DOET CHAPTER 5
HUMAN ERROR? NO, BAD DESIGN

By Don Norman

Presented By Amelia Mitchell and Izzie Corley

Why Are There Errors?

- **Physical and Mental Limitations**

- Designers take in to account physical, but misunderstand mental limitations

- **Interruptions, Multitasking, Stress (time)**

- **Root Cause Analysis**

- Usually stops when a person is found to have acted unexpectedly

- Humans Nature vs Machines

- Why, why, why, why, why?

Types of errors: Mistakes and Slips

Mistakes

Acting upon incorrect intent

- Rule Based.
Applying the wrong rule

- Knowledge Based.
Incorrectly evaluating novel situation

- Memory mistakes.
Forgetting goals/plans
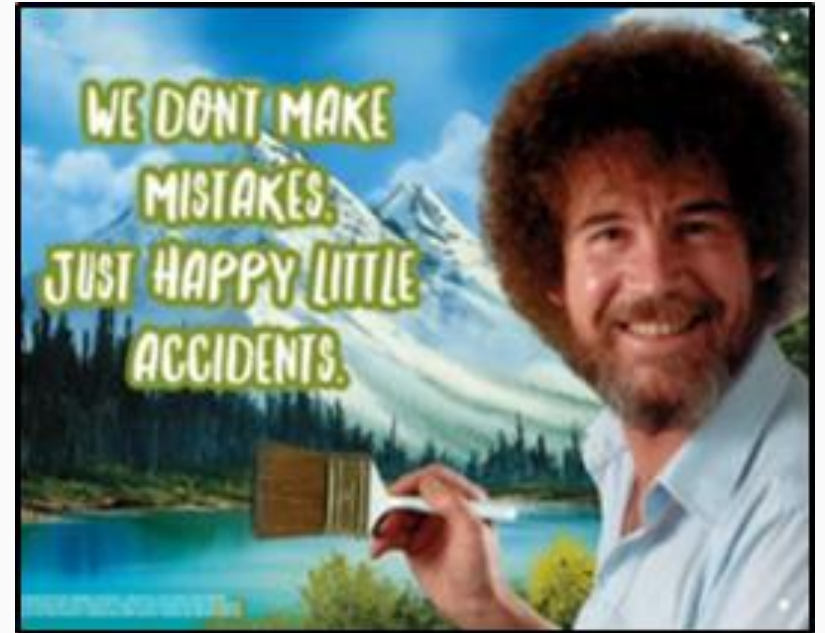
Slips

Correct intent, incorrect action.

Two main classifications:

- Action-based
- Memory-lapse

Some days I amaze myself. Other days I put my keys in the fridge.

Classification of Slips

- Capture
  - Instead of the desired activity a more frequently preformed activity is done instead

- Description-similarity
  - Act upon a similar item to the target

- Memory Lapse
  - Caused by memory failures

- Mode Error
 - Different states that use the same controls

Social Pressures

- **Time & economic constraints make people avoid reporting problems**
  - **Airline crash examples**
- **Errors covered up to avoid making employee or institution look bad**
  - **Leads to root causes not being found, patterns not identified**

Reporting Error Best Practices

- Get to the root cause by asking "why"!

- Praising reporters and punishing non-reporters.

