

Breaking Down (and building up) Exploratory Testing Skill

Google (Mountain View)

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First, a haiku...

Oh, Masters of Test,
Describe to me your methods
...we launch in one hour...

Assumption

- * you've done exploratory testing...
- * or might need to do it...
- * so you'll want to know how it's done
- * or at least care about it enough
- * to know if it's done well

The problem

1) *“What’s the big deal? Exploratory testing is random pounding on the keys. Nothing to it. My toddler does it every day.”*

2) *“How she finds those great bugs without test cases, I’ll never know. I guess some people are just natural explorers -- you either have it or you don’t -- and I just don’t have her knack for it.”*

These are limited perspectives, but common sentiments I’ve heard over the years, so this talk is my counter-argument. It is about how exploratory testing is a compilation of systemically observable, evaluatable and *teachable* skills.

A brief demo of ET

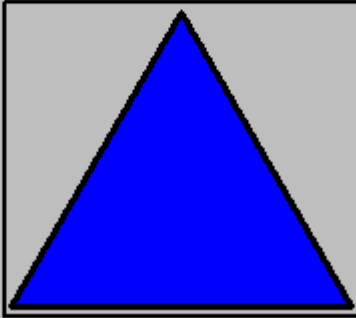
Enter three numbers. These will be treated as the dimensions of a triangle. When you press the "Check" button, the program will display the type of triangle that you specified.

Side A

Side B

Side C

Results



Common Questions

- 1) ET is for expert testers only, right?
- 2) ET is unstructured and unmeasurable, right?
- 3) ET is just testing randomly based on experience, right?
- 4) ET is only for testing things that have no specs, right?
- 5) Is there such a thing as exploratory test automation?
- 6) How do I get my management to accept ET? They believe in rigorous testing.
- 7) Surely you wouldn't use ET for mission or life-critical software, right?

ET Research Summit (ExTRS)

February 1, 2006 – Palm Bay, FL

James Bach
Jon Bach
Scott Barber
Michael Bolton
Elisabeth Hendrickson
Mike Kelly
Cem Kaner
James Lyndsay
Jonathan Kohl
Rob Sabourin

Mission of ExTRS

To foster and promote community

To achieve consensus on what ET is

To expose disagreements on what ET is

To learn about teaching styles

To trade models and exercises

To learn more about what we collectively know about ET

Conversation starters

- 1) How do you define exploratory testing?
- 2) Are there different *kinds* of ET, in your view?
- 3) Name five constituent skills or behaviors of exploratory testing.
- 4) Name two specific things a tester can do to gain skill in exploratory testing.
- 5) What is the relationship between scripted testing and exploratory testing?
- 6) What is the relationship between context-driven testing and exploratory testing?
- 7) What would be the *opposite* of exploratory testing?
- 8) In your personal test methodology, where does exploratory testing fit in?
- 9) What makes ET effective or ineffective?
- 10) What kind of research should we be doing to further develop ET into a viable discipline?

Some ET Definitions

- **Sabourin**: “continuous test design as testing continues; continuous testing as design continues; continuous test planning as testing continues”
- **Hendrickson**: a style of testing in which you explore the software while simultaneously designing and executing tests, using feedback from the last test to inform the next (Test-Driven Testing?)
- **Bolton**: Operating and observing the product with the freedom and mandate to investigate it in an open-ended search for information about the program.
- **Kaner**: Simultaneous learning, design and execution, *with an emphasis on learning.*

“Ad hoc” testing?

1a : concerned with a particular end or purpose (an *ad hoc* committee)

1b : formed or used for specific or immediate problems or needs (*ad hoc* solutions)

2 : fashioned from whatever is immediately available

<http://www.m-w.com/dictionary/ad%20hoc>

Note: All ET is ad hoc, but not all ad hoc is ET.

