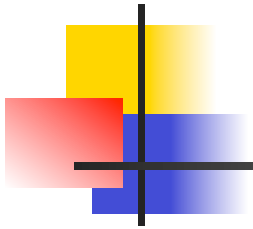
Your mission is to

WAKE THEM UP

And make them glad they did

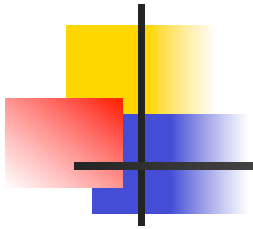
WHAT TO PUT IN…

What to put in



What to put in

1. Motivation (20%)
2. Your key idea (80%)
3. There is no 3



Motivation

You have 2 minutes to engage your audience before they start to doze

- Why should I tune into this talk?
- What is the problem?
- Why is it an interesting problem?

Example: Java class files are large (brief figures), and get sent over the network. Can we use language-aware compression to shrink them?

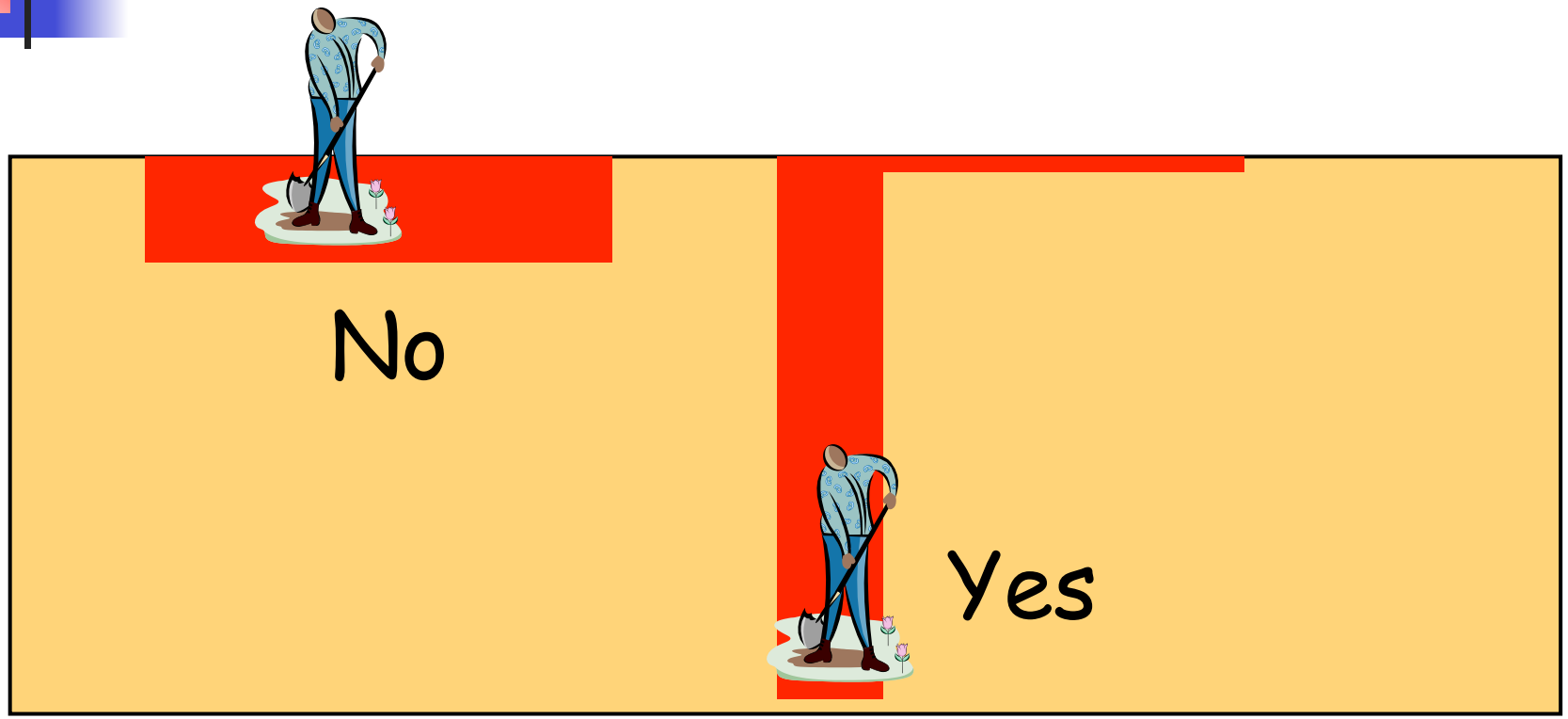
Example: synchronisation errors in concurrent programs are a nightmare to find. I'm going to show you a type system that finds many such errors at compile time.

Your key idea

If the audience remembers only one thing from your talk, what should it be?

