Science and Stories

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A short survey

How many are doing some flavor of Agile?

How did your organization “decide” to do that?

How many looked at the randomized, controlled studies that provided evidence that Agile is better than your current process?

We rely on good stories

- The short history of software development is not littered with scientific experiments.
- Instead we jump on the latest bandwagon because we hear a good story.
- These are not even really case studies.

Why test "common sense"?

How many believe that Agile practices (or whatever we subscribe to) don't need formal evaluation because they're obviously common sense!!

Medicine – a science?

Bloodletting?

Leeches?

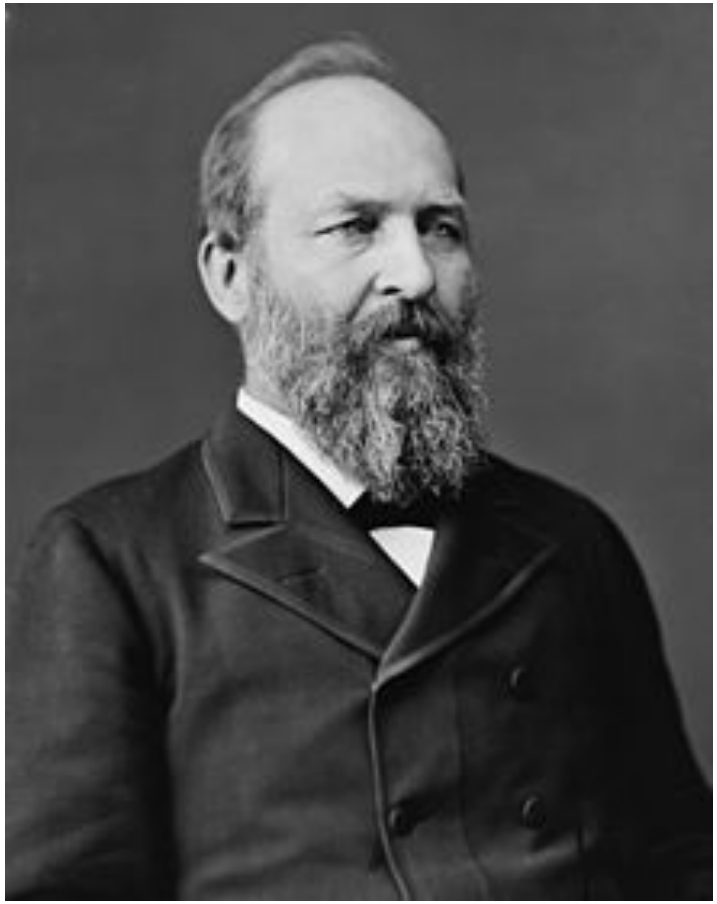
It's common sense!

William Harvey (1578 – 1657)

- Disproved the practice of bloodletting in 1628 but it continued until the 1920s
- It was common sense, best practice for 2,000 years
- Stories and the confirmation bias trumped science for hundreds of years
- Countless patients, including George Washington, died as a result of bloodletting

Ignatz Semmelweis (1818-1865)

James Garfield (1831-1881)



What if the drug companies operated the way we do?

- Drugs would be offered on the street corner because they seemed to work well for one person, so why not try them for your ailment?
- Drug companies were late in recognizing that controlled experiments were not enough.

Radomized, placebo-controlled, double-blind

- Not instituted until 1950s
- Real treatment + Control not sufficient
- Placebo is required

Why do placebos work?

- Belief
- Groupthink
- Social pressure
- Stories!

Could Agile be a Placebo?

- Does it work because we believe in it?
- Is it “true believers” who sustain the practices?
- Is this a bad thing?

Science isn't foolproof

- Many scientific results have been shown at a later date to no longer hold.
- Newtonian physics, once thought to be "true," was later displaced by Einstein's theories, verified by better measurements.

Scientists are biased

- Drug trials are now "double-blind" because it was discovered that if the researchers and doctors knew which patients were getting the "real" treatment, that would change the outcome.
- Scientists suffer from confirmation bias.
- I wouldn't believe that – even if it were true!
  Anonymous reviewer of a scientific paper

Science validates but doesn't always convince

- Stories convince. Science validates.
- It wasn't Semmelweis who convinced physicians in the U.S. it was the story of Garfield

We’re natural scientists!

Fixed educational system?

"… what we do throughout our whole education system is give students solvable problems. In fact they're guaranteed to be solvable…. In the real world, most problems are not solvable…and there are many competing demands….you have to often change course in the middle in order to meet sociological issues as opposed to technological ones…..it's very difficult for us to implement that in our teaching. But I think we do a much better job and a much better service to our students if we try and teach our students to fail more effectively."

Lawrence Krauss, theoretical physicist

Organizations don't encourage the scientific method

- We don't have the resources for one experiment, let alone the repeated experiments that good science requires.
- Decision-makers want action not investigation. Many executives are resistant to the notion of "experiment."

- We are often in cultures where failure, a natural part of the learning process, is avoided.
- In most corporate cultures, admitting that you don’t know is risky. You want others to believe you’re the expert.

What CAN we do?

- Look at the research that others are doing, e.g., cognitive scientists, workplace designers
- Test your assumptions in diverse groups

Do Food…together

Everyone had lunch, tea, coffee together, they spent a lot of time talking and I wondered how anyone was getting any work done! But the conversations were not about the latest movie—they were always talking about science, suggesting ideas for experiments, sharing ideas, critiquing, giving feedback.

Now we eat lunch in our offices alone, doing e-mail. IMHO, this is a lousy way of doing science. You can't learn anything by doing e-mail.

At the Lindau Nobel Laureate Meeting, 2009 chemistry laureate Thomas Steitz recalled the Laboratory of Molecular Biology at Cambridge in the 1960s.

Agile Contributions

The notions of failure and learning have been brought to the table by Agile.

The emphasis has been shifting from blindly following a checklist to stopping after a short iteration to ask questions.

Agile can help move us to a more scientific approach. Each iteration can be framed as a small experiment, in the “real” sense of the word: hypothesis, field test, reflection on results. Encourage others to validate and share.

We need both

Our best hope for overcoming personal bias is to collaborate with diverse others, both testing our ideas and sharing stories.

“A Final Word about Stories,” IEEE Software, March/April 2014.

Send e-mail for a copy.

Thanks for listening ☺!