

# Presentation Skills



Andrew Ker

Department of Computer Science, 3 May 2016

*with thanks to Tom Melham, whose original slides inspired these*

# Presentation skills

Strategies and tips for how to **prepare** and **give** a good presentation.

We are thinking about various types of presentation:

- Academic seminars & conference presentations.
- Industrial presentations.
- The undergraduate group project presentation.

# Why does this matter?

## *... to academics:*

- Conference talks & invited seminars are crucial to your scientific reputation.
- Most academic jobs involve a talk in the selection process.
- You can win collaborators and influence.
- Science only has value if communicated.

## *... to others:*

- Your job security & promotion will depend on communication skills.
- You can win resources and influence.
- You need to communicate technical information to do your job.

# Creating a talk

There are seven steps to creating a successful talk.

1. Have something to say!
2. Identify your audience.
3. Determine the main message.  
*What is the one thing you most want them to remember?*
4. Decide on the broad structure.  
*Find a story to tell.*
5. Prepare visual aids.
6. Practice.  
*Make sure that you will not go over time.*
7. Check the venue.

# Have something to say

The first rule of style is to have something to say.

The second rule of style is to control yourself when, by chance, you have two things to say; say the first one, then the other, not both at the same time.

**George Pólya**

# Audience & main message

**Whom** are you talking to?

- Fellow academics?
  - Academic colleagues in a different field?
  - ‘The man in the street’?
  - A prospective partner or employer?
- How much **technical knowledge** can you assume?
  - What examples will they be familiar with?
  - What will capture their interest?

**Why** are you talking to them?

What is **the one thing** you most want them to remember?

# Structure: beginning

## *Title*

A good title is informative (not too general) and supplies some context.

Not always a good idea to state the main result in the title.

Use humour with great caution.

## *Opening the talk*

Prepare a first sentence.

The rule is: **start general**.

Establish the context and importance of your message.

## *'Contents' or 'outline' slide*

Not obligatory.

Need not be at the beginning.

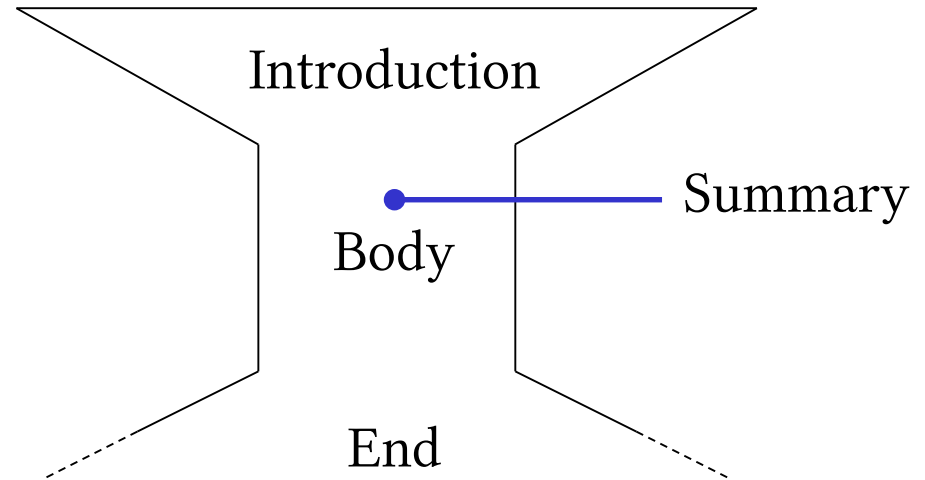
# Structure: shape

## *Shape of talk*

Start general

Focus for the contents

End by opening out again



## *Tell a story*

- How did you come to this research/conclusion?
- What has changed as a result?
- View your slides as a 'storyboard'



# Structure: examples

*Examples are a wonderful tool*

- Motivating examples.
- Illustrating examples.

Always consider using an example in lieu of a definition.

Keep your examples *as simple as possible*.

# Structure: conclusion

## *At the end of the talk*

The title of the final slide need not be 'conclusion'.

Repeat the main message, concisely.

Prepare a crisp final sentence.

## *Remember the Golden Rule*

**Never, ever, over-run your time.**

# Visual aids

You don't HAVE to use slides, but most people expect them.

Use whatever technology gets the job done:

- PowerPoint / TeX plugin.
- LaTeX / Beamer.
- Flip charts & pen.
- Overheads made from clear plastic & permanent marker.

This looks elegant.

