Questioning the Best Practice Myths

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April 2010

Updates

- This presentation is ALWAYS under construction
- Updated slides at http://www.developsense.com/past.html

A Statement From A Manager

- "We follow industry best practices in order to ensure that we deliver value to our clients."

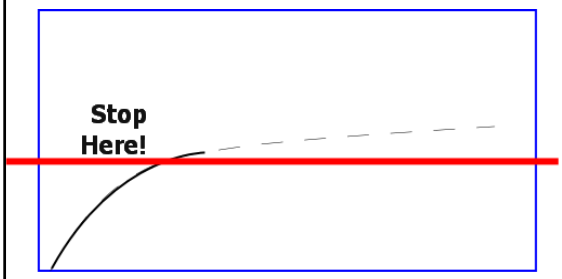
Exercise

- Identify something that you've heard or thought of as a label for a "best practice".
- Using an index card, describe it in as much detail as you can (use extra cards if you need it).
- When you're ready, have the colleagues at your table read the card.

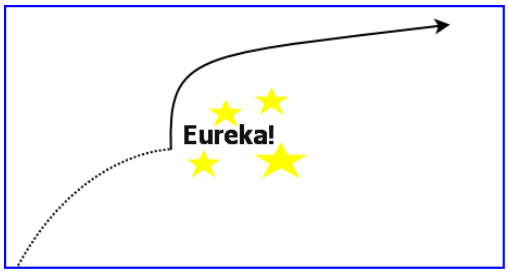
Exercise (Part 2)

- Identify at least three cases or contexts in which your "best practice" *won't work* or might work in the *wrong way*.
- Write these down on another card.

Diminishing Returns for Testing



Diminishing returns in testing is a *feeling*
NOT A FACT



(We testers use our feelings, but we also think critically about them.)

Escaping Best Practice Thinking

- We need to think *more critically* about
  - models
  - practices
  - advice

Models Link Observation and Inference

- **A model is an idea, activity, or object…**

  such as an idea in your mind, a diagram, a list of words, a spreadsheet, a person, a toy, an equation, a demonstration, or a program
- **…that represents another idea, activity, or object…**

  such as something complex that you need to work with or study
- **…whereby understanding the model may help you understand or manipulate what it represents.**

  - A map helps navigate across a terrain.
  - 2+2=4 is a model for adding two apples to a basket that already has two apples.
  - Atmospheric models help predict where hurricanes will go.
  - A fashion model helps understand how clothing would look on actual humans.
  - Your beliefs about what you test are a model of what you test.

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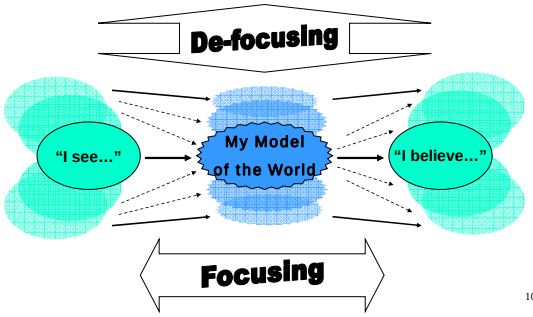
Models Link Observation and Inference



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Some Common Beliefs About Testing

- Every test must have an expected, predicted result.
- Effective testing requires complete, clear, consistent, and unambiguous specifications.
- Bugs found earlier cost less to fix than bugs found later.
- Testers are the quality gatekeepers for a product.
- Repeated tests are fundamentally more valuable.
- You can't manage what you can't measure.
- Testing at boundary values is the best way to find bugs.

Some Common Beliefs About Testing

- Test documentation is needed to deflect legal liability.
- The more bugs testers find before release, the better the testing effort.
- Rigorous planning is essential for good testing.
- Exploratory testing is unstructured testing, and is therefore unreliable.
- Adopting best practices will guarantee that we do a good job of testing.
- Step by step instructions are necessary to make testing a repeatable process.

