

Semat: Software Engineering Method and Theory

or

What are we doing here?

Richard Mark Soley, Ph.D.

A Programmer I Know



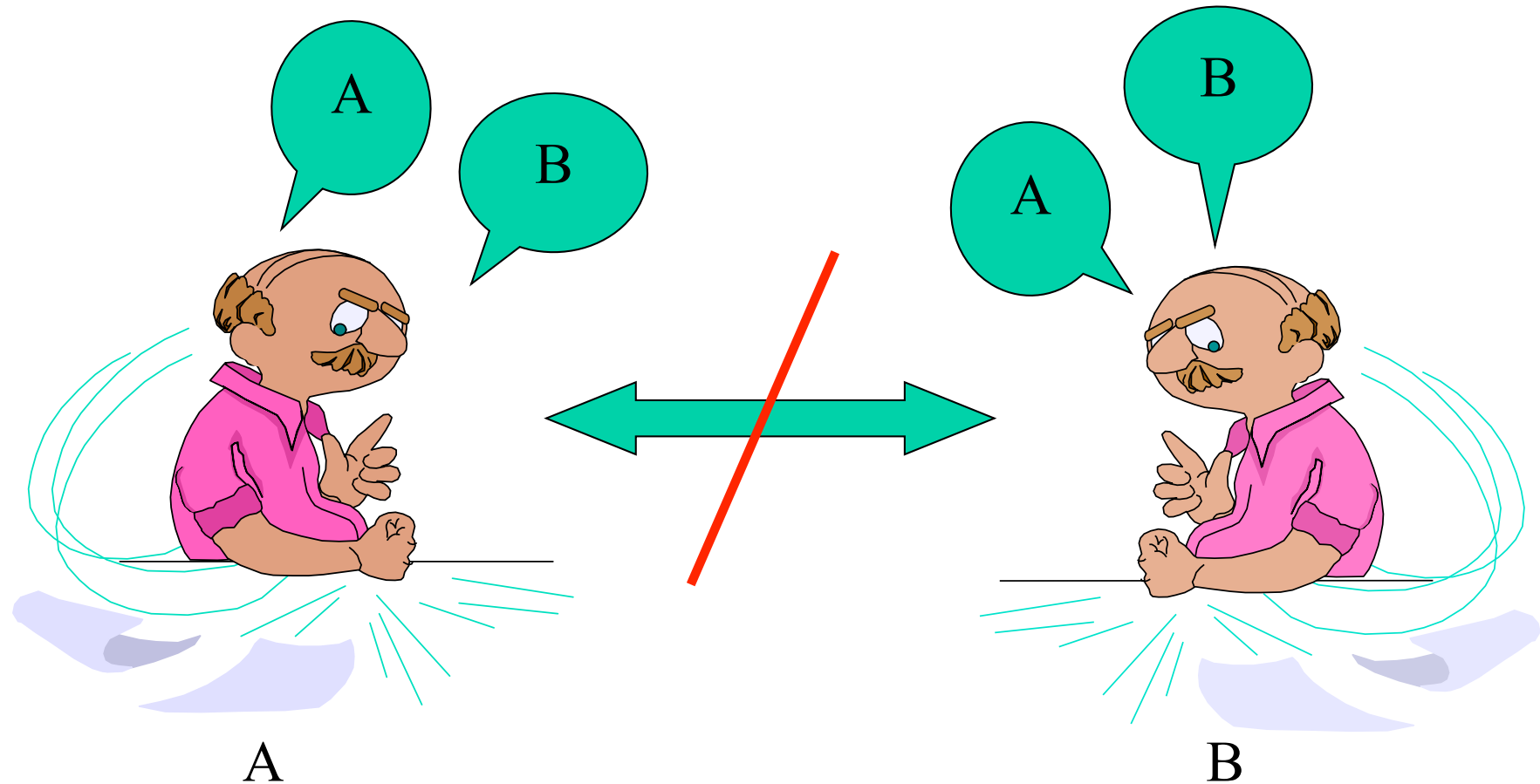
Definitions Are Hard

What's an Engineer?