Analogies

Psychologist

Driving a car

“20 Questions”

Sports

Bounty Hunter

Going to a testing conference

Job Interview

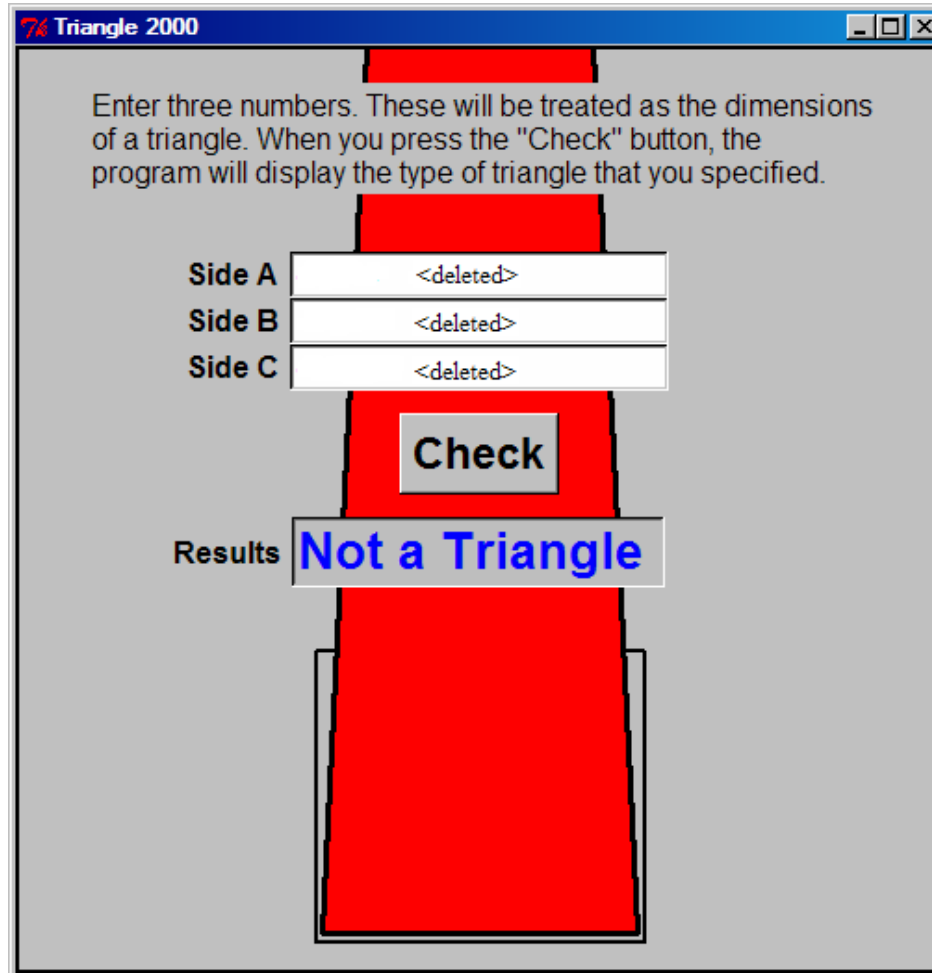
Jam session

Newspaper reporter

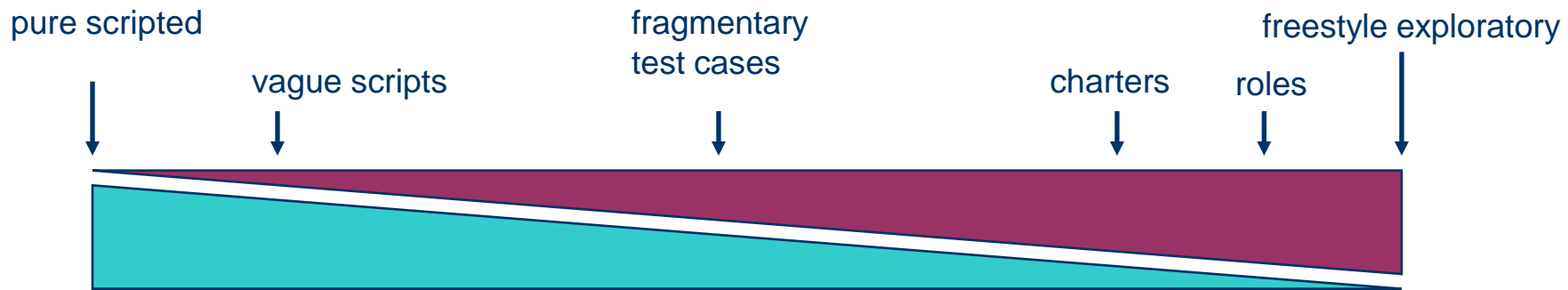
Paradigmatic examples

- **Mike Kelly**: Retesting and testing around a defect
- **Scott Barber**: The developer walks to my desk and asks “can you whip up a test to see if...”
- **Michael Bolton**: Working with a new build of an existing product, checking for bug fixes by using old test paradigms with new variations; not under the control of a script
- **James Bach**: “Please investigate this puzzling situation”, “Please test this product that doesn’t yet exist”
- **Cem Kaner**: Tests from a bug taxonomy or “quick test” list
- **James Lyndsay**: Once a script has executed, choosing different data and re-executing

