How to give a theory talk

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What is a successful talk?

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While going to meetings I had already been studying why some papers are remembered and most are not. The technical person wants to give a highly limited technical talk. Most of the time **the audience wants a broad general talk** *and wants much more survey and background than the speaker is willing to give. As a result, many talks are ineffective. The speaker names a topic and suddenly plunges into the details he's solved. Few people in the audience may follow.* **You should paint a general picture to say why it's important, and then slowly give a sketch of what was done.**

– Richard Hamming, "You and Your Research"

What is a successful talk?

A successful talk has...

- Interesting big ideas
- A compelling story
- *Carefully selected* details

You want to sell your ideas *and yourself*.

Outline

1. Basic parameters
2. Speech, slides, timing, and technology
3. Audience interactions
4. Practice
5. Types of talks
6. Summary of advice

Basic parameters

- What is the *form*?
- Who is the *audience*?
- What is the *topic*?
- What is the *purpose*?

Verbal logistics

Four pieces of advice:

- Don’t mutter or mumble
- Speak slowly and clearly
- Punctuate with pauses, pitch variations, and questions
- Use deliberate body language

Slide basics

Slides $\neq$ talk!

Slides

Things to ask:

- Does this slide contribute to the talk?
- Do all details contribute to the slide?
- Could the guy who woke up five minutes ago read this?
- Could a color-blind guy who needs glasses read this?

Bad slides!

`http://pdos.csail.mit.edu/scigen/`

`http://norvig.com/Gettysburg/`

... or Google “bad Powerpoint examples”

Timing logistics

- Learn your timing (two minutes per slide is typical)
- Find out duration early – but plan to be flexible
- Have backup material
- Practice

Technology logistics

Murphy was an optimist

$$\Longrightarrow$$

Make contingency plans

Engaging an audience

- Grab them in the first thirty seconds
- Make eye contact
- Mention local people and projects
- Use compelling examples
- Allow people to re-engage after distractions

Reading an audience

Adjust your talk based on audience feedback:

- Notice *aggregate* attention levels
- Watch for widespread blank looks
- Pay attention to patterns in questions

But don't overanalyze:

$$\begin{aligned} \text{One person} &\neq \text{whole audience} \\ \text{Jet lag} &\neq \text{boredom} \\ \text{Smiling} &\neq \text{understanding} \\ \text{Rudeness} &\neq \text{deliberate disrespect} \end{aligned}$$

Humor

Humor is a *technique*, not a *goal*.

Questions

A three-dimensional space:

1. I am confused about something you said.
2. I think you've left out something interesting.
3. I am a space alien.

Answering questions

Basic strategy:

1. Repeat the question
2. Answer respectfully
3. Defer if appropriate

Answering questions

Plan ahead for some questions:

1. Redesign to avoid confusion
2. Backup slides about omitted topics
3. Graceful dodges for space alien questions

Practice

Rehearse your talks, but also practice

- Explaining your work to non-experts
- Asking good questions in talks
- Analyzing talks

... a few specific cases

The visitor at the door

- Form: Short ad hoc talk (2-15 minutes)
- Audience: One person, usually not in your area
- Topic:
  - What your subfield of computer science is about
  - Why some specific problem you work on is interesting
  - What types of problems interest you
- Purpose: Start a conversation

The conference talk

- Form: 20–25 minute talk
- Audience: CS audience in your area (usually)
- Topic: Research in one paper
- Purpose:
  - Sell the problem
  - Convey the key idea
  - Convince people to read the paper

The job talk

- Form: One hour colloquium talk
- Audience: General CS audience (usually)
- Topic: Your dissertation work
- Purpose:
  - Sell yourself as a teacher and researcher
  - Highlight *your* contributions
  - Sell your area

Higham's ten commandments

1. Design the talk for the audience.
2. Prepare thoroughly and rehearse the talk.
3. Produce clear, legible slides.
4. Arrive early and check the lecture room.
5. Speak slowly and loudly.
6. Be enthusiastic about what you say.
7. Look at the audience as you speak.
8. Don't fidget with the slides or the pointer.
9. Finish on time (or early).
10. Answer questions courteously and concisely, and admit if you don't know the answer.

My summary

- Understand your audience and purpose
- Be accessible
- Plan logistics
- Practice!

Offline reading

- N. Higham, *Handbook of Writing for the Mathematical Sciences* (chapters 10–11)
- R. Hamming, “You and Your Research” `http://www.cs.virginia.edu/~robins/YouAndYourResearch.html`
- Ken Birman, “Thoughts on Giving Professional Talks” `http://www.cs.cornell.edu/~stevenan/givingatalk.pdf`
- Charlie Van Loan, “The Short Talk” `http://www.cs.cornell.edu/cv/ShortTalk.htm`
- Matt Blaze, “No, You Can’t Have My Slides” `http://www.crypto.com/blog/slideware`

A final thought

Beware of advice, even this.

— Carl Sandberg