Your slides have **impact**.

They don't have much **content**.

# 'Off-the-wall' talks

- One line per slide.
- One picture per slide.
- Amusing wordplay.

*Is your aim is to impress/entertain or to communicate?*

# Ground rules for good slides

## *Minimality is best*

- Everything on the slide should be clean, simple, and **necessary**.
- Use an uncluttered background.
- Use colour sparingly, to convey content.





# Bad slides



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# BAD SLIDES



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## Sorted version of the objective vector

### Initial idea

Maximize the objective vector under using the leximin preorder  $\Leftrightarrow$  maximize the successive components of the **ordered** objective vector.

$\leadsto$  We have to introduce the sorted version of the objective vector:

- **A vector of variables**  $(y_1, \dots, y_n)$ .
- **A constraint**  $\text{Sort}(\vec{u}, \vec{y})$  ([Mehlhorn and Thiel, 2000] (filtering in time  $O(n \log(n))$ )).



### Mehlhorn, K. and Thiel, S. (2000).

Faster algorithms for bound-consistency of the sortedness and the alldifferent constraint.

In Dechter, R., editor, *Proc. of CP'00*, pages 306–319, Singapore.

# Logical Consequences

- An interpretation  $x$  is called a **model** of  $\gamma$  if  $\gamma$  evaluates to 1
- The set of all models of  $\gamma$  is denoted by  $N_P(\gamma) \subseteq N_P$
- If  $N_P(\gamma) \neq \emptyset$  then  $\gamma$  is called **satisfiable**

## Entailment Relation

- $\delta$  is a **logical consequence** of  $\gamma \Leftrightarrow N_P(\gamma) \subseteq N_P(\delta)$
- we write  $\gamma \models \delta$
  
- $\gamma$  and  $\delta$  are **logical equivalent** ( $\gamma \equiv \delta$ )  $\Leftrightarrow N_P(\gamma) = N_P(\delta)$

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- Use an uncluttered background.
- Use colour sparingly, to convey content.
- Bulleted lists have their place, but constant use is boring.
  - Deeply nested bullet points
    - are very irritating
      - ✓ and impossible to parse.

Some advocate dark backgrounds with light text.

Sometimes you need to avoid the very lowest part of the screen.



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# Ground rules for good slides

## *Font size*

Do not be tempted to go small:

- 24 point font, reasonable
- 20 point font, manageable
- 18 point font, absolute minimum
- 16 point font, too small
- 14 point font, way too small
- 12 point font, almost invisible

## *Typeface*

Stick to the same typeface throughout.

Can use *italics* for emphasis, and maybe a different font for code/math.

Some advocate **sans serif fonts** for readability.

(This presentation is 22 point Linux Libertine.)

# Ground rules for good slides

## *Density*

Each slide should have one ‘topic’.

- One ‘frame’ of the story, like a graphic novel.
- A short title enforces this.

Put only 4-5 things on each slide.

- All items must fit the slide’s focus and be necessary.
- Use more, sparser, slides rather than fewer denser slides.
- Use a series of almost-duplicate slides to add detail.

## *Timing*

~~Very roughly 1 slide per 2-3 minutes.~~

# What to include?

- **Words** are for **saying**.
- What is said out loud need not go on the slides.
- Don't use the slides as your aide-memoire.

## Discursive (bad)

Before giving our main result, we need the following definition, given here mainly to fix notation.

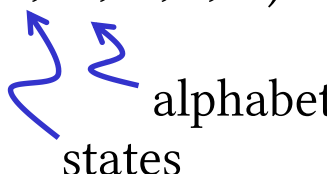
Definition: A finite-state machine (or 'automaton') is given by a 5-tuple

$$M = (S, \Sigma, \delta, i, F)$$

where  $S$  is a finite set of *states*,  $\Sigma$  is the *alphabet*, blah, blah, blah...

## Outline (good)

FSM definition:

$$M = (S, \Sigma, \delta, i, F)$$


alphabet  
states

# What to include?

## *Use*

- Pictures & diagrams.
- Simple and memorable examples.
- Simplified formulae.
- Colour, but only to convey meaning or emphasis.

## *Avoid*

- Multiple sentences of text.
- Tables of numbers (show a graph instead).
- Structure which requires you to rewind the slides.

