The Zen of Software Testing

Discovering your Inner Tester

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Our Beginnings

- Who am I?
- Who are you?

- What inspired this talk?
  - General frustration about the state of software
  - Encounters with testing industry vocalists
  - Encounters with testing teams
  - Unexpected encounter with Tibetan Buddhism
    - Disclaimer

What Testing Teams ask for …

- Repeatable processes / improved processes
- Best practices
- Insurance (regression tests)
- Quantifiable measures of tasks and activities
- Ways to find all the bugs … faster
- Ways to be more effective
- Ways to be more efficient
- *Magic pixie dust … ?*

But you may not like what you get …

- Regression testing => Pesticide Paradox?
- Less time / fewer resources => Less testing?
- Automation => Less subjective data?
- Full regression reqs => Too much testing?
- Following rigid process => Following instincts?
- Heavy doc requirements => Less testing?

➢ *Less testing => Less information?*

➢ *Less human interaction => Lower quality information?*

Common Software Testing Methods

- Requirements based
- Specification based
- Risk based
- Historical
- Exploratory

- Others …

Parallels of Testing Methods

Scientific Method -> Software Testing	
Proceeds from the observation of a material phenomena	Test analysis
Leads to a theoretical generalization	Test conditions, test ideas
Predicts the events and results based on conditions	Test cases
Tests the prediction with an experiment	Test execution & results
If theory is contradicted, the theory must be adapted	Rework, if necessary

Some Methods for Defining Reality

- Reliable authority (defer to an expert/leader)
  - Scripture
  - Scientific results published in journals
- Experience (do it yourself)
  - Empirical method or means
- Reasoned inference (~educated guess)
  - From an observed phenomenon, directly evident to the senses, one can infer what is there or possibly what remains hidden

A Search for Reality

The Universe in a Single Atom

The Convergence of Science and Spirituality

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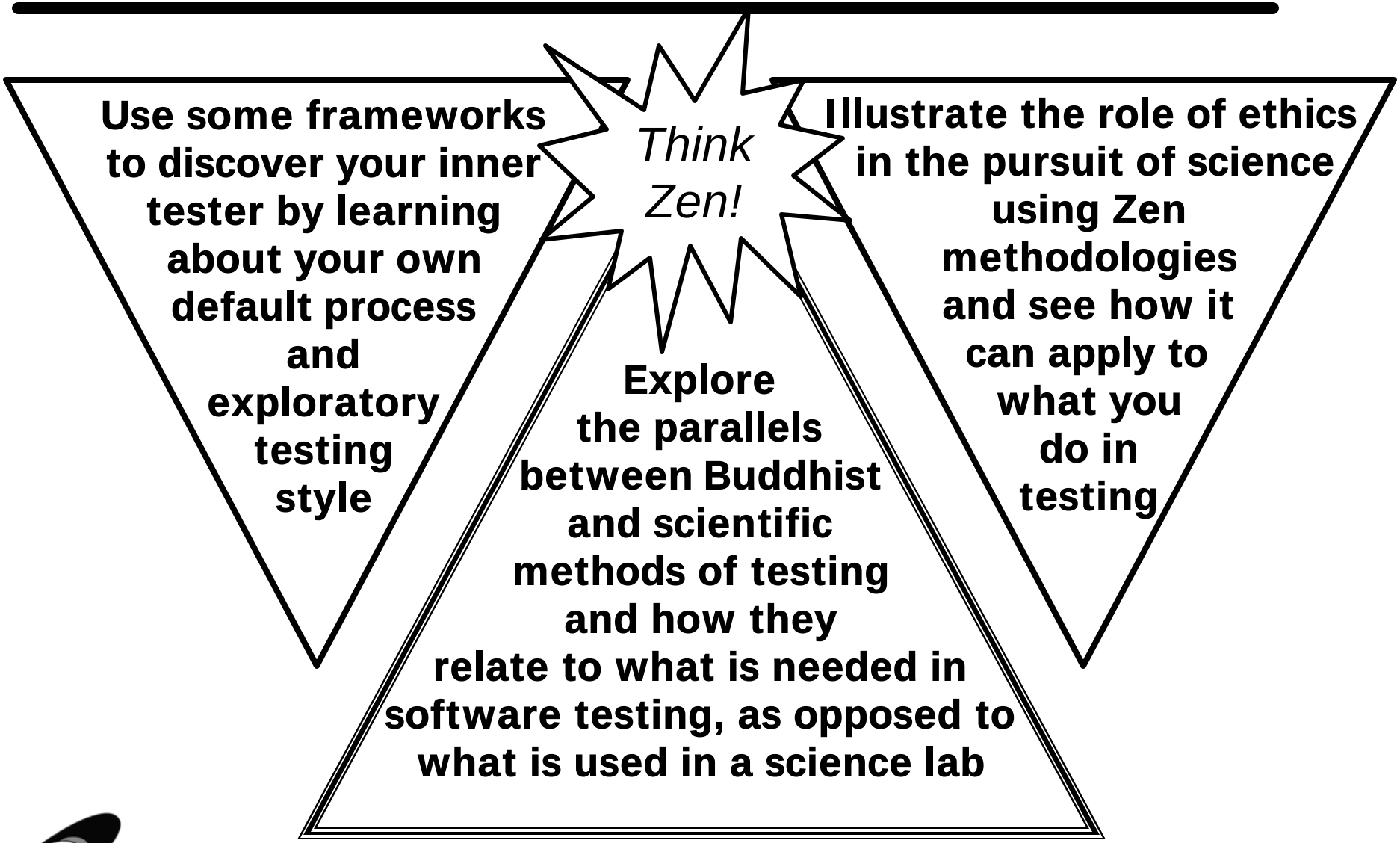
By His Holiness the Dalai Lama