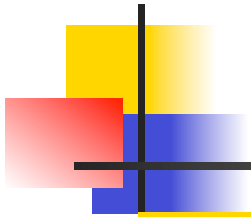
- You must identify a key idea. "What I did this summer" is No Good.
- Be specific. Don't leave your audience to figure it out for themselves.
- Be absolutely specific. Say "If you remember nothing else, remember this."
- Organise your talk around this specific goal. Ruthlessly prune material that is irrelevant to this goal.

Narrow, deep beats wide, shallow



Avoid shallow overviews at all costs

Cut to the chase: the technical "meat"



Your main weapon

Examples are your main weapon

- To motivate the work
- To convey the basic intuition
- To illustrate The Idea in action
- To show extreme cases
- To highlight shortcomings

When time is short, omit the general case, not the example

Omit technical details

- Even though every line is drenched in your blood and sweat, dense clouds of notation will send your audience to sleep
- Present specific aspects only; refer to the paper for the details

- By all means have backup slides to use in response to questions

Omit technical details

- But: Technical Details depend on the skill and knowledge of your audience
  - Spend enough time if you go into details (e.g. equations etc.)
    - K*1/C= constant (or K = C*constant)
      - Knowledge required
      - Complexity of the talk
  - Invest in a high quality presentation of details (e.g. figures, tables)
  - Focus (remember: Shallow and wide<< Deep and narrow)

Technical detail

$$\frac{}{\Gamma \vdash k : \tau_k} \qquad \frac{\Gamma \cup \{x : \tau\} \vdash e : \tau'}{\Gamma \vdash \lambda x.e : \tau \to \tau'} \qquad \frac{\Gamma \vdash e_1 : \mathtt{ST}\ \tau^\circ\ \tau \qquad \Gamma \vdash e_2 : \tau \to \mathtt{ST}\ \tau^\circ\ \tau'}{\Gamma \vdash e_1\ \mathtt{>>=}\ e_2 : \mathtt{ST}\ \tau^\circ\ \tau'}$$

$$\frac{\Gamma \vdash e : \tau}{\Gamma \vdash \mathtt{returnST}\ e : \mathtt{ST}\ \tau^\circ\ \tau} \qquad \frac{\Gamma \vdash e : \tau}{\Gamma \vdash \mathtt{newVar}\ e : \mathtt{ST}\ \tau^\circ\ (\mathtt{MutVar}\ \tau^\circ\ \tau)} \qquad \frac{\Gamma \vdash e : \mathtt{MutVar}\ \tau^\circ\ \tau}{\Gamma \vdash \mathtt{readVar}\ e : \mathtt{ST}\ \tau^\circ\ \tau}$$

$$\frac{\Gamma \vdash e_1 : \mathtt{MutVar}\ \tau^\circ\ \tau \qquad \Gamma \vdash e_2 : \tau}{\Gamma \vdash \mathtt{writeVar}\ e_1\ e_2 : \mathtt{ST}\ \tau^\circ\ \mathtt{Unit}} \qquad \frac{}{\Gamma \cup \{x : \forall \alpha_i.\tau\} \vdash x : \tau[\tau_i/\alpha_i]}$$

$$\frac{\Gamma \vdash e : \tau' \to \tau \qquad \Gamma \vdash e' : \tau'}{\Gamma \vdash e\ e' : \tau} \qquad \frac{\Gamma \vdash e : \mathtt{ST}\ \alpha^\circ\ \tau}{\Gamma \vdash \mathtt{runST}\ e : \tau}\ \alpha^\circ \notin FV(\Gamma, \tau)$$

$$\frac{\forall j.\Gamma \cup \{x_i : \tau_i\}_i \vdash e_j : \tau_j \qquad \Gamma \cup \{x_i : \forall \alpha_{j_i}.\tau_i\}_i \vdash e' : \tau'}{\Gamma \vdash \mathtt{let}\ \{x_i = e_i\}_i\ \mathtt{in}\ e' : \tau'}\ \alpha_{j_i} \in FV(\tau_i) - FV(\Gamma)$$

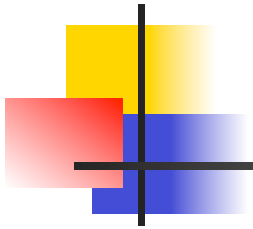
Figure 1. Typing Rules

HOW TO PRESENT..