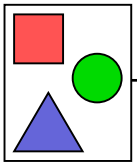
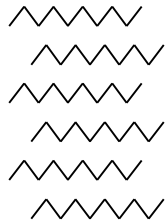
**Use all the advantages of the visual medium.**

# Example – set the scene

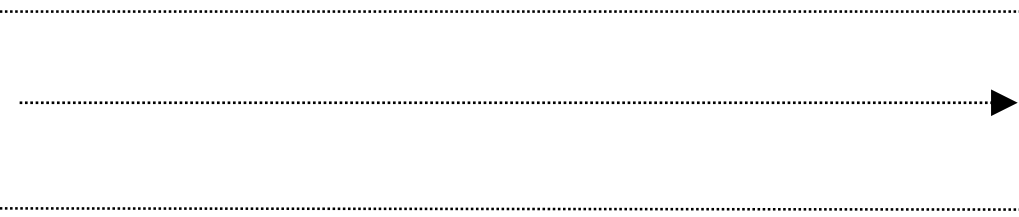
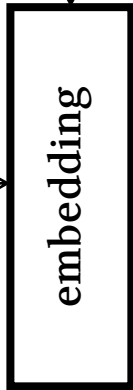
Alice

Bob

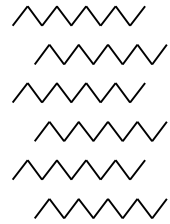
message



“cover object”



*insecure channel*

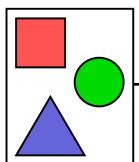
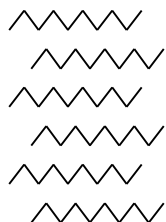


# Example – set the scene

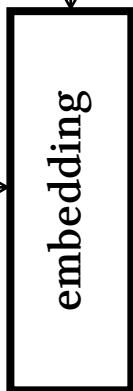
Alice

Bob

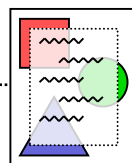
message



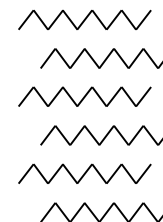
“cover object”



