Getting Serious
About Emotions in Testing

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Special acknowledgements to Cem Kaner, James Bach, and Jerry Weinberg

I'm Michael Bolton

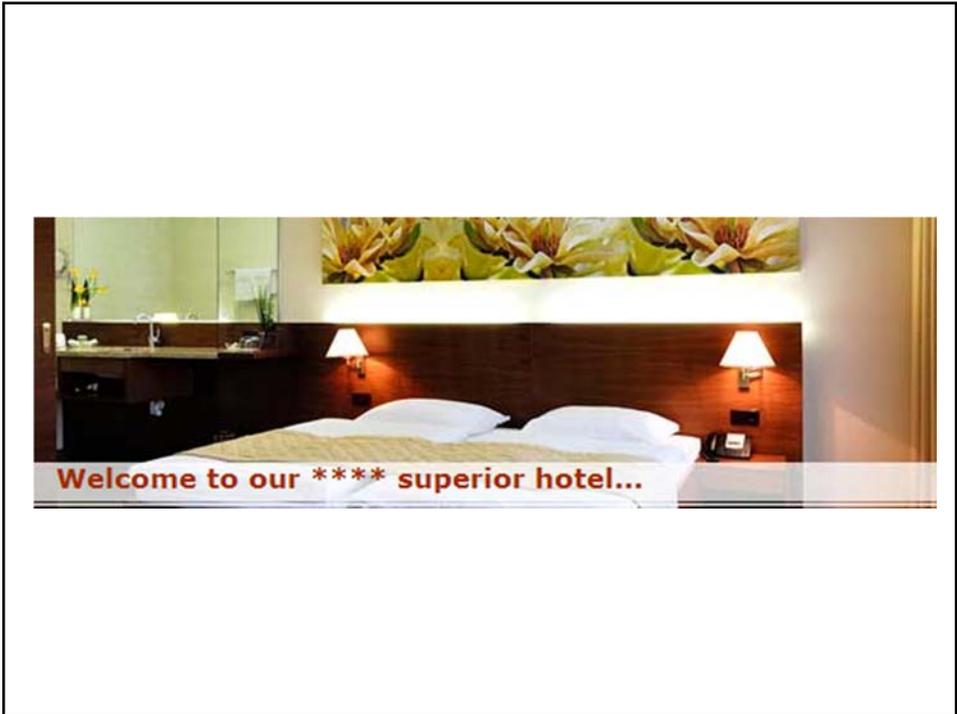**Not the singer.**   **Not the guy
in Office Space.**   **No relation.**

Marital Bliss 101

I love my wife
and thanks to AutoCorrect,
I know she Kievs me too.

iTunes

The iPhone "Michael's iPhone" could not be synced because the sync session failed to start.

OK

Welcome to our **** superior hotel...

Flight Itinerary

Flight	From	To	Stops	Aircraft	Fare Type
AC597	Toronto, Pearson Int'l (YYZ) Sat 16-Oct 2010 13:10 - Terminal 1	Las Vegas, Mccarran Int'l (LAS) Sat 16-Oct 2010 14:54 - Terminal 2	1	319	Tango Plus W
	ⓘ AC597: This flight includes a stop in null.				
AC5233*	Las Vegas, Mccarran Int'l (LAS) Tue 19-Oct 2010 19:15 - Terminal 1	San Francisco, San Francisco Int'l (SFO) Tue 19-Oct 2010	0	320	Tango Plus L

aircanada.com

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From	To
Toronto, Pearson Int'l (YYZ) Sat 16-Oct 2010 13:10 - Terminal 1	**Las Vegas, Mcca** Sat 16-Oct 2010 14:54 - Termina
⚠ AC597: This flight includes a stop in null.	
Las Vegas, Mccarran Int'l (LAS) Tue 19-Oct 2010 19:15 - Terminal 1	**San Francisco, S Int'l (SFO)** Tue 19-Oct 2010

aircanada.com

Hyatt Regency, 2008

If you can't do math, it's a nickel extra.

Last Name: *
Bolton

Company Name:

○ $9.95 for 1 day
○ $5.95 for 1 hour
○ $19.95 for 2 days

Charges plus taxes will be billed to your room.