- An Engineer is someone who can do for fifty cents what any damn fool can do for a dollar. (*Mark Twain*)
- The optimist says the cup is half full; the pessimist claims it's half empty. Engineers say the cup is twice as big as it needs to be. (*Anonymous*)

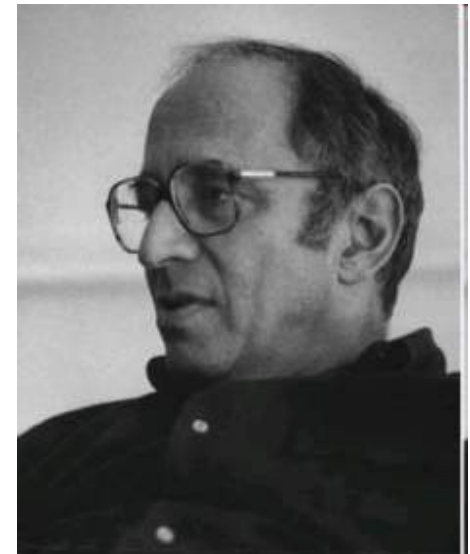
Unfortunately, we need to do better than that.

Because Agreements Are Hard

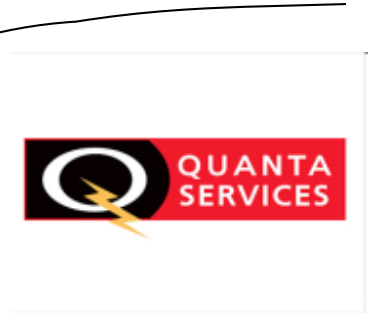


Conceptual Inertia

- “The Structure of Scientific Revolutions” (Thomas Kuhn, 1962)
- A scientific community cannot practice its trade without some set of *received beliefs*
- The infamous Paradigm Shift



From Here to Eternity



More Paradigm Shift



"Good news—I hear the paradigm is shifting."

The 20th Century Reformation



Our 21st Century Reformation



Some Bad News



1933

And Some Worse News

American Scientist online
THE MAGAZINE OF SIGMA XI, THE SCIENTIFIC RESEARCH SOCIETY

[see full issue: March-April 2002](#)

MACROSCOPE

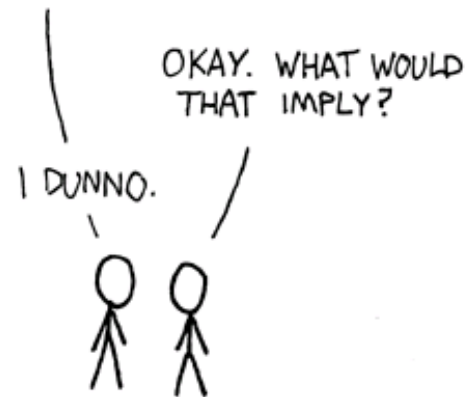
Is String Theory Even Wrong?

[Peter Woit](#)

We Need a (Useful) Theory

STRING THEORY SUMMARIZED:

I JUST HAD AN AWESOME IDEA.
SUPPOSE ALL MATTER AND ENERGY
IS MADE OF TINY, VIBRATING "STRINGS."



Call for Action

Software engineering is gravely hampered today by immature practices.

