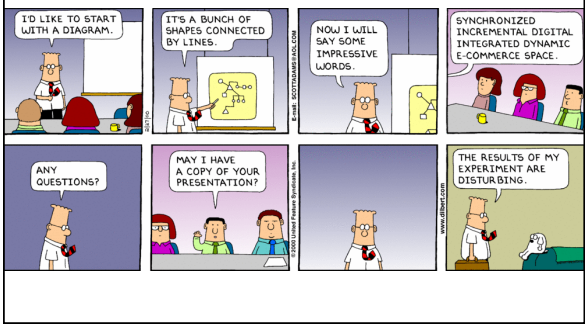
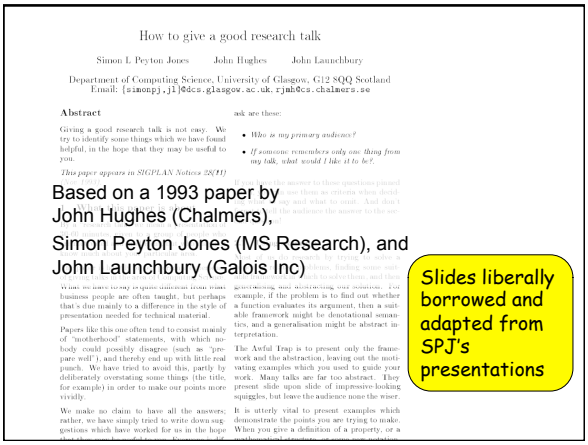
How to give a good research talk

David Sands





How to give a good research talk

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Abstract

Giving a good research talk is not easy. We try to identify some things which we have found helpful, in the hope that they may be useful to you.

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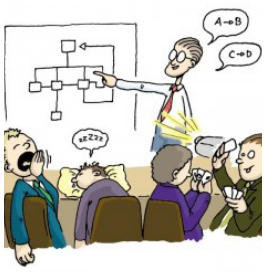
- *Who is my primary audience?*
- *If someone remembers only one thing from my talk, what would I like it to be?*

Based on a 1993 paper by John Hughes (Chalmers), Simon Peyton Jones (MS Research), and John Launchbury (Galois Inc)

Slides liberally borrowed and adapted from SPJ's presentations

In a nutshell



- There are too many bad academic talks
- Some simple advice can help you stand out
- Giving good talks is good for you and your audience

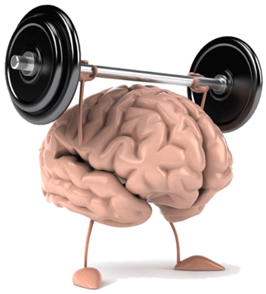
1. What is the talk for

But I don't mean this:

Photo: GP, 2011-09-11

The purpose of your talk…

..is **not**:



The purpose of your talk…

..is **not**:

The purpose of your talk…

..is **not**:

The purpose of your talk…

The purpose of your talk…

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

The audience you would like

Your Actual Audience

~~The audience you would like~~

- ~~Have read all the earlier papers~~ Never heard of you
- ~~Thoroughly understand all the relevant theory of *cartesian closed endomorphic bifunctors*~~ Have seen it. Wish they hadn't
- ~~Are all agog to hear about the latest developments in the work~~ Like, whatever
- ~~Are fresh, alert, and ready for action~~ Mmm wine with lunch... Zzzzz...

Butler Lampson
Turing Award Winner
1990

Sir Tony Hoare
Turing Award Winner
1980

Your Audience

Photo: Aslan Askarov
Marktoberdorf summer school '06

Your mission

What to put in

1. Motivation (20%)
2. The 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?

Motivation: Examples

Motivation: Examples

Example: Parallelization of C/C++ legacy code is difficult, labor-intensive and error-prone.

Nema Labs has developed a methodology that allows programmers to parallelize ordinary C/C++ code without reasoning about parallelism.

The Middle

- The motivation is the beginning of the story
  - Introduce the main characters
  - Make you care about them
  - Make sure you know who is the bad guy
- The middle is the meat of the story. You should have at least one technical nugget

The key idea

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

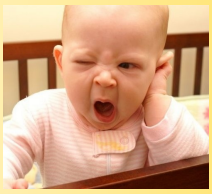
Examples are your chief weapon

- 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

What to leave out

Outline of my talk



- Background
- The FLUGOL system
- Shortcomings of FLUGOL
- Overview of synthetic epimorphisms
- π-reducible decidability of the pseudo-curried fragment under the Snezkovwski invariant in FLUGOL
- Benchmark results
- Related work
- Conclusions and further work

No outline!