Hyatt Regency, 2008

hootsuite

Hi Michaelbolton,

We received a password reset request from:
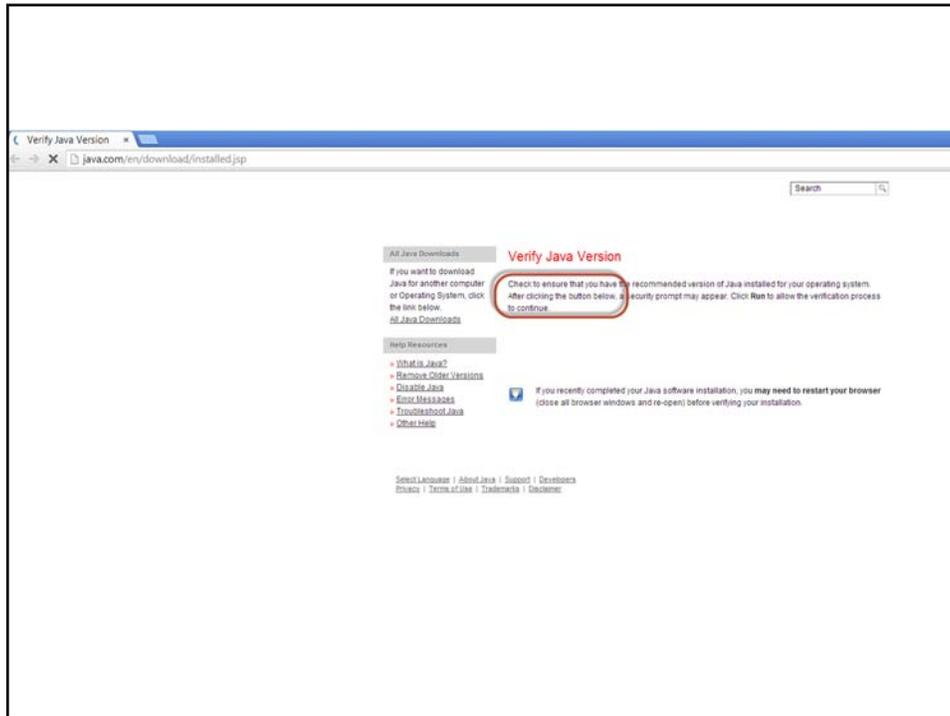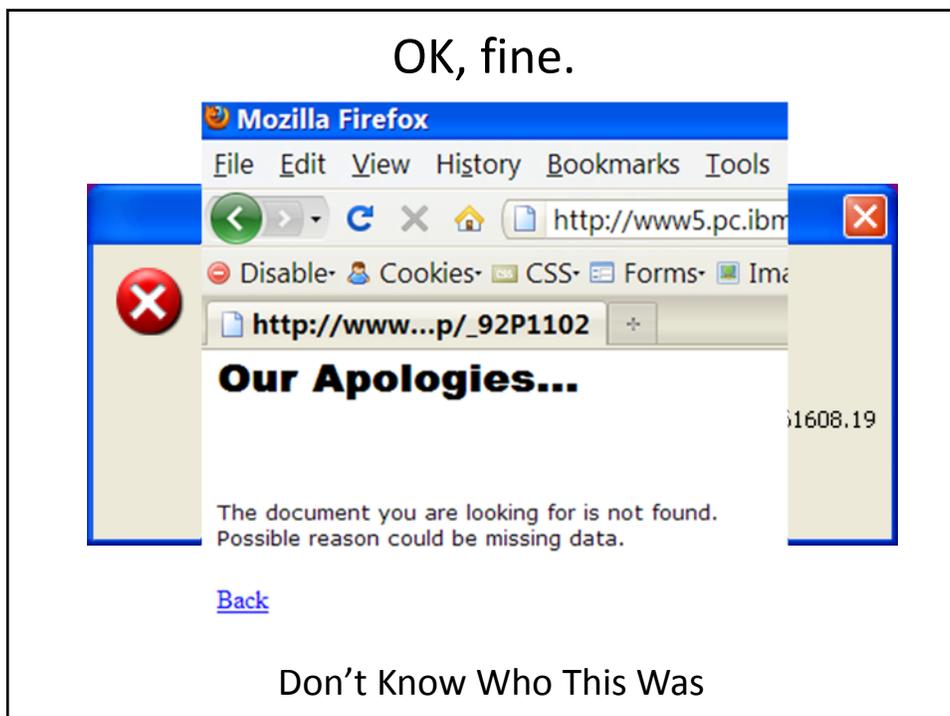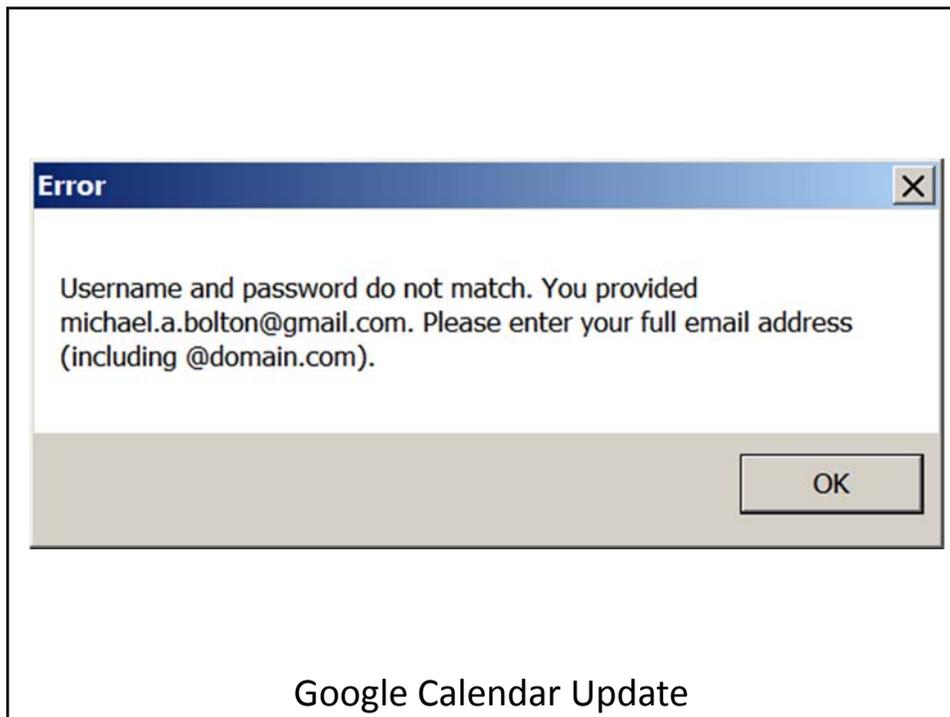
Location:
At:
IP Address:

If this wasn't you, please disregard this email.

If this was you:

Please click on the button below or copy and paste the URL into your browser:
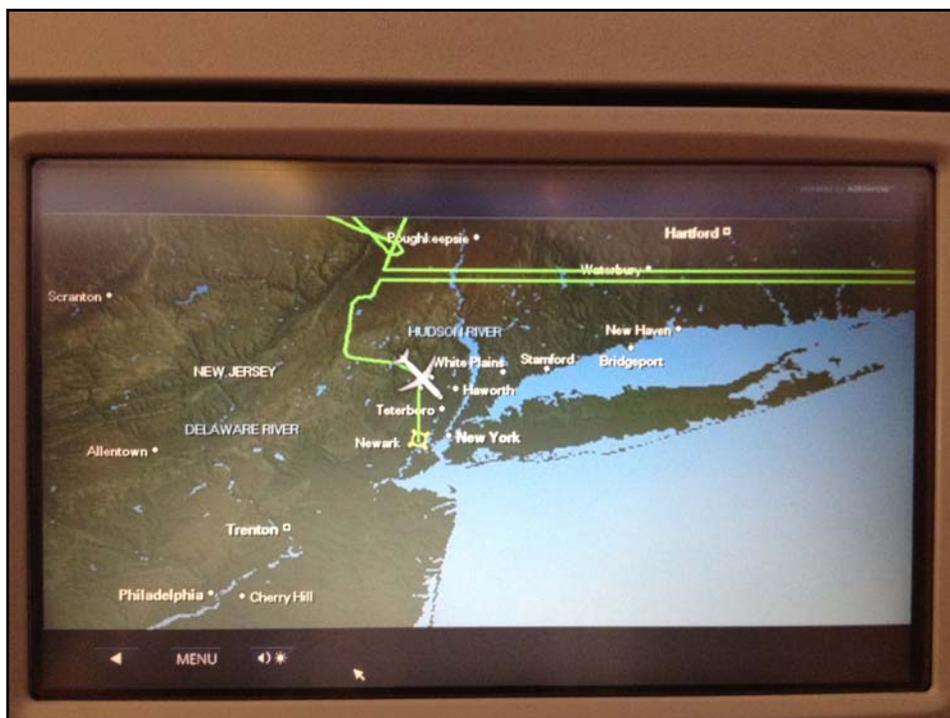
Reset Password