Example: repro this bug



Scripted vs. exploratory




To know where a test falls on this scale, ask yourself: *“to what extent am I in control of the test, and from where did the idea originate?”*

Is it an “art”?

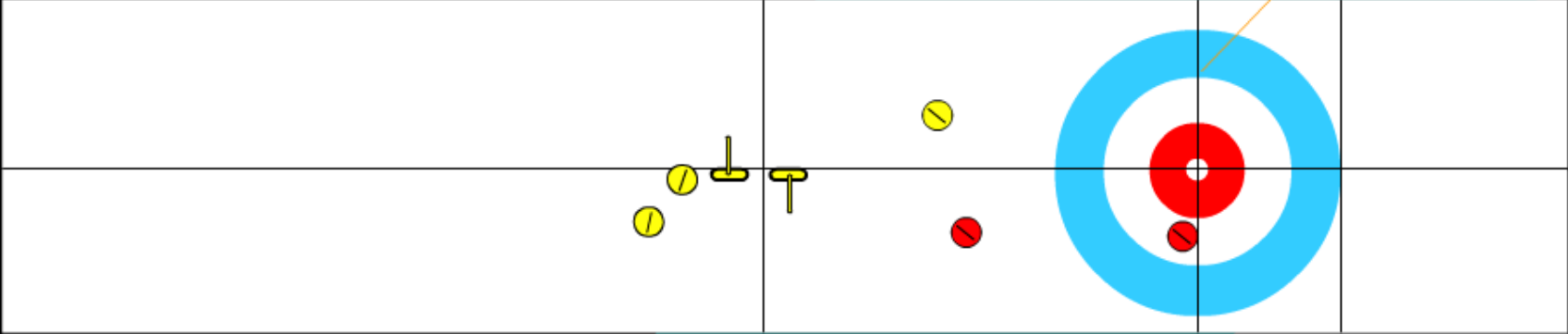
“Skill acquired by experience, study, or observation”

<http://www.m-w.com/dictionary/ad%20hoc>

Curling (masters of friction)

CURLINGBasics.com 

Sweeping



← Tee Line

Tee Line

Sweeping keeps the stone in motion longer as result of reducing friction in the path of the stone and so helps him to travel farther; the other effect of sweeping: the stone is kept more straight. Both stones in my example are delivered with same "weight" and "curl" (momentum) at the same time.

[Video](http://www.nbcolympics.com/video/5120027/detail.html) <http://www.nbcolympics.com/video/5120027/detail.html> --
start from minute 2:19

Stages of a curling master?

Master: “an artist, performer, or player of consummate skill”