How to present your talk

By far the most important thing is to

be enthusiastic



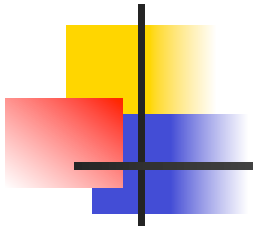
Enthusiasm

- If you do not seem excited by your idea, why should the audience be?
- It wakes 'em up
- Enthusiasm makes people dramatically more receptive
- It gets you loosened up, breathing, moving around

The jelly effect

Most presenters will experience apparently-severe pre-talk symptoms

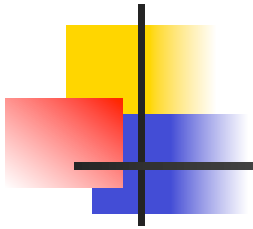
- Inability to breathe
- Inability to stand up (legs give way)
- Inability to operate brain



What to do about it

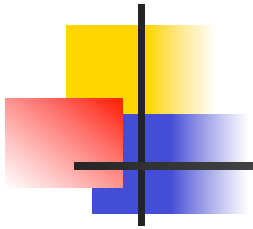
- Deep breathing during previous talk
- *Script your first few sentences precisely*
  (=> no brain required)
- Move around a lot, use large gestures, wave your arms, stand on chairs
- Go to the loo first

- You are not a wimp. Everyone feels this way.



Being seen, being heard

- Point at the screen, not at the overhead projector
- Speak to someone at the back of the room, even if you have a microphone on
- Make eye contact; identify a nodder, and speak to him or her (better still, more than one)
- Watch audience for questions…



Questions

- Questions are not a problem
- Questions are a golden golden golden opportunity to connect with your audience
- Specifically encourage questions during your talk: pause briefly now and then, ask for questions
- Be prepared to truncate your talk if you run out of time. Better to connect, and not to present all your material

Presenting your slides

A very annoying technique

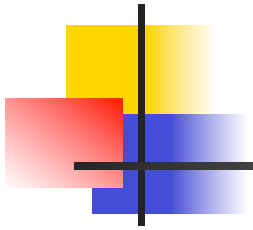
- is to reveal
- your points
- one
- by one
- by one, unless…
- there is a punch line

Presenting your slides

Use animation effects

very very very very very very very

sparingly

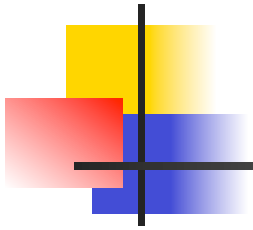


Finishing

Absolutely without fail, finish on time

- Audiences get restive and essentially stop listening when your time is up. Continuing is very counter productive
- Simply truncate and conclude
- Do not say "would you like me to go on?" (it's hard to say "no thanks")

HOW TO STRUCTURE..

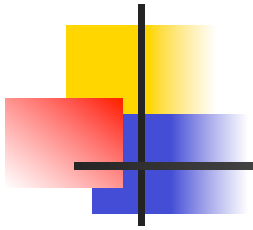


How to structure your talk

- There is no perfect structure.
- It depends on
  - Your topic
  - Your preferences
  - Your audience
  - Your style

How to structure your talk

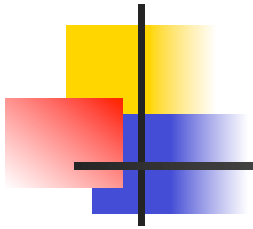
- It is like a roller coaster
- An example structure
  1. Title, Name– 1 slide
  2. Motivate your work - 1-2 slides
  3. Explain what the audience will hear next – 1 slide
  4. The details – x slides
  5. Conclusion and take away message – 1 slide



How to structure your talk

Motivate your work

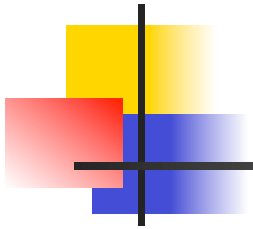
- Use one example
- Outline your key idea
- That's enough.
- Keep it simple
- Her you win or loose the audience



How to structure your talk

Explain what the audience will hear next

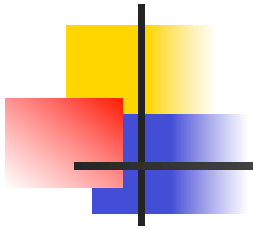
- Show how you want to explain your key idea to the audience
- Stick to this structure
- Agenda as formal version
- Structure along key questions
- Can be done with the motivation, but requires experience



How to structure your talk

Details

- Detail your key idea along questions
- 2-4 questions are usually enough
- Stick to the structure
- Show structure breaks using filler slides
  - Give the audience time to relax
- Details are mentally exhausting, so try to keep it as simple as possible for the audience



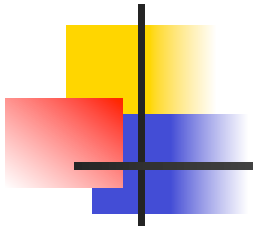
How to structure your talk

Conclusion

- Be brief
- Highlight the main point(s)
- Avoid any details

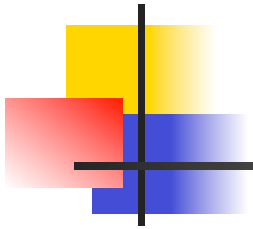
Final slide

- Questsions and say thanks to your audience



Summary

- Motivation and Key Idea
  - Ommit technical details without loosing the meat in your talk
- Less is more: Narrow and deep
- Examples, Examples, Examples
- Questions are good, and a sign of interest



Summary

- Questions?