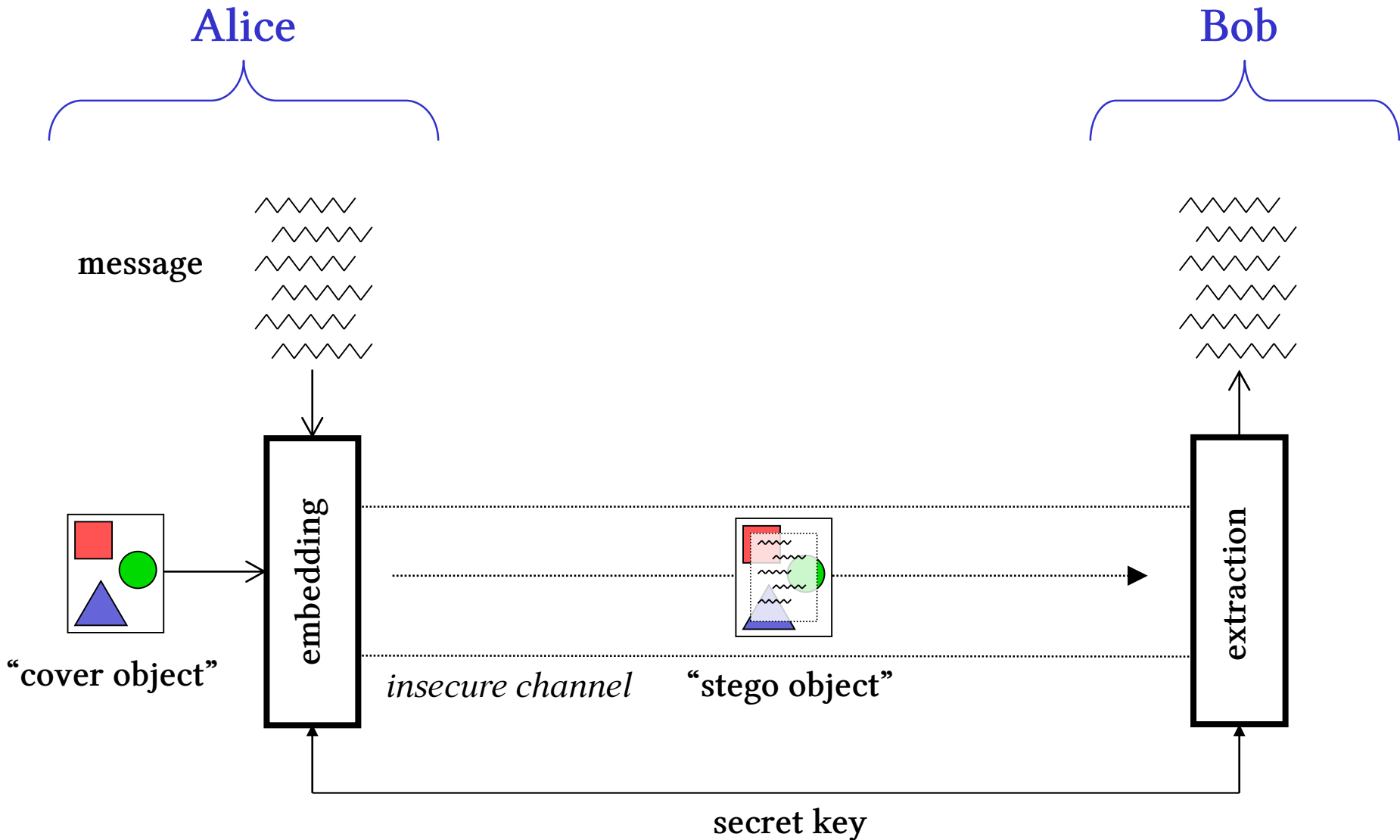
*insecure channel*



“stego object”



secret key

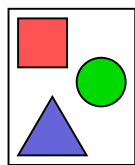
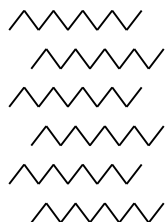


# Example – set the scene

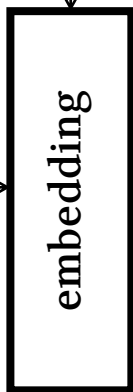
Alice

Bob

message

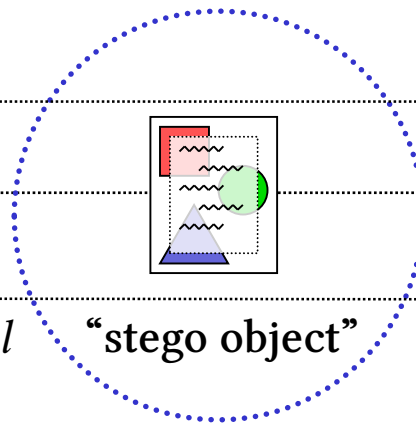


“cover object”

