



# **Agile, Systems, and the Deception of Training**

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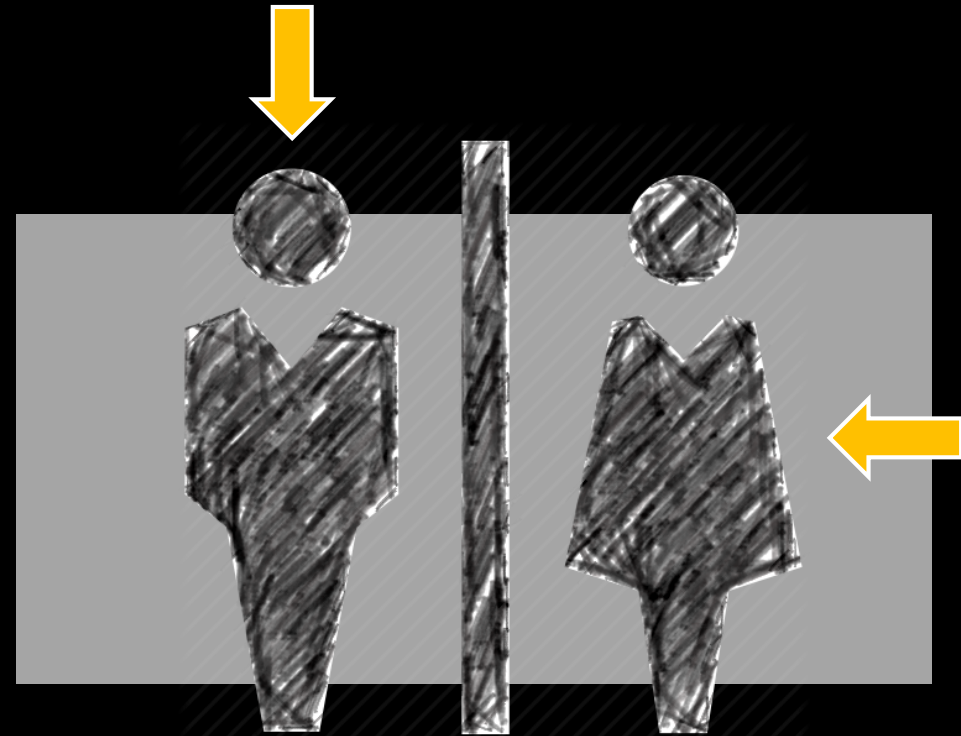
# System of Profound Knowledge (W. Edwards Deming)

1. Appreciation for a system.

2. Knowledge of variation.

3. Theory of knowledge.

4. Psychology.





Is your team or organization behaving according to Agile principles?



How many have received Agile-related training?



This is uncomfortable.



We're most comfortable with reductionist thinking.

Dr. Russell Ackoff

1. Take the thing apart.
2. Attempt to understand what the parts do.
3. Assemble an understanding of the parts into an understanding of the whole.