Google Calendar Update

OK, fine.

Don't Know Who This Was

Don't Know Who This Was

An Important Theme

Feelings are the first part of the answer we get to the fundamental question of testing:

Is there a problem here?

Testing is…

Acquiring the competence, motivation, and credibility for…

creating the conditions necessary for…

evaluating a product by learning about it through experimentation, which includes to some degree: questioning, study, modeling, observation and inference, including…

operating a product to check specific facts about it…

…so that you help your clients to make informed decisions about risk.

And perhaps help make the product better, too

Tools Can Do FAR More Than Checking

- Test generation (data and script generators)
- System configuration (setup; rapid changes)
- Test execution (harnesses and test scripts)
- Logging (action capture, video capture)
- Probes (identifying internal states)
- Monitoring (coverage analysis, profiling)
- Visualization (blink testing, highlighting)
- Test management (but keep tools lightweight)
- and yes, oracles (automated checking)

Testing CANNOT Be Encoded

"Test Cases Are Not Testing:
Toward a Culture of Test Performance"
James Bach & Aaron Hodder
http://www.testingcircus.com/documents/TestingTrapeze-2014-February.pdf

Why Testing Cannot Be Encoded
Harry Collins on Software Testing

"Computers and their software are two things. As collections of interacting cogs they must be 'checked' to make sure there are no missing teeth and the wheels spin together nicely. Machines are also 'social prostheses', fitting into social life where a human once fitted. It is a characteristic of medical prostheses, like replacement hearts, that they do not do exactly the same job as the thing they replace; the surrounding body compensates.

Why Testing Cannot Be Encoded
Harry Collins on Software Testing

"Contemporary computers cannot do just the same thing as humans because they do not fit into society as humans do, so the surrounding society must compensate for the way the computer fails to reproduce what it replaces. This means that a complex judgment is needed to test whether software fits well enough for the surrounding humans to happily 'repair' the differences between humans and machines. This is much more than a matter of deciding whether the cogs spin right."

Abstract, "Machines as Social Prostheses", EuroSTAR 2013

How Do People React to Software?

Impatience

Frustration

Amusement

Surprise

Confusion

Annoyance

What Might Feelings Tell Us?

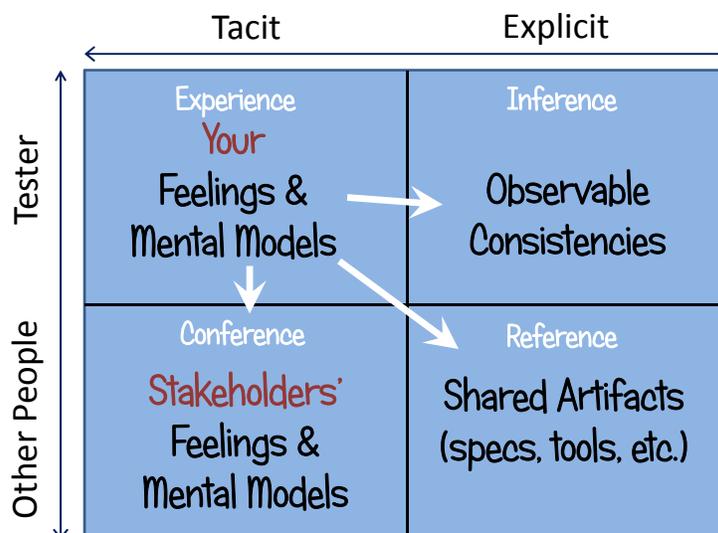|	
Impatience	⇨ a threat to performance?
Frustration	⇨ a threat to capability?
Fear	⇨ a threat to security?
Surprise	⇨ a threat to reliability?
Confusion	⇨ a threat to usability? to testability?
Annoyance	⇨ a threat to charisma?
Boredom	⇨ an insignificant test?
Tiredness	⇨ time for a break?
Anxiety	⇨ a need for a particular skill?
Curiosity	⇨ a pointer to useful investigation?