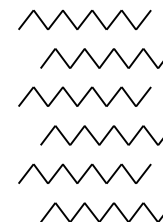


*insecure channel*

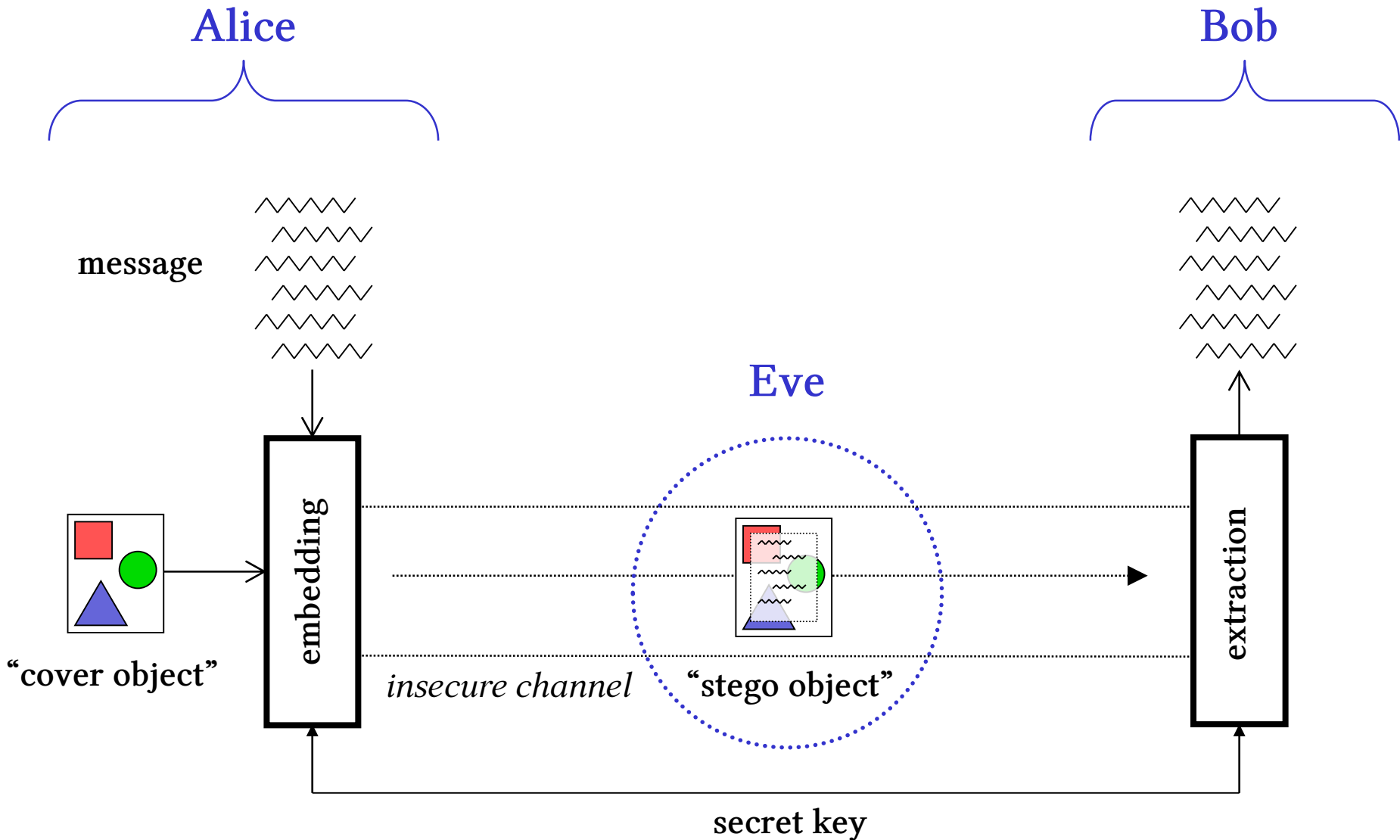
Eve



“stego object”