## Our Manufacturing Process

From seedling to high-value biopharmaceutical in eight weeks

Plant *Nicotiana benthaminia* seeds

Plants grow, generating biomass



6 weeks



Infiltrate plants with agrobacterium

Plants grow, producing drug in each cell



1 week

Grow agrobacterium containing genetic sequence for target drug



3 days

Extract drug



1 day

Purify drug



4 days

Fill vials



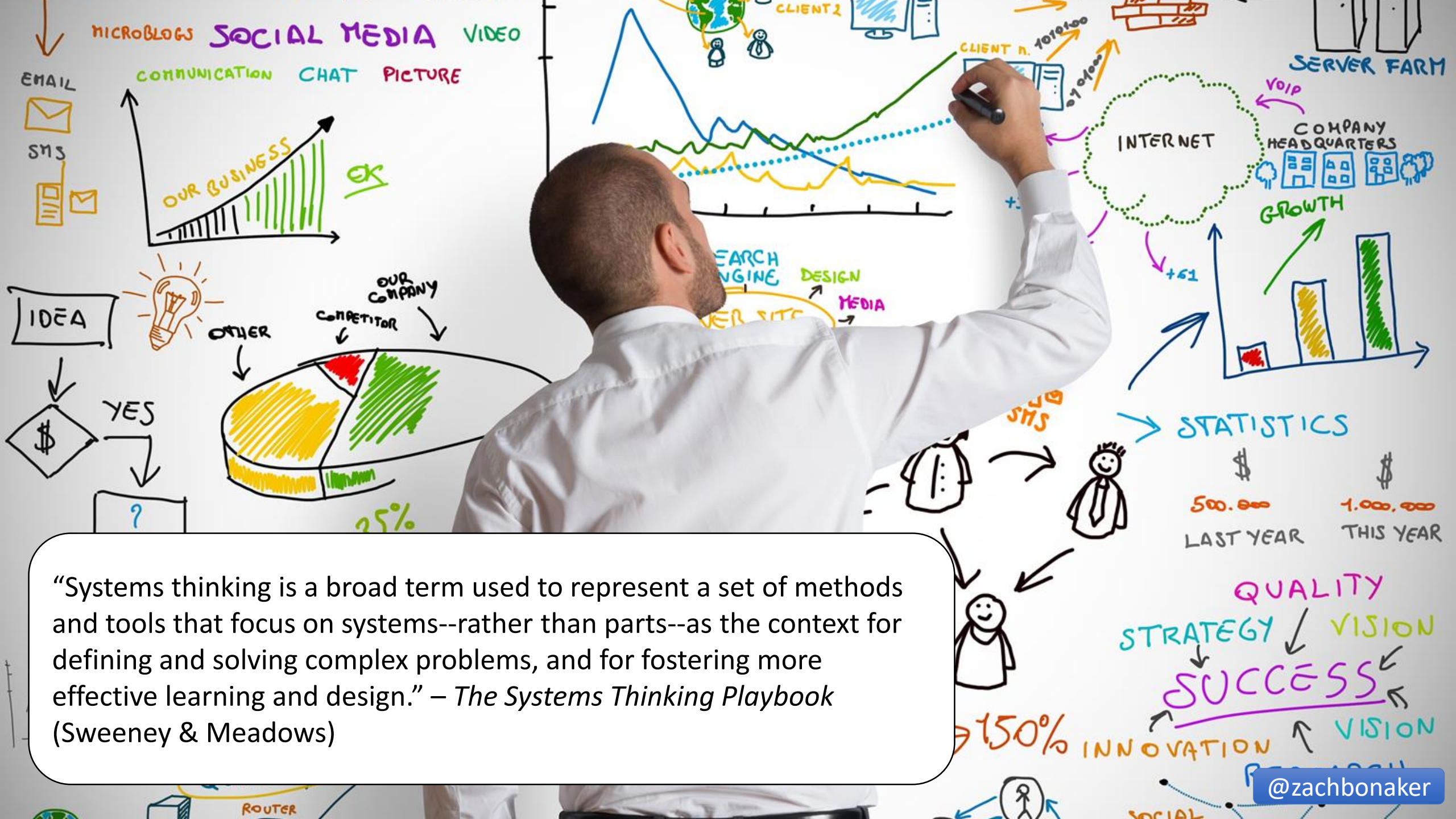
1 day

Package product



1 day





“Systems thinking is a broad term used to represent a set of methods and tools that focus on systems--rather than parts--as the context for defining and solving complex problems, and for fostering more effective learning and design.” – *The Systems Thinking Playbook* (Sweeney & Meadows)

According to ISO 9000:2015 (“Fundamentals of Quality Management Systems”)

A system is:

“A set of interrelated or interacting elements.”

“A system is a whole, that consists of parts, each of which can affect its behaviors or properties.”

<https://www.youtube.com/watch?v=OqEeIG8aPPk> (Ackoff, 1994)





“A series of functions or activities within an organization that work together for the aim of the organization.”

Deming W. Edwards (1994) *The New Economics for industry, government and education*. Second Edition MIT Press

“A set of variables that influence one another.”

