Cognitive illusions

Contents

- Optical illusions
- Some things we don’t see
- Anxiety and self-deception
- Perversity and blame

PS: Recent research into brain function
Optical illusions

Illusions and self-deception

- "The eye sees what it sees even when the mind knows what it knows"
  - some parts of our minds are unable to use information available to us in other parts of our minds
- We have the ability to deceive ourselves
  - things we don’t seem to see
  - tradeoff between anxiety and awareness
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Quality

- Quality versus deadlines
  - what if deadlines were expressed in the same way quality often is?
    - Yes, we’re really committed to deadlines. We need to finish early - we mustn’t be late. Exactly when? Well, I’ll know it when the date arrives, but you can’t tie it down like that. Oh yes, we have a plan, but we don’t actually put dates on it - but it’s very important to achieve timely delivery.

  - Deception: I can’t see it, so it isn’t important
    - Need to make quality visible (quantified attributes)
    - Need to evaluate projects (and project managers) on quality achieved, not just on deadlines met
Lack of detail in test plans

- Content of test plans
  - 6 weeks “testing”
  - 2 weeks? “testing”
    - Shorter one looks exactly the same inside
      - therefore it must not be any different in nature
      - 2 weeks is better for my schedule
    - Can’t see any difference, therefore there is none
      - Solution: make detailed test activities visible
      - Not shorten a piece of string, cut off arm or leg!

Plans

- Early Inspection: design needs re-writing
- Now think Extra work
- Really had Problems
- Huge problems coming later
- Very late
- Delay
- End date
What does testing produce?

- **Development versus testing**
  - can tell when development is finished
    - it produces something concrete and demonstrable
    - positive effect
  - testing doesn’t change the product at all
    - neutral effect: still the same product
    - negative effects
      - adds extra work when we’re pushed
      - didn’t want to know about bugs anyway
  - Why testing is a “hard sell”

At first glance ..

Here’s a document: review this (or Inspect it)
Reviews: time and size determine rate

2 hrs?  Time

50 pages per hour

100 pages?  Size

Checking Rate

Review “Thoroughness”? 

ordinary “review” - finds some faults, one major, fix them, consider the document now corrected and OK
Inspection: time and rate determine size

2 hrs?

Optimum: 1 page* per hour

Time

Checking Rate

Size

2 pages (at optimum rate)

* 1 page = 300 important words

Inspection Thoroughness

Inspection can find deep-seated faults:
• all of that type can be corrected
• but needs optimum checking rate
Why do we deceive ourselves?

- **Anxiety is caused by various factors**
  - fear, worry, insecurity, uncertainty
- **“out of sight, out of mind”**
  - our attention can be directed to some things, and can ignore others
  - what we ignore is a “blind spot”
    - can occur for individuals, groups, society
- Social pressure
  - the world is flat, the O-rings are safe
What causes anxiety?

- **Developers**
  - Have I done a good job? (want to show off)
  - Will it work (properly)/(forefront of technology)

- **Project managers**
  - Will we meet our deadlines? (promised resources)

**How do good testers affect these concerns?**
- Find lots of bugs, makes everything worse!
  - worse for developers: find bugs, have to fix not move on
  - worse for manager: delay project, need more resources

Symptoms: developers

- **What do you mean, it doesn't work?**
  - It works on my machine
  - It worked yesterday
  - Nelson’s telescope “I see no bugs”
  - Defensiveness: that’s not a bug, it’s a feature
  - People who find bugs are not nice
  - Don’t find any [more], it will slow us down
  - Why don’t you find something important instead?
  - You mis-used the system - a real user would never do that
The “last bug”

What causes anxiety for testers?

- Will we find all the bugs?
- How much testing is enough?
- Have we tested everything?
- Not enough time to do a proper job
- Why should I have to fight the developers
  - I just report their own bugs, why should they hate me?
- Will I get any recognition
  - How can anyone tell I’ve done a good job?
  - Guilt about bugs not found
  - What if bugs I found weren’t fixed - is it my fault?
Symptoms: testers

- I want to be your friend
  - feel guilty about finding bugs in my friend’s work
    • turn a “blind eye” to bugs
- It’s never enough
  - want to keep testing forever / I’m not done yet
- It’s all my fault
  - feel guilty about any bugs missed in testing
    • we should continually improve, but can’t get them all
    • remember, you didn’t put them in!

What causes anxiety for test managers?

- Test manager
  - Will we finish testing on time?
  - Will we find the worst of the bugs?
  - Will it be noticed if I do a good job?
  - How to control the uncontrollable
- No credit where credit is due
  - if system is good, developers are praised
  - if system is bad, testers are blamed
Symptoms: test managers

- **Conflict of interest**
  - want to encourage my team to find faults
    - do a good job if we find lots
  - my manager doesn’t want us to delay the project
    - do a good job if we don’t find many
  - paradox
    - if you do your job properly, you’re not a team player
    - if you’re not a team player, you’re not doing your job properly
  - don’t want to challenge developers (too much)

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Complexity rules OK

- Simplicity seen as less good
  - “it’s only common sense”
- Complexity seen as good
  - I don’t understand this, so it must be really good
  - Afraid to challenge (everyone else understands)
  - $1b pen

Now and then

- This time
  - time pressure
  - something innovative
  - good team, some new
  - done something similar
  - very important
  - it’s different this time
  - very optimistic
    - we’re sure it will be a success
- Last time
  - time pressure
  - something innovative
  - good team, some new
  - done something similar
  - very important
  - it’s different this time
  - very optimistic
    - but was not a success

Insanity: expecting a different output with the same inputs
Failure to study history

- What happened last time?
  - probably not too wonderful - creates anxiety

- Solution: divert attention
  - but it will be different this (next) time
  - we don’t have time to spend looking back, we have a new project to get on with

- Hope against all the evidence to the contrary
  - remember what we hoped, not what really happened
  - why Post-Project Reviews are seldom done?

Measurement

- Over 80% of measurement programmes fail
- Most organisations don’t measure much
  - real facts would destroy our comfortable illusions
- Most organisations don’t benchmark
  - some don’t even count defects
  - “since one could be catastrophic, why count any?”
- You can’t control what you can’t measure
  - if you don’t measure, no one can blame you?
Illusion: Blame helps?

- **Human nature: it’s not my fault**
  - (Bart Simpson)

- **Perceived desired effect: improvement**
  - Actual effect: guilt, hide the truth, no improvement

- **Misguided attempt to get people to accept responsibility**
  - Responsibility (like an insult) must be taken, it cannot be given
  - Responsibility thrives if it is OK to make a mistake

Opposite of blame?

- **Learning**
  - Making a mistake isn’t so bad
  - Making the same one twice is not good

- **Forgiving**
  - not necessarily forget (otherwise no learning)
  - it’s OK, wipe the slate clean, governor’s pardon
  - leave it behind, doesn’t continually affect now
  - not the easy option (blame is easier!)
**Conclusion**

- **We have the ability to deceive ourselves**
  - recognise when we do it
  - recognise when others do it
- **Understand the reasons for it**
  - anxiety -> attention diverted / don’t see
- **What to do about it?**
  - observe and learn (self and others)
  - face (unpleasant) facts - it may help you!

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**And finally ...**

Some recent research into brain function

- testers
- developers
- managers
References