secret key

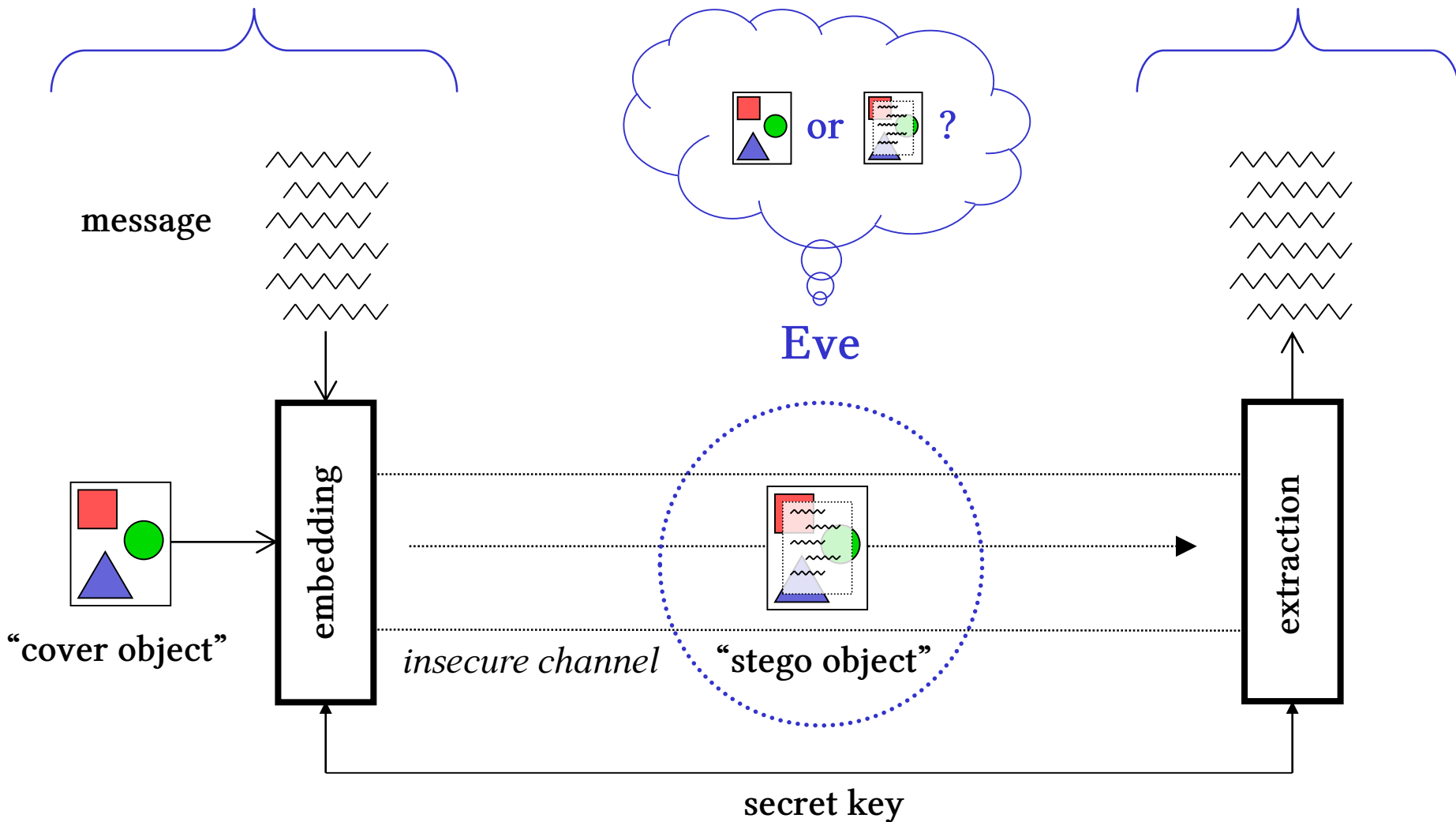




# Example – set the scene

Alice

Bob



# Example – STE

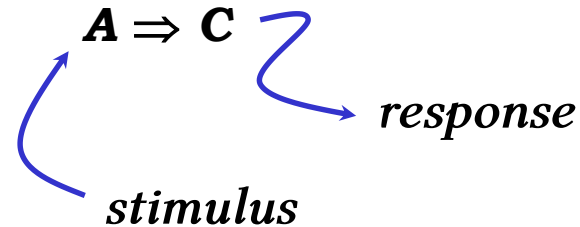
- Syntax of formulae

$f :=$   **$n$  is 0**  
|  **$n$  is 1**  
|  **$f_1 \wedge f_2$**   
|  **$\mathbf{N} f$**   
|  **$\mathbf{E} \rightarrow f$**

- Abbreviation

**$n$  is  $\mathbf{E}$**   
=  
 **$\mathbf{E} \rightarrow (n \text{ is } 1) \wedge \neg \mathbf{E} \rightarrow (n \text{ is } 0)$**