"Outline of my talk": conveys **near zero information** at the start of your talk

- But maybe put up an outline for orientation *after* your motivation
- …and signposts at pause points during the talk

Technical detail

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

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

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

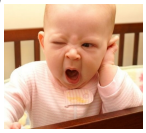
$$\frac{\Gamma \vdash e : \tau' \to \tau \qquad \Gamma \vdash e' : \tau'}{\Gamma \vdash e\ e' : \tau} \qquad \frac{\Gamma \vdash e : \mathtt{ST}\ \alpha^\circ\ \tau}{\Gamma \vdash \mathtt{runST}\ e : \tau}\ \alpha^\circ \notin FV(\Gamma, \tau)$$

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

Figure 1. Typing Rules

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



3. Presenting your talk

Do not apologise

- "I didn't have time to prepare this talk properly"
- "My computer broke down, so I don't have the results I expected"
- "I don't have time to tell you about this"
- "I don't feel qualified to address this audience"

Start Preparation Early, Finish Late

- By starting early you have time to
  - Practice your talk
  - Give a trial run for a friendly audience
  - Improve, improve, improve
- By finishing late you
  - Keep what you want to say fresh in your mind
  - Make connections to other talks

Fault tolerance

- Always have a backup on a memory stick
  - and/or in the cloud (Dropbox)
- Test your laptop with the beamer if you get a chance
- Learn to start your presentation gracefully
- Be wary of using laser pointers
  - Parkinson's syndrome

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 hard part: you can't really fake it

The jelly effect

What to do about the n-n-nerves

- ***Script your first few sentences precisely*** (=> no brain required)
- Move around a lot, use large gestures, wave your arms, stand on chairs

You are not a wimp. Everyone feels this way.

Being seen, being heard

- Point at the screen, not at the overhead projector, not at the laptop's screen
- Speak to someone at the back of the room, even if you have a microphone on
- Make eye contact
- Watch audience for questions…

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

And remember, it is never a good idea to put lots and lots of text on your slide. It's hard to read for the audience. Its probably even worse if you just plan to read it out loud. Well actually, you will probably get half way through reading it and then decide that maybe it wasn't such a good idea after all. Er then what should I do. Maybe just be quiet for a bit so you can read it yourself. The audience has already opened their laptop and started to read their email.

Animate Judiciously

Fonts & Readability

- Never, ever, go below 24 point font
  - This is what 24 point looks like on *this* projector
- Feel free to make the font size considerably larger.
- If possible, adjust the presentation to the specific environment

Colours

- Take care with choice of colours and backgrounds
- 5% of your audience are likely to be colour blind

Haha what a bunch of losers

Mechanics of Slide Production

Powerpoint, Prezi, ooffice, latex, notepad…?

No hard and fast rule (in academia). Good and bad talks can be made with any technology.

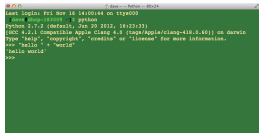
Some tend to be more bad than good.

Live Demos

Need to be super well-prepared

Live coding:

- think about font, colours, and window size **long** before your actual talk
- make sure you know how to navigate



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
- **Never** say “would you like me to go on?” (it’s hard to say “no thanks”!)

Finally…the Top Tips from the Pros

Finally…the Top Tips

Decide what ONE message you want your audience to leave with, and build the presentation around it

(so if you're presenting a paper, don't necessarily follow the outline of the paper)

Focus on

THE KEY TAKE AWAY

from the talk.

Finally…the Top Tips

Cliffhanger style presentation:

At the end of each slide, the audience is left with a bit of intrigue resolved by the next slide.

Finally…the Top Tips

1.1 - don't put too much text on your slides

1.2 - practice your talk - if necessary before a mirror.

Finally…the Top Tips

Keep the overall argument high level BUT

dive down to the one or two most interesting bits of the technical level, to show the nature of your work and to keep the intellect of the audience entertained.

Finally…the Top Tips

Convey everything with pictures and code. Almost no words on slides

Finally…the Top Tips

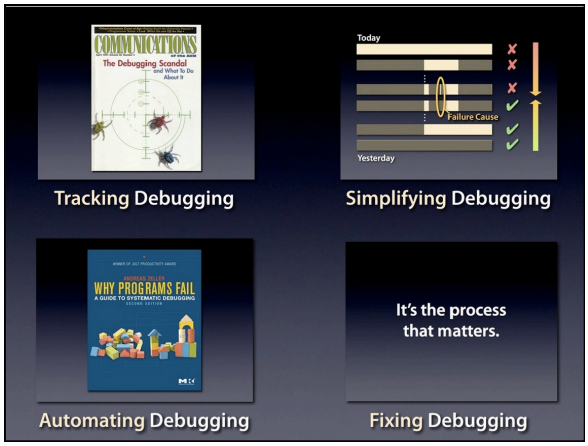
Examples first

always start by giving an example before you dive into the general (formal) explanation

Start with an example; delete the "outline" slide!

Thank you for listening!
Questions?

andreas-zeller.blogspot.com



Finally…the Top Tips

Learn from the great talks that you attend: what made them great?

Pick up ideas for what to do and what to avoid