Senge Peter M (2006) The Fifth Discipline, The Art and Practice of the Learning Organization. Random House



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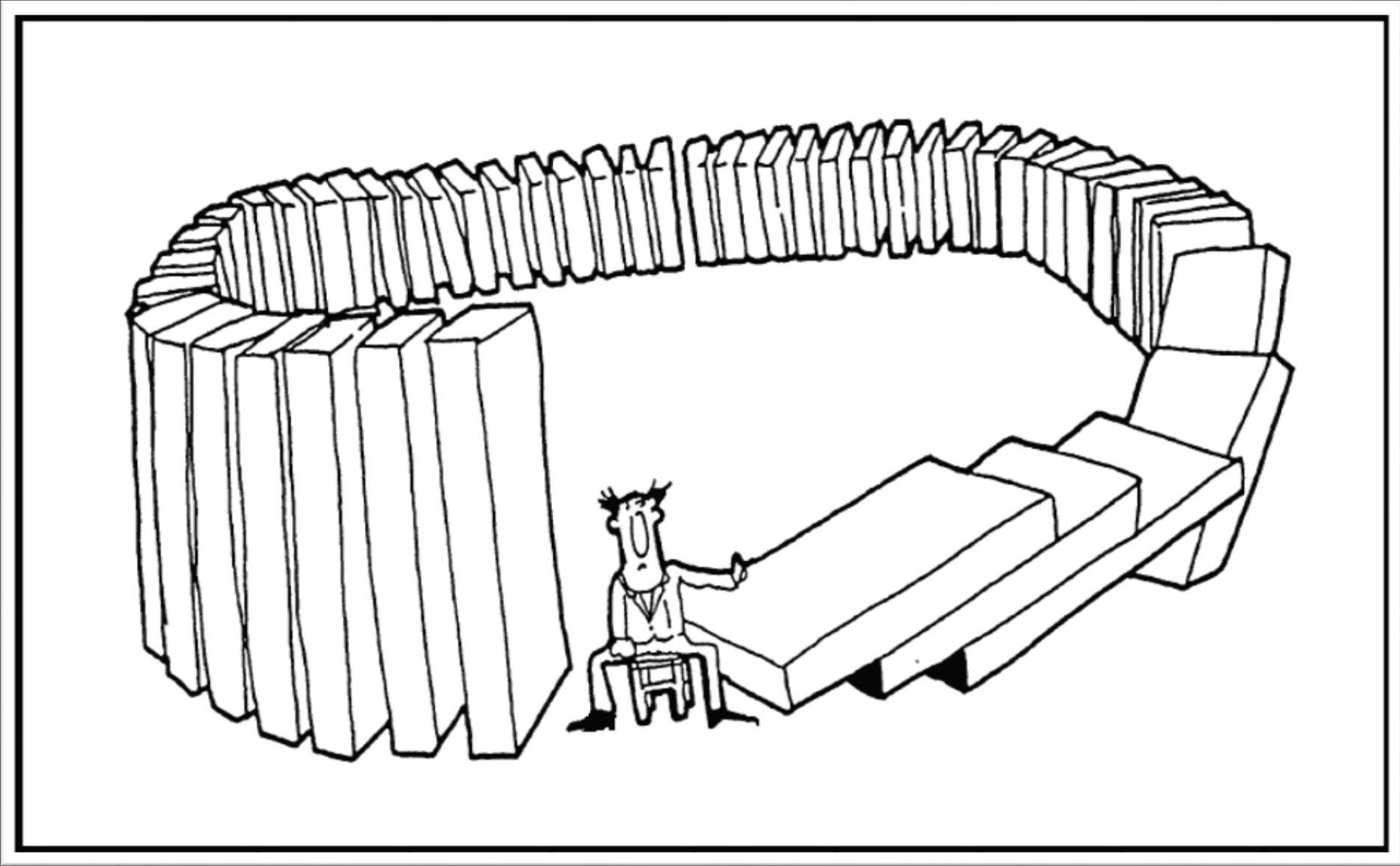


## Cause & Effect Loop

Dynamic, Unbound, Variable

Nouns, Variables, Results

Changing a variable causes a change to at least one other variable



**“Analysis” is everywhere.**

- Our companies are broken into functional parts.
- Our educational system doesn't teach the field, it teaches the parts.
- Our Scrum training doesn't guide people on becoming an Agile software company with Scrum; we teach the parts of Scrum.