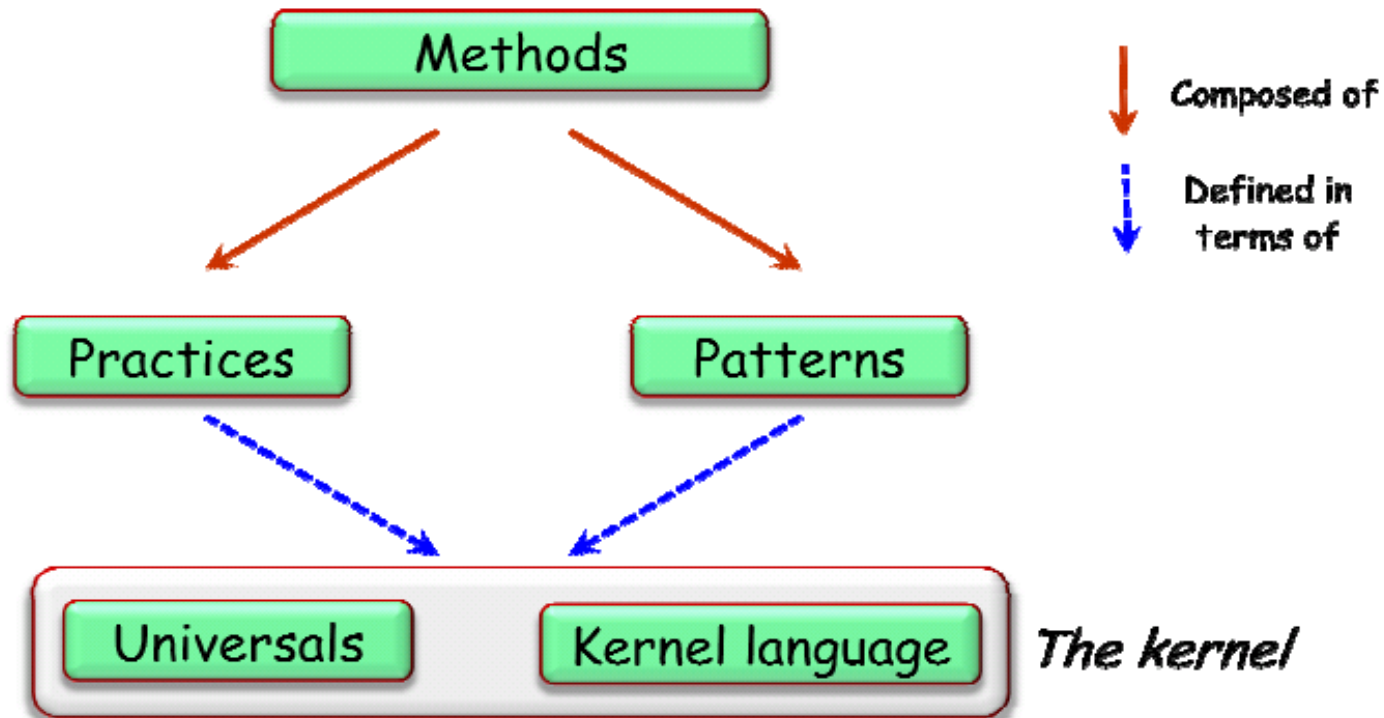
Specific problems include:

- The prevalence of fads more typical of fashion industry than of an engineering discipline.
- The lack of a sound, widely accepted theoretical basis.
- The huge number of methods and method variants, with differences little understood and artificially magnified.
- The lack of credible experimental evaluation and validation.
- The split between industry practice and academic research.

We support a process to refound software engineering based on a solid theory, proven principles and best practices that:

- Include a kernel of widely-agreed elements, extensible for specific uses
- Addresses both technology and people issues
- Are supported by industry, academia, researchers and users
- Support extension in the face of changing requirements and technology

The Schema of Our Effort



Tracks of our Tears

- Definitions
- Theory
- Universals
- Kernel Language
- Assessment

“Tracks” of our Tears

- This introduction (nearly over!)
- Everyone who sent a position in time gets to introduce his position (briefly)
- Five track discussions *in plenary*
 - Introduction by Track Chair
 - Open Discussion
- Troika partners give closing position

We Started This Craziness



But It Takes a Community



Please Be Patient

- There are many points of view here
- There are many more in the wider industry
- None of us are patient...
- ...but all of us need to consider other points of view.

*The focus is on delivery of v.1 in one year, so don't be **too** patient 😊*