"My confidence in venturing into science lies in my basic belief that as in science so in Buddhism, understanding the nature of reality is pursued by means of critical investigation …"

Our Journey



Buddha says …

- Do not accept the validity of his teachings simply on the basis of reverence to him
- Test the truth of his teachings through reasoned examination and personal experiment

➢ *Buddhism accords the greatest authority to <u>experience</u>, with reason second, and scripture last*

Ref: *The Universe in a Single Atom*

Buddhist Testing Rule #1

- Not finding something you are looking for DOES NOT PROVE it doesn't exist

- *Testing software and not finding defects does not mean defects are not there*

Buddhist Testing Rule #2

- If your testing and experience prove a tenet, assumption, rule, or understanding to be FALSE, you MUST accept the new information

➢ *Even if there is a scripture (script) to follow, you must be able to accept, process and use the new information you discovered – any other interpretation would have us working as blinded and disabled creatures, or victims of denial*

Buddhist Testing Rule #3

- You must be open to new ideas and new information; proceed with healthy skepticism

- *To believe the world is fixed and that someone else has figured it out and you are just there to follow the instructions, process, plan, script, best practices, or "we've always done it that way" is just too limiting*
- *Projects are dynamic and complex, and a flexible approach is required for success*

The Spirit of Inquiry

- The investigative methods of science and Buddhism are similar in that they both rely heavily on empirical means
- They differ in that science proceeds from an external or material analysis and Buddhism from an internal or contemplative process
- Both share a commitment to keep searching for reality by empirical means and be willing to discard positions if the truth is different

Our Journey: *Zen Model of Testing*

Testing is integral in the context of software testing projects

Testing does not occur without the context of experience

Testing should not occur without validating its purpose against the context of ethics

Zen Testing: *The Context of Software*

- Challenge the way you've always done things
- Ask questions; ask more questions
- Challenge your assumptions

➢ *Work to understand the whys, determine if the whats and hows are appropriate*

Basic Principles of the Context-Driven School

1. The value of any practice depends on its context.
2. There are good practices in context, but there are no best practices.
3. People, working together, are the most important part of any project's context.
4. Projects unfold over time in ways that are often not predictable.
5. The product is a solution. If the problem isn't solved, the product doesn't work.
6. Good software testing is a challenging intellectual process.
7. Only through judgment and skill, exercised cooperatively.

- http://www.context-driven-testing.com

Zen Testing: *The Context of Experience*

- Error guessing / stochastic
  - Randomly aim → fire
  - Generic attacks
- Historical
  - Actual failures / failure patterns
- Exploratory
  - Combined experience and instincts
  - Select a target → aim → fire

What's your natural testing style?

- Caveman (break stuff)
- Newspaper Reporter (gather facts)
- Tasmanian Devil (be a spaz)
- Dog (can't let the bone go)
- Sunday Driver (just cruising)
- Adventure Enthusiast (looks challenging)
- Tourist (looks interesting)
- Fish in a Fishbowl (short attention span)

Your Inner Tester: *Getting to Zen*

- Become more aware of your natural testing style
- Observe when it works well and when it doesn't
- Experiment with other styles

➢ *Work to use your inner tester (instincts) to their fullest extent and tame them when they are not productive*

Zen Testing: *The Context of Ethics*

- Performing investigation in a responsible way
  - Responsible to the organization
    - Risk, exposure, reputation, revenue loss
  - Responsible to the project
    - Working toward the project's goals
    - Serving the needs of the project's stakeholders
  - Responsible to the users / customers
    - Understanding the impacts of software errors & failures

Some Testers Follow a Code

- Association for Computing Machinery (ACM)
  - Code of Ethics
    - 1.2 Avoid harm to others
    - 1.3 Be honest and trustworthy
    - 1.8 Honor confidentiality
    - 2.1 Strive to achieve the highest quality, effectiveness and dignity in both the process and products of professional work
    - 2.3 Know and respect existing laws pertaining to professional work
    - 2.4 Accept and provide appropriate professional review

Some Testers Take an Oath

- The Iron Ring is a symbolic ring worn by many Canadian engineers.
- There is a rumor that the rings are made from the steel of a beam from the Quebec Bridge, which collapsed during construction in 1907, killing 75 construction workers, due to poor planning and design by the overseeing engineers. It's not true, but the ring is a reminder.
- The Ring is a symbol of both pride and humility for the engineering profession.
- The Ring is always worn on the little finger of the working hand, where the facets act as a sharp reminder of obligation while the engineer works.

Thought Provoking Quote

Where is the wisdom we have lost in knowledge?

Where is the knowledge we have lost in information?

-T. S. Eliot (1888-1965)

We’ve come so far but where has it gotten us? And if we ask the questions, where can we go?

Testing Industry Credits

- Software testing challenges
  - James Whittaker, Elisabeth Hendrickson, Danny Faught, Michael Bolton & many others
  - SQE, ASTQB, IEEE, ISO, ASQ
- Exploratory testing concepts
  - Cem Kaner, James Bach, Andy Tinkham
- Ethics in testing
  - Cem Kaner, Robert Sabourin, Scott Barber
  - Association for Software Testing (AST)
  - Association for Computing Machinery (ACM)

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Good Luck

&

Happy Testing!