Critical Thinking Meta-thoughts

- Much "best practice" talk is based on mistaken assumptions and critical thinking errors.
- Refine your thinking about practice by recognizing common errors and digging up buried assumptions

See Levy, "Tools of Critical Thinking"

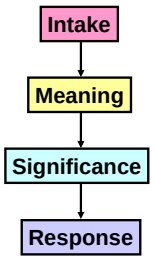
The Nature of Critical Thinking

- "Critical thinking is **purposeful, self-regulatory judgment** which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based." - *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction, Dr. Peter Facione*
- Thinking about thinking, with the goal of avoiding being fooled -- Michael Bolton/James Bach

The Nature of Critical Thinking

- We call it critical thinking whenever we systematically doubt something that the "signs" tell us is probably true. Working through the doubt gives us a better foundation for our beliefs.
- Critical thinking is a kind of **de-focusing** tactic, because it requires you to seek alternatives to what is already believed or what is being claimed.
- Critical thinking is also a kind of **focusing** tactic, because it requires you to analyze the specific reasoning behind beliefs and claims.

The Satir Interaction Model



- Developed by Virginia Satir and explained by Jerry Weinberg
- Useful to identify the phases in conversation and communication

Intake

- distinct from in*put*
- you have considerable control over what you choose to sense
- listen carefully to the words, but…
- listen to the music and watch the players, too
- beware of selective listening, both in yourself and in the other

Meaning

- Words are inherently slippery and fundamentally ambiguous
- A given sentence or question may have a large number of possible interpretations
- Words don't have meaning until some person *assigns* a meaning
- People may differ in their meanings
- Keep your sense of possibilities open
- Feed back into Intake
- Hint: try applying the Rule of Three

Significance

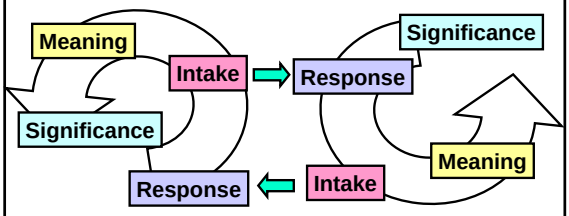
- Gives priority *for some person* to meaning *for some person*
- Feeds back into Intake and Meaning
- Strongly conditioned by emotion
- Hint: apply the Rule of Three here, too

Response

- Don't feel obliged to respond
  - right away, or
  - under pressure
- Do watch, listen, and assign priorities to observations
- Do anticipate to go with the response, "seek more data"

…and remember…

- …the process is continuous and interactive.



How to Think Critically: Theories of Error

Huh?
- You may not understand. (We err in interpreting, modeling, and communicating a situation)

Really?
- What you understand may not be true. (missing information, observations not made, experiments not done)

So?
- The truth may not matter, or may matter much more than you think. (poor understanding of significance)

Says who?
- The person proferring a best practice may have many well-founded reasons for believing in it… but those reasons may not apply to you. (poor understanding or application of context)

"Huh?" Critical Thinking About Words

- Among other things, *testers question premises.*
- A *suppressed premise* is an unstated premise that an argument needs in order to be logical.
- A suppressed premise is something that should be there, but isn't…
- (…or *is* there, but it's *invisible* or *implicit*.)
- Among other things, *testers bring suppressed premises to light and then question them.*
- A diverse set of models can help us to see the things that "aren't there."

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Example: Missing Words

- "I performed the tests. All my tests passed. Therefore, the product works."
- "The programmer said he fixed the bug. I can't reproduce it anymore. Therefore it must be fixed."
- "Microsoft Word frequently crashes while I am using it. Therefore it's a bad product."
- "Step 1. Reboot the test system."
- "Step 2. Start the application."

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Factoring: Identifying Elements That Matter

- A factor is an element that you can identify, control, or vary about something.
- What factors form our models of something?
- To whom do they matter?
- How do we describe the factors?
- What factors are consistent with
  - the thing itself?
  - things like it?
- What are the elements that differ
  - from one thing to another?
  - in the same thing over time?

Heuristic

"guideline" "rule of thumb"

noun:
A *fallible* method for *solving a problem* or *making a decision*

- Examples:
  - "Plant your corn early!"
  - Pull on the handle, push on the plate.
  - Problems are cheaper to fix the earlier they're found.

Heuristic

adjective:
"serving to discover"

- Examples:
  - a heuristic *approach*
  - heuristic *guidewords*
  - heuristic *models*
  - heuristic *tools*

Heuristics

- Fallible, "fast and frugal" methods of solving problems, making decisions, accomplishing a task…

All is heuristic!

