Human Error &
How to Give a Talk

Eliot Winer
Human Error

Some slides from Sarah Wiseman, Sandy Gould | University College London
Proportion of system failures based on human error

- 90% Air traffic control
- 85% Cars
- 70% US nuclear power plants
- 65% Jet cargo transport
- 31% Petrochemical plants
- 19% Petroleum industry

Instead of on:
- Bad design
- Maintenance issues
- Management issues
One jumbo jet crash every day
Error: intention is key

Budget Report

Send message

To: boss@company.com
Cc: 
Bcc: 

Subject: Budget Report

From: Stephen Gilbert <g...> Signature: None

ForgetMeNot Attachment Reminder

You mentioned 'attach' in your email message, but no attachment is present.

Cancel Add attachment... Send anyway
Probabilistic Risk Assessment

\[ R = P_E \times \sum_{i} (P_i \mid E \times C_i) \]

- \( P(E) \): Probability of an Event
- \( P_i \): Probability of consequences given the event
- \( C_i \): Cost of the consequence
- \( P(\text{error given opportunity}) \times P(\text{no correction in time given error}) \)

Related to Failure Modes and Effects Analysis (FMEA)
Challenges with probabilistic approach

Getting the probabilities for human perceiving, responding, deciding, etc.

Estimating probabilities of rare or unexpected events

It assumes many events are independent, but they’re not.

Resilience Engineering
Types of Errors
Human Error

Slips
- Right plan.
- Wrong execution.

Mistakes
- Wrong plan.
- Right execution.

I should take my umbrella tomorrow.

The grocery is right next to the gas station. I’ll do shopping first.
Post-Completion Errors

Forgetting the final subgoal of a task because primary goal is reached.


Design Implications

Remove possibility for post-completion errors.
If not feasible…

Provide very strong cues:
  Explicit
  Timely
  Visually salient
Design Implications 2: Resilience

Aid recovery
Make actions reversible
Make results of each action noticeable within 150 ms.

Bonnie John on Cancel
http://www.youtube.com/watch?v=gxiA4jTS9P8&t=0m26s
Intention vs. Evaluation

See handout
"I intended to pick up milk on the way home but I drove straight home."

Automatic activation of a well-learned routine that overrides the current intended activity.
**Omission Slip**

- **Intention**
- **Execution**
- **Action Specification**
- **Goal**
- **Evaluation**
- **Interpretation**
- **Perception**

Leaving out a step. Often due to interruptions.

"I forgot to add flour to the pancakes. Very eggy."

**Physical System**

System Activities
“By the time I got downstairs, I forgot what I had come down for.”
"After tapping my phone to cancel an alarm, I nearly clicked my desktop to cancel it there also."

Activation of similar but incorrect schemas
“I was texting in English but then a friend spoke to me in German and I continued texting in German.”

Action components are exchanged between two or more concurrent actions.
“I was commenting out code but used % instead of //. Probably because of using LaTeX earlier.”

Action components are exchanged between two or more sequential actions.
Name that error

Pizza complaint

http://youtu.be/pkAeNcNJvjA
Name that error

Dominic Furniss
University College London

Man-Machine Nightmares: Chaos buttons, human error and healthcare

Morning 1
http://www.youtube.com/watch?v=ifjDWKMNIllk&t=1m54s

Morning 2
http://www.youtube.com/watch?v=ifjDWKMNIllk&t=3m12s
Further discussion of errors?

Before we switch topics?
How to Give a Talk
You’ll be giving a talk…

Research symposium

Group presentation

“What did you do this summer?”
Doesn’t talking come naturally?

No.

It can be scary.

It can be boring, even soporific.
Doesn’t talking come naturally?

No.

It can be scary.

It can be boring, even soporific.
What are you trying to tell to your audience?

You’re a passionate analytical authority.

Oh, and by the way…

Your message.
Messages

Please have 1-3 messages to convey. Each could be said in 30 seconds.

Our method of usability testing using bluetooth is better than existing methods.

Facebook Participation Increases Isolation Within Rural Communities.
Non-Useful Messages

I’m running out of time.

I’m sorry…

I did this, and this, and this, and that.
Typical Talk Outline

What’s the problem? (Hook!)
What have you done about it? (big picture)
How are you different than other people?
What did you do really? (details)
How did you solve the problem?
How did you evaluate your solution?
Don’t delay the message

Worse
First, there was the mouse.
Then other interfaces…
I’m working on the iPhone…
My contribution is…

Better
A problem to be solved is…
My contribution is…
Why does this matter?
First there was the mouse…
An effective talk must:

Communicate arguments and evidence
Persuade your audience they’re true
Be interesting and entertaining

What’s that mean?

From Paul Edwards’ How to Give an Academic Talk
# Tips

From Paul Edwards’ *How to Give an Academic Talk*

(Valid even though your talk isn't "academic")

<table>
<thead>
<tr>
<th>Usually Better</th>
<th>Usually Worse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talk</td>
<td>Read</td>
</tr>
<tr>
<td>Stand</td>
<td>Sit</td>
</tr>
<tr>
<td>Move</td>
<td>Stand still</td>
</tr>
<tr>
<td>Vary the pitch of your voice</td>
<td>Speak in a monotone</td>
</tr>
<tr>
<td>Speak loudly, facing the audience</td>
<td>Mumble, facing downward</td>
</tr>
<tr>
<td>Make eye contact</td>
<td>Stare at your laptop</td>
</tr>
<tr>
<td>Focus on main points</td>
<td>Get lost in details</td>
</tr>
<tr>
<td>Use outlines, images, and charts</td>
<td>Have no visual aids</td>
</tr>
<tr>
<td>Finish within your time limit</td>
<td>Run overtime</td>
</tr>
<tr>
<td>Rehearse</td>
<td>Don’t practice because you’re too busy working on the slides</td>
</tr>
<tr>
<td>Summarize your main points at the beginning and end</td>
<td>Start without an overview; trail off without a conclusion</td>
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<tr>
<td>Notice your audience and respond to its needs</td>
<td>Ignore audience behavior</td>
</tr>
<tr>
<td>Emulate excellent speakers</td>
<td>Emulate your advisor, even if s/he gives lousy talks</td>
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</tbody>
</table>
Keep control of talk

Rehearse, including jokes & tech

Bring backup notes

No need to apologize
Learn from Great Speakers

TED Talks (ted.com)
Ignite talks (igniteTalks.io)
iTunes U

And from bad ones
Slide Advice

PowerPoint
Keynote
Prezi
Google Docs
Slide Rocket
Impress
...

David Byrne
Less is more
Conscious decision

Right now,
Should they look at me or the screen?

Do my words need any visual aid?
Last tips

Use a remote control.

Avoid giving a demo live.

Don’t look at the screen (your back’s to the audience).

Don’t read your slides.

Do look at someone.
Sum Up

Passion & Style, not just content

Tight messages

Tell a story – Signposting!
Improv Activity

Need 2 volunteers
Improv Activity

2 volunteers

Remaining group decides topic

Volunteers have 5 minutes to prepare a 3-minute talk where both speak

We all comment / critique

Eye contact? Body? Hook? Signposting?