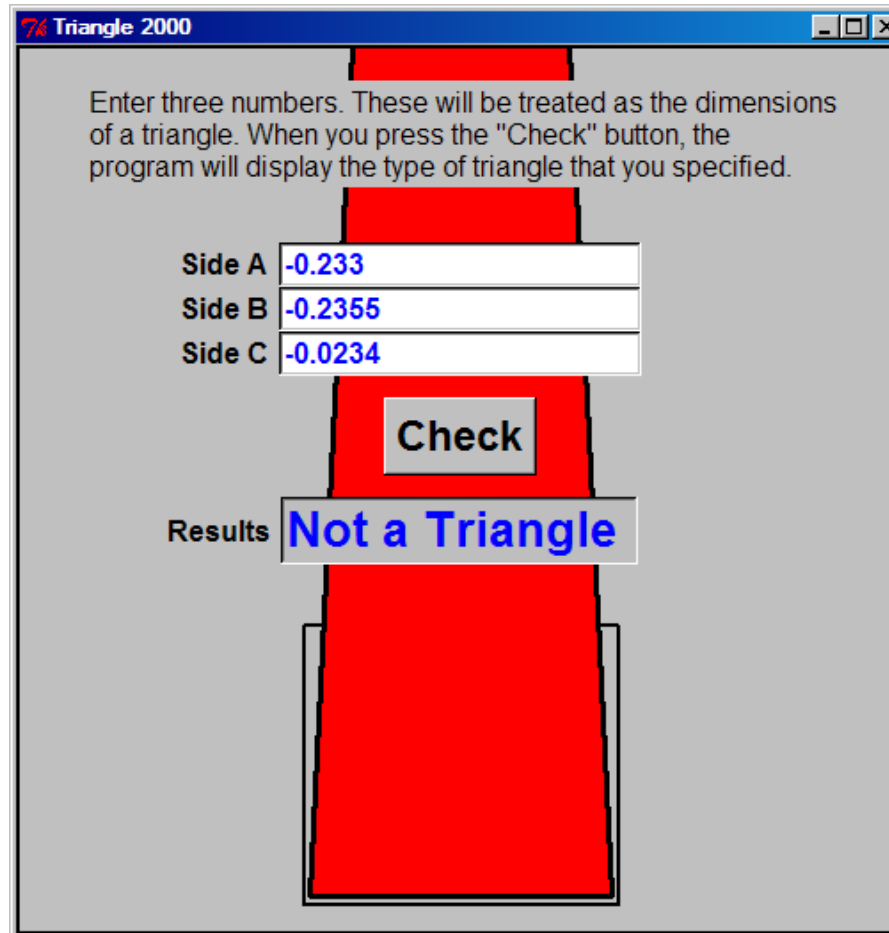
Where I’m at so far in my curling “mastership”:

- 1) Know that there is something called “curling”
- 2) Watch it being done
- 3) Have some curiosity
- 4) Learn basic terminology
- 5) Try it
- 6) Realize that I could never be good at it
- 7) Practice, practice, practice
- 8) Compete in the 2010 Olympics
- 9) Keynote at curling conferences
- 10) Move to Canada and become a commentator for CBC

Or... do what a master might do

- 1) Know that there is something called “curling”
- 2) Watch it being done
- 3) Have some curiosity
- 4) Learn basic terminology
- 5) Try it
- 6) Go to curling conferences to learn techniques
- 7) Study great games and curling champions
- 8) Read about curling physics and study theory
- 9) Compete / play for recreation
- 10) Buy my own broom, custom stone, and teflon shoes
- 11) Write articles about my experiences
- 12) Teach others how to do it
- 13) Borrow others’ styles and techniques
- 14) Know and accept that I won’t win every game
- 15) Move to Canada and do color commentary on CBC

How did you **find** that...?



How did you **find** that?

Some Exploration Skills and Tactics

Chartering

Manipulating

Observing

Modeling

Resourcing

Refocusing

Branching/Backtracking

Generating/Elaborating

Pairing

Conjecturing

Questioning

Recording

Reporting

Alternating

Exploratory testing is a mindset using this skillset.

Chartering

Making your own decisions about what you will work on and how you will work. Understanding your client's needs, the problems you must solve, and assuring that your work is on target.



Manipulating

Making and managing contact with the object of your study; configuring and interacting with it.



Observing

Gathering empirical data about the object of your study; collecting different kinds of data, or data about different aspects of the object. Designing experiments and establishing lab procedures.



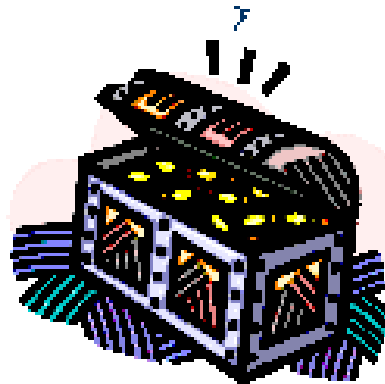
Modeling

Composing, describing, and working with mental models of the things you are exploring. Identifying relevant dimensions, variables, and dynamics. A good mental model may manifest itself as having a “feel” for the product; intuitively grasping how it works.



Resourcing

Obtaining tools and information to support your effort.
Exploring sources of such tools and information. Getting
people to help you.



Refocusing

Managing the scope and depth of your attention. Looking at different things, looking for different things, in different ways.