- Anonymized reports.
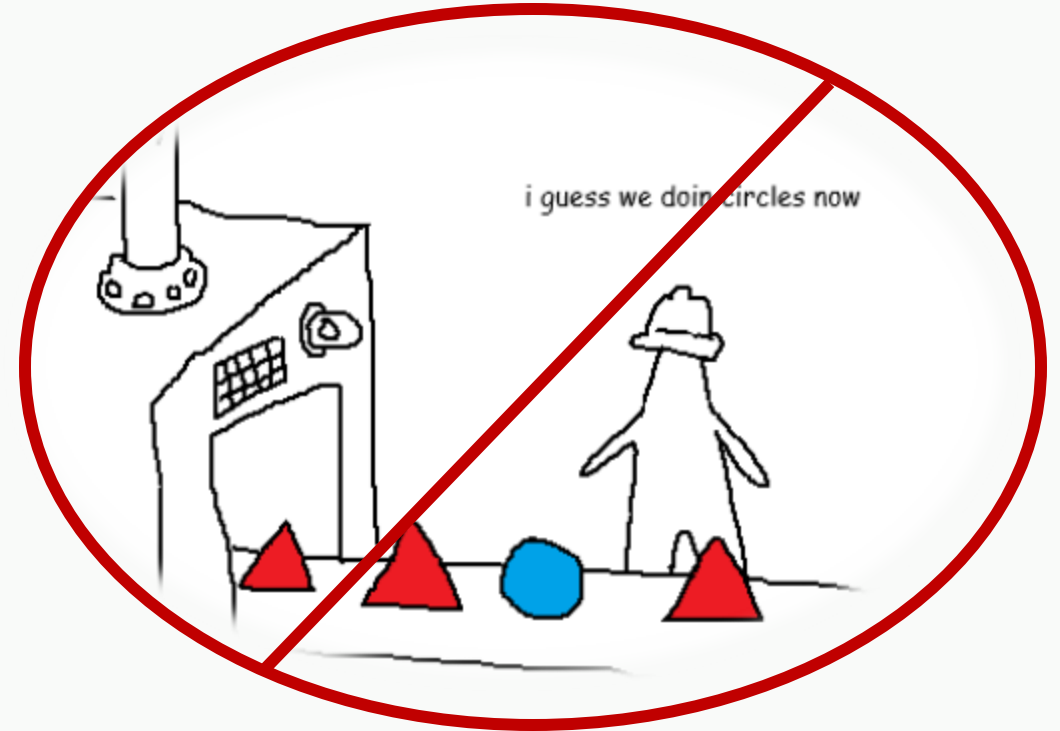
Detecting Error

- Social Pressures

- Action-slips vs Mistakes

  - Memory-lapse

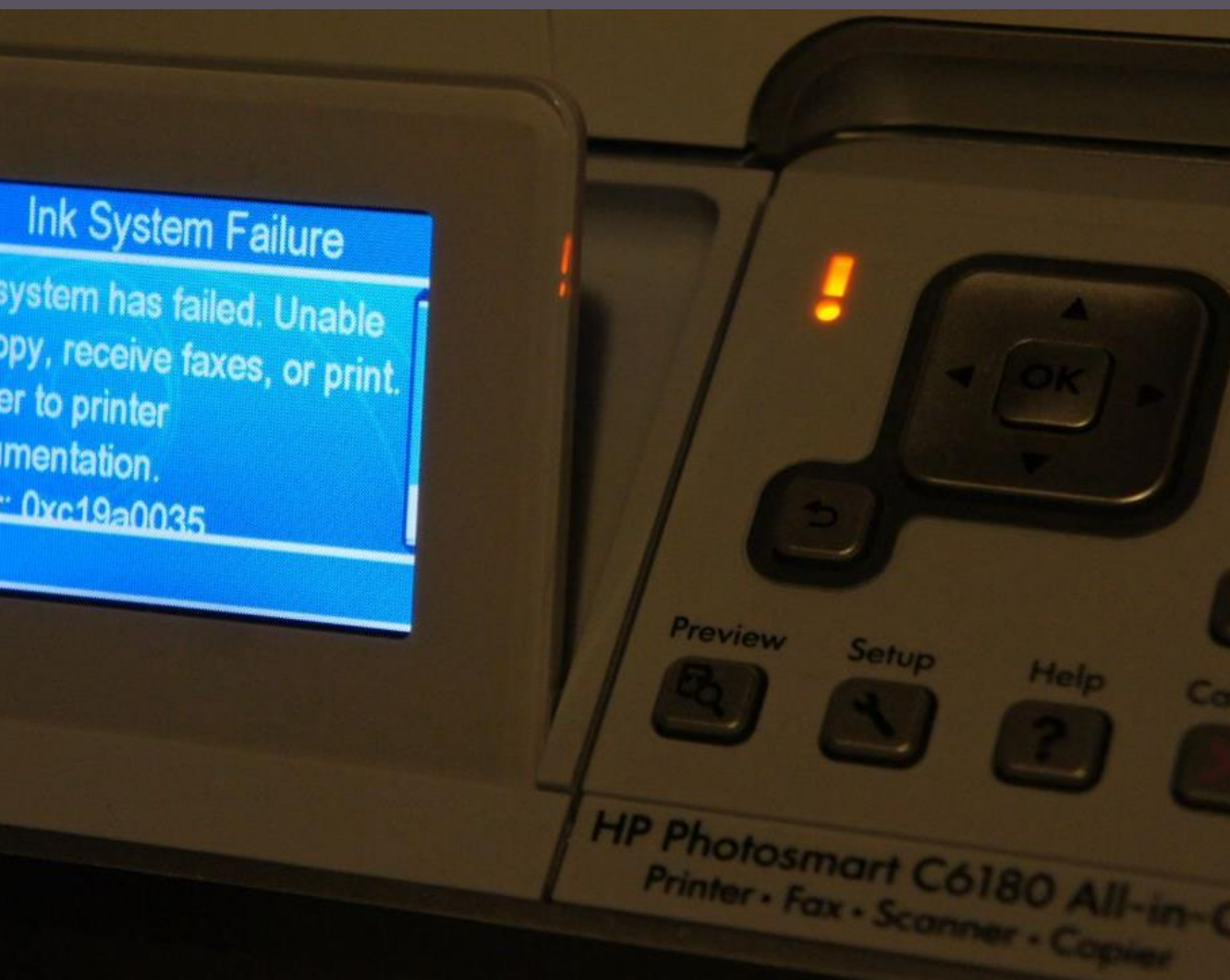 - Need Feedback!

- Explaining Away Mistakes

HINDSIGHT MIGHT BE OBVIOUS, BUT FORESIGHT IS EXTREMELY DIFFICULT.

Designing for Error

- Understand the true cause

- Do sensibility checks

- Reversable actions

- Easier to discover errors

- The action is not the error work to guide the person to the correct solution instead

- Add constraints

Automation Paradox

Machines often stop giving us feedback as soon as problems arise.

- **Don't treat machines and people as separate entities going about separate tasks, but as collaborators**

Design Principles for Dealing with Error

Bridge the gulfs of evaluation and execution.

- Don't force people to keep lots of knowledge in the head

- Make use of constraints, mappings, and forcing functions

- Ensure relevant info is continuously available

- Avoid interruptions

Discussion Questions

1. Why do people stop investigating the cause of an error when it is linked to human behavior? Why do people blame each other instead of the design? Is it because of societal and/or cultural implications?

2. How will automation affect the detection or finding of errors in the next 2, 5, or 10 years? Will they be harder to find as people give away control?

3. How can UI design help people avoid, detect and reverse errors?

4. What specific type of error do you make the most?

14

THANK YOU!