Bugs!

Issues!

Feelings as Heuristic Triggers for Oracles

- An emotional reaction or a feeling is a trigger to attention and learning.

- Without emotion, we don't reason well.
  - See Damasio, *The Feeling of What Happens*

- When you find yourself mildly concerned about something, someone else could be *very* concerned about it.

- Observe emotions to help overcome your biases, to evaluate significance, and to calibrate responses.

> Emotions and feelings are signals.
> Look into what they're signalling.

Oracles from the Inside Out

Tacit   Explicit

Tester

	Experience	Inference
Tester	Your Feelings & Mental Models	Observable Consistencies
Other People	Conference Stakeholders' Feelings & Mental Models	Reference Shared Artifacts (specs, tools, etc.)

General Examples of Oracles
things that suggest "problem" or "no problem"

- A person whose opinion matters.
- An opinion held by a person who matters.
- A disagreement among people who matter.
- A reference document with useful information.
- A known good example output.
- A known bad example output.
- A process or tool by which the output is checked.
- A process or tool that helps a tester identify patterns.
- A feeling like confusion or annoyance.
- *A desirable consistency between related things.*

People

Mechanisms

Feelings

Principles

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Consistency ("this agrees with that")
an important theme in oracle principles

- **Familiarity:** The system *is not consistent* with the pattern of any familiar problem.
- **Explainability:** The system *is consistent* with our ability to describe it clearly.
- **World:** The system *is consistent* with things that we recognize in the world.
- **History:** The present version of the system *is consistent* with past versions of it.
- **Image:** The system *is consistent* with an image that the organization wants to project.
- **Comparable Products:** The system *is consistent* with comparable systems.
- **Claims:** The system *is consistent* with what important people say it's supposed to be.
- **Users' Expectations:** The system *is consistent* with what users want.
- **Product:** Each element of the system is *consistent* with comparable elements in the same system.
- **Purpose:** The system *is consistent* with its purposes, both explicit and implicit.
- **Standards and Statutes:** The system *is consistent* with applicable laws, or relevant implicit or explicit standards.

Consistency heuristics rely on the quality of your models of the product and its context.

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Oracle Cost and Value
Be Aware of Your Choices

- Some oracles are more *authoritative*
  - but less predictable
- Some oracles are more *consistent*
  - but maybe not up to date
- Some oracles are more *immediate*
  - but less reliable
- Some oracles are more *precise*
  - but less accurate
- Some oracles are more *accurate*
  - but less precise
- Some oracles are more *available*
  - but less authoritative
- Some oracles are *easier to interpret*
  - but more narrowly focused

Confusion

Confusion is a sign that there's something **confusing** going on.

If you're confused, is there are a possibility that the programmers might be confused too?

Affective Priming
Preparing Your Emotional Mindset

- developing self-confidence
- pushing aside feelings of intimidation
- building tolerance for mistakes
- allowing tolerance for confusion
- inoculating yourself against stress
- embracing and celebrating the new
- avoiding learned helplessness
- managing reactions and responses
- recognizing emotional oracles

A Computer Program

**A set of instructions
for a computer.**

*See the Association for Software Testing's
Black Box Software Testing Foundations course, Cem Kaner & James Bach*

A House

**A set of building materials,
arranged in the
"House" design pattern.**

A House

Something for *people* to live in.