- Assertions



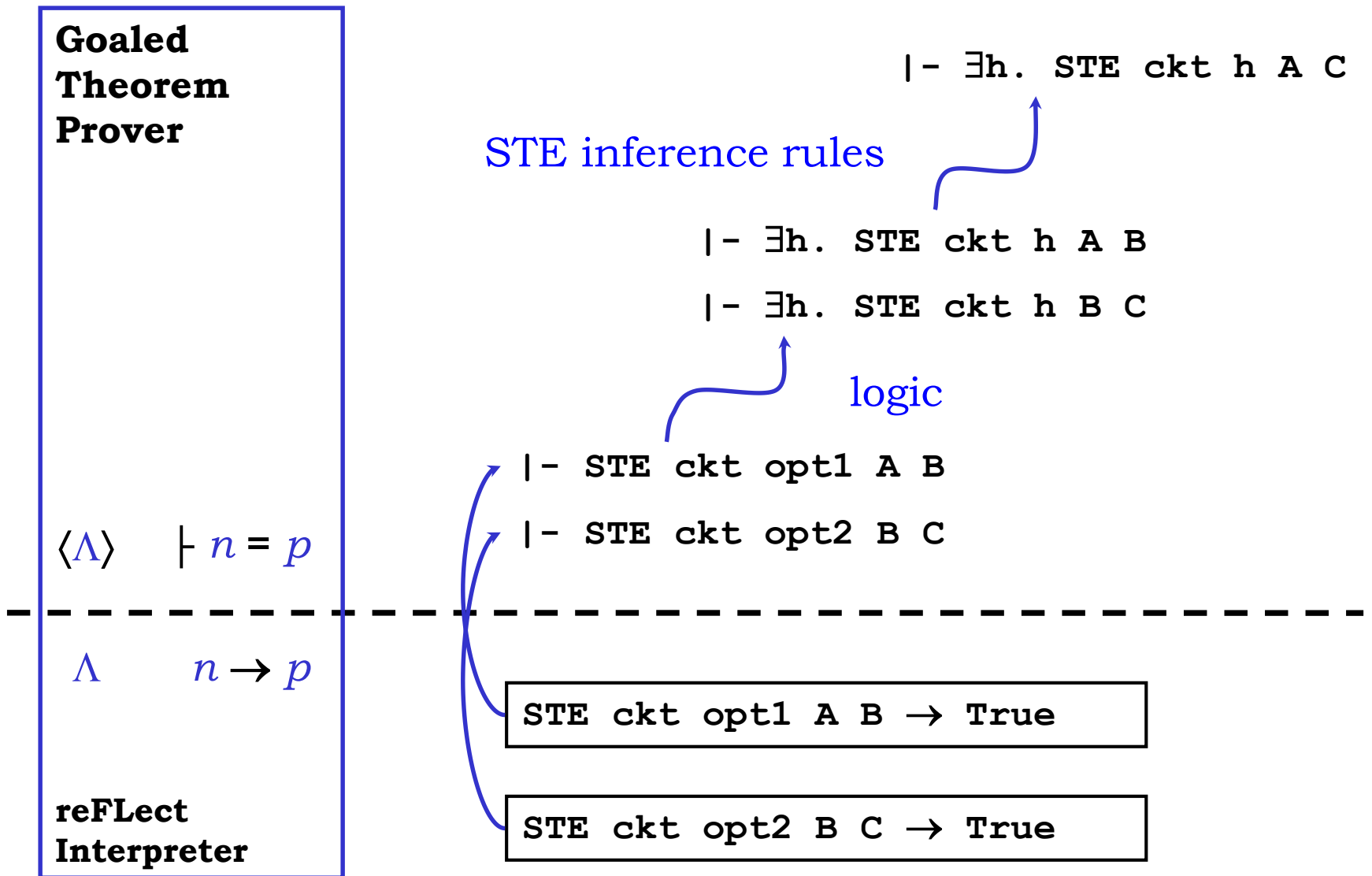
- STE model checking

**$P := \text{STE M A C}$**

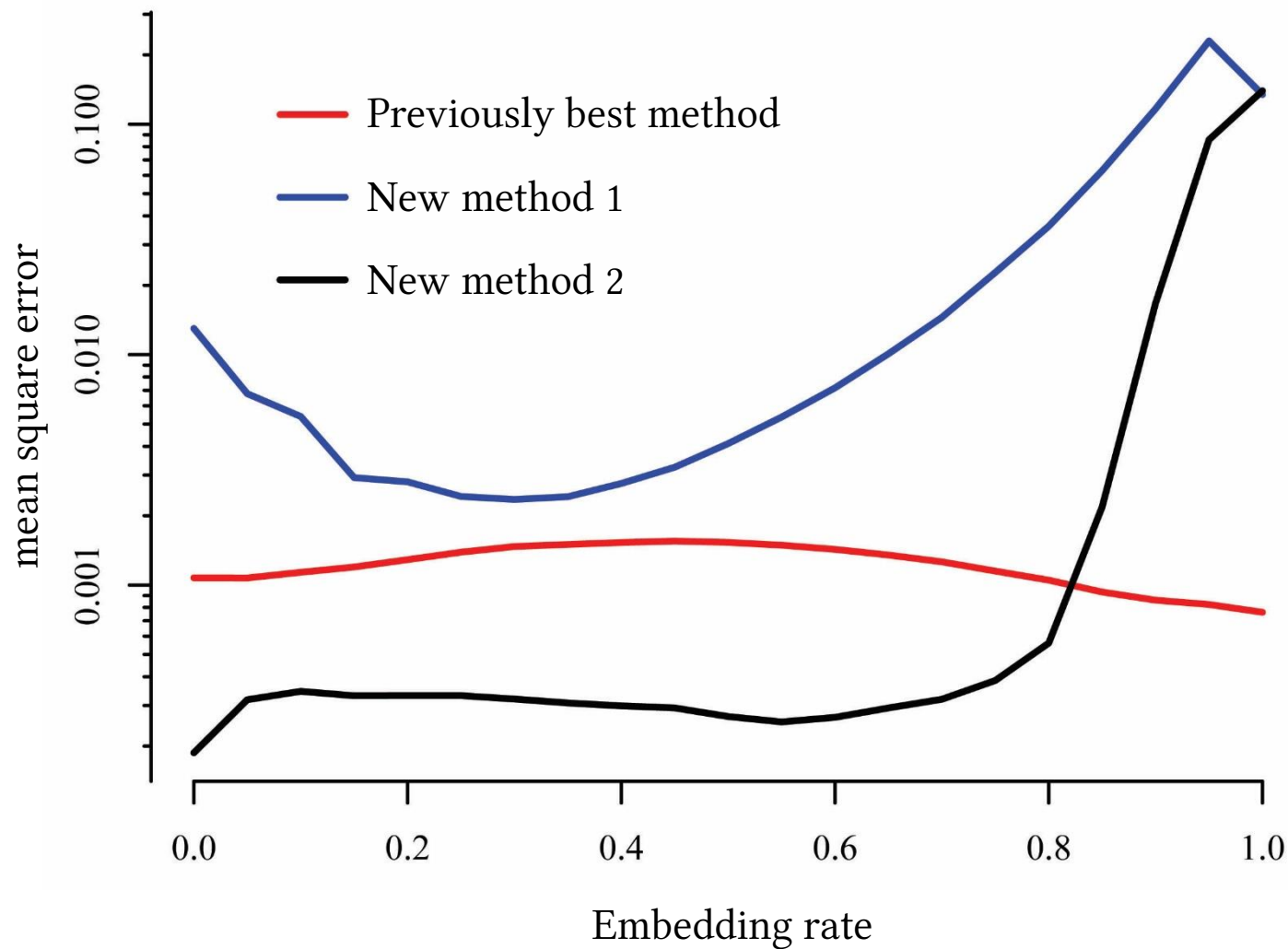
A blue arrow points from the text  $P := \text{STE M A C}$  down to the formal semantics expression.