"The engineering method is ***the use of heuristics*** *to cause the* ***best change*** *in a* ***poorly understood situation*** *within the* ***available resources****."*
Billy Vaughan Koen
Discussion of the Method

Heuristics Are Fallible

- Heuristics use guidance and control of skilled practitioners.
- They're heavily context-dependent.
- They may be useful even when they contradict each other—especially when they do!
- They can substitute for complete and rigorous analysis.
- Because they are *reasonable, low-cost* shortcuts, heuristics can present *more valuable* solutions for the present circumstances *because* they're less complete.

"Heuristic reasoning is not regarded as final and strict but as provisional and plausible only, whose purpose is to discover the solution to the present problem."
- George Polya, *How to Solve It*

Heuristic: A vs. THE

When referring something, prefer "a" to "the".

- Example: "A problem…" instead of "THE problem…"
- Using "A" instead of "THE" helps us to avoid several kinds of critical thinking errors
  - single path of causation
  - confusing correlation and causation
  - single level of explanation

Heuristic: Unless…

Try adding "unless..."

- When someone asks a question based on a false or incomplete premise, try adding "unless…" to the premise
- When someone offers a Grand Truth about testing, append "unless…"

Some Verbal Heuristics: "And Also…"

Whatever is happening, something else may ALSO be happening.

- "We released on time and on budget! Yay!"
  - *What else* happened?
- "We didn't release on time and on budget, because we didn't follow the process."
  - What else did (or didn't) we do?
  - What's missing from our description?

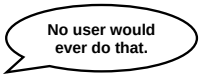
Heuristic: The Data Question

What did you see or hear (smell, taste, touch) that makes you believe...?

This heuristic comes from Jerry Weinberg and Don Gause, *Exploring Requirements*

Heuristic: The Subtitle

- Reframe an idea so you can see alternatives and bring out assumptions in a conversation.



"No user *that I've thought of*, and *that I like*, would ever do that *on purpose*."

What users haven't you thought of?

What users don't you like?

What might a user that you *do* like do by accident?

Heuristic: The Rule of Three

- Special case of the Rule Of At Least Three:

If you can't think of at least three explanations for something, you probably haven't thought about it enough.

Testing as a Social Science

- This is a very compelling notion from Kaner
- Social sciences investigate effects on *people*
- Include qualitative *and* quantitative research methods.
- Diversity of values and interpretations is normal.
- Observer bias is an accepted fact of life and is managed explicitly in well-designed research.

Partial answers that might be useful!

Critical Thinking About Practices: What does "best practice" mean?

- **Someone:** Who is it? What do they know?
- **Believes:** What specifically is the basis of their belief?
- **You:** Is *their* belief applicable to *you*?
- **Might:** How *likely* is the suffering to occur?
- **Suffer:** So what? Maybe it's worth it?
- **Unless:** Really? There's no alternative?
- **You do this practice:** What does it mean to "do" it? What does it cost? What are the side effects? What if you do it badly? What if you do something else really well?

Beware of…

- **Numbers:** "We cut test time by 94%."
- **Documentation:** "You must have a written plan."
- **Judgments:** "That project was *chaotic*. This project was a *success*."
- **Behavior Claims:** "Our testers follow test plans."
- **Terminology:** Exactly what is a "test plan?"
- **Contempt for Current Practice:** CMM Level 1 (initial) vs. CMM level 2 (repeatable)
- **Unqualified Claims:** "A subjective and unquantifiable requirement is not testable."

Look For…

- **Context:** "This practice is useful when you want the power of creative testing but you need high accountability, too."
- **People:** "The test manager must be enthusiastic and a real hands-on leader or this won't work very well."
- **Skill:** "This practice requires the ability to tell a complete story about testing: coverage, techniques, and evaluation methods."
- **Learning Curve:** "It took a good three months for the testers to get good at producing test session reports."
- **Caveats:** "The metrics are useless unless the test manager holds daily debriefings."
- **Alternatives:** "If you don't need the metrics, you ditch the daily debriefings and the specifically formatted reports."
- **Agendas:** "I run a testing business, specializing in exploratory testing."