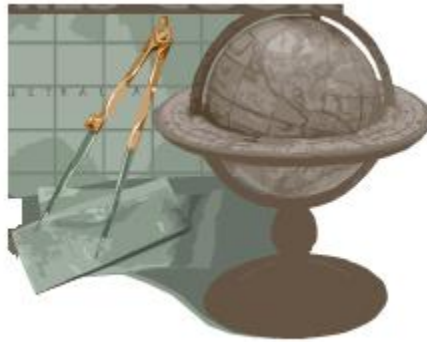
Branching/Backtracking

Allowing yourself to be productively distracted from one course of action in order to explore an unanticipated new idea.
Identifying opportunities and pursuing them without losing track of the process.



Generating/Elaborating

Working quickly in a manner good enough for the circumstances. Revisiting the solution later to extend, refine, refactor, or correct it.



Pairing

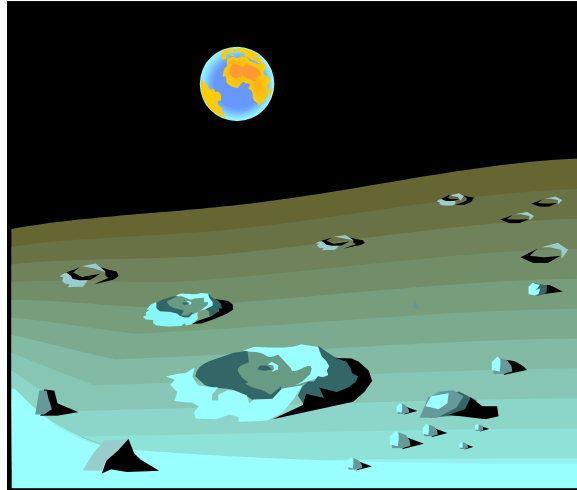
Working and thinking with another person on the same problem; group problem-solving.



(c) Jon Bach, Quardev Laboratories, Seattle

Conjecturing

Considering possibilities and probabilities. Considering multiple, incompatible explanations that account for the same facts.



Questioning

Identifying missing information, conceiving of questions, and asking questions in a way that elicits the information that you seek.



Recording

Preserving information about your process, progress, and findings. Taking notes.



Reporting

Making a credible, professional report of your work to your clients in oral and written form.



Alternating

Switching among or contrasting different activities or perspectives so as to create or relieve productive tension and make faster progress.



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Alternating -- Polarities

Warming up vs. cruising vs. cooling down

Doing vs. describing

Doing vs. thinking

Careful vs. quick

Data gathering vs. data analysis

Working with the product vs. reading about the product

Working with the product vs. working with the developer

Product vs. project

Solo work vs. team effort

Your ideas vs. other peoples' ideas

Alternating -- More Polarities

Lab conditions vs. field conditions

Current version vs. old versions

Feature vs. feature

Requirement vs. requirement

Test design vs. execution

Coverage vs. oracles

Testing vs. touring

Individual tests vs. lab procedures and infrastructure

Testing vs. resting

Useful mental triggers

Test Plan Evaluation Model

Test Planning Checklist

Heuristic Test Strategy Model

Next steps

Where are you with exploratory testing?

- 1) Know that there is something called “exploratory testing”
- 2) Watch it being done
- 3) Have some curiosity
- 4) Learn / create definitions
- 5) Ask critical questions about ET as an effective approach for you
- 6) Participate in discussion threads
- 7) Study others’ experiences
- 8) Borrow from others’ experiences
- 9) Write about your own experiences
- 10) Present your experiences (and inventions) at STAR
- 11) *Move to Canada and become a commentator for CBC*

3 master writers, on gaining skill

"It's none of their business that you have to learn to write. Let them think you were born that way."

- Ernest Hemingway

"First you jump off the cliff and you build wings on the way down."

- Ray Bradbury

"What the caterpillar calls the end of the world, the master calls the butterfly."

- Dad (Richard Bach)

Last, a haiku...

We launch in one hour...

Oh, where could bugs be hiding?

Engage the skillset!

Sources / More info

Context-Driven Software Testing

<http://groups.yahoo.com/group/software-testing>

Center for Software Testing Education and Research

<http://www.testingeducation.org/BBST>

Books related to Exploratory Testing skills and tactics

<http://www.testingreflections.com/node/view/3190>

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