$\phi \models P \quad \text{iff} \quad \phi \models_M A \Rightarrow C$

# Example – a complicated process



# Example – experimental results



# More bad slides

## *The Striptease*

- Revealing your points
- one at a time
- is patronizing and distracting.

But adding to or decorating previous slides can be a useful technique.

## *Transitions*

- Animated transitions are irritating and juvenile.
- Ditto sound effects.

Be aware of what cannot be saved in a pdf (sounds, movement, transparent objects).

# Practice

Practice is important:

- Ensures that you have thought everything through properly.
- Gives you confidence.
- Allows you to time the talk.
  - *The only way to know how long your talk takes is to say it out loud.*

Short talks are much harder than long ones.

Talks without slides/notes are harder than those with.

Leave plenty of time for practice.

# Short talks

Undergraduate group project seminars: **7 minutes**

Short talks are difficult.

*Too long an introduction/conclusion eats up all the time*

- Be ruthless about the contents.
- Don't waste time on the first slide.
- No outline.

*No time to present a full story*

- 3-5 slides of content.
- What is the one thing you want your audience to remember?

*Needs more practice*

# Talks without slides



# Check venue

## *Arrive early*

- Test the technology.
- Check microphone levels if possible.
- Work out where to stand.
- Think about lighting.
- Get comfortable.

## *What to bring?*

- Timer.
- Laser pointer (or stick).

If necessary, prepare laptop in advance.

Talk to the chairperson before the session.

# Giving the talk

Thank the person who invited or introduced you.

Memorize your first and last sentence.

*- use notes for entire talk?*

## *Delivery*

- Stand up straight.
- Move around (a bit).
- Make eye contact, with more than one person.
- Speak **slowly** and articulate clearly.

## *Techniques*

Pause **before** and/or lengthen vowels for emphasis.

Lead into next slide.





# Questions

There is usually a protocol for questions:

- You or the chairperson invites questions.
  - You or the chairperson selects question to answer.
- 
- Repeat the question (especially if using a microphone).
  - Be brief.
  - Be honest.
    - *‘I don’t know’*
    - *‘I haven’t thought about that’*
    - *‘I’ll have to check and get back to you’*
- ... are perfectly good answers.

# Review

The process for creating this talk:

1. Have something to say!
2. Identify your audience.  *Students with CS knowledge but limited experience of giving talks.*
3. Determine the main message.  *Must practice the talk.*
4. Decide on the broad structure.  *Story: process for creating a talk.*
5. Prepare visual aids.  *How many slides were actually needed?*
6. Practice.
7. Check the venue.

# Final tips

- Don't be over- or under-confident.
- Do the correct thing, not what others appear to do.
- Always look for improvements.
- Beware of cultural sensitivities.
  
- Practice.

*Remember the Golden Rule*

Never, ever, over-run your time.