**“Command-and-control managers like to buy change by training and projects, unaware that change really requires changing the system.”**

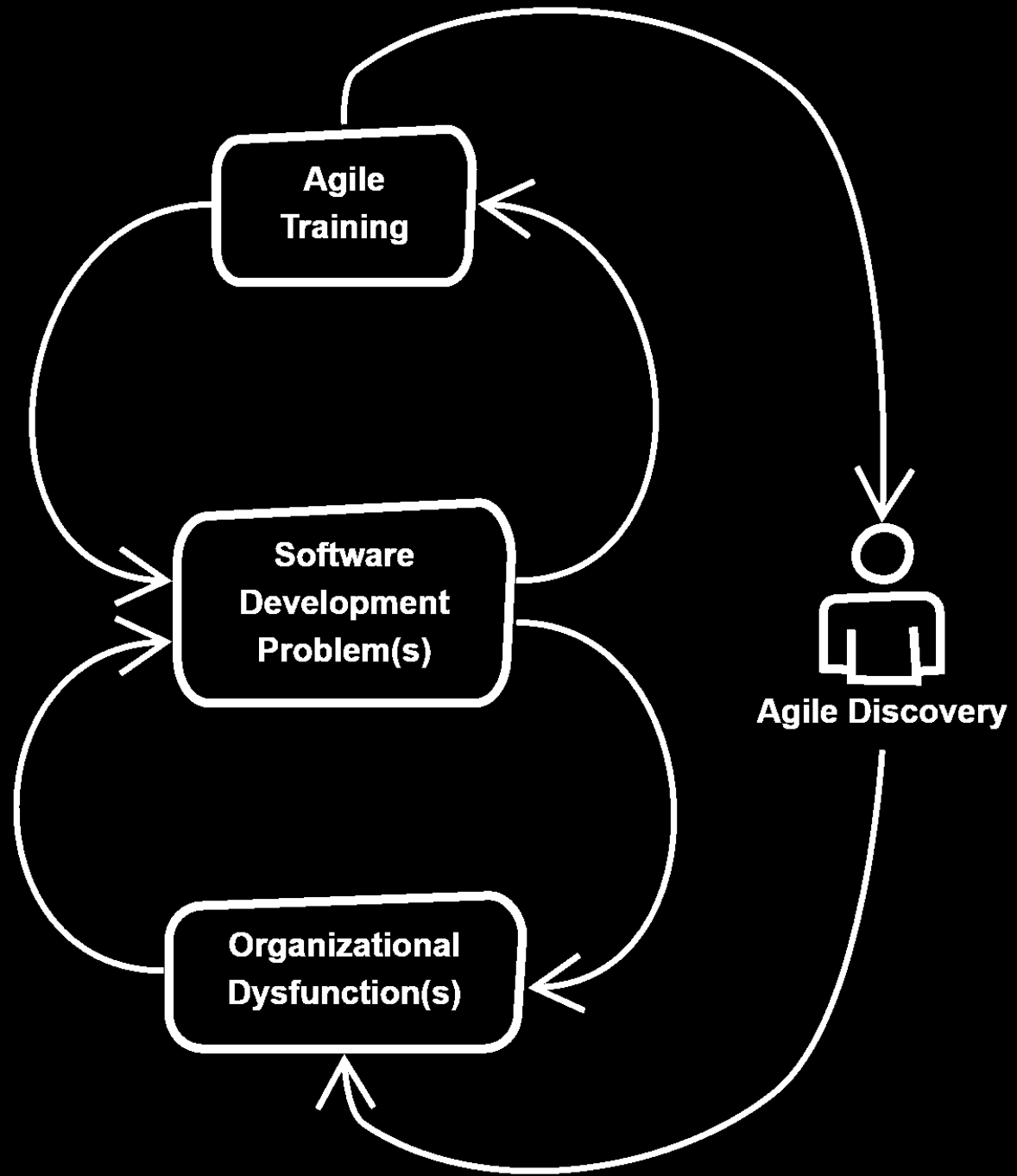
--John Seddon



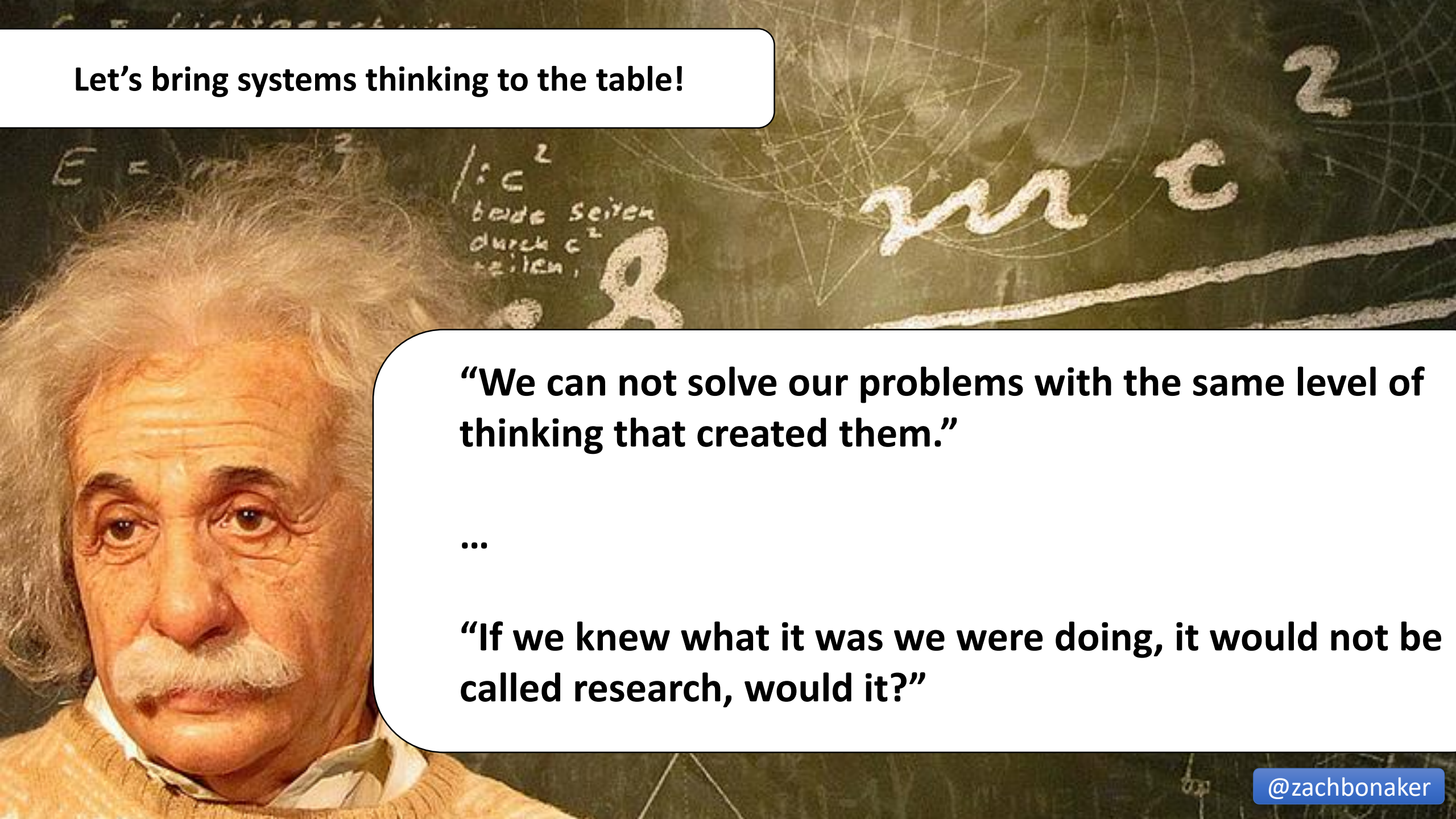
$$B = f(P, E),$$

Lewin's Equation (1936)

**What about training causes a change in behavior?**



Let's bring systems thinking to the table!



**“We can not solve our problems with the same level of thinking that created them.”**

...

**“If we knew what it was we were doing, it would not be called research, would it?”**

# *fin*

Content in this talk was highly influenced by (i.e., “recommended reading”):

- Peter Senge: *The Fifth Discipline, The Art and Practice of the Learning Organization*
- W. Edwards Deming: *The New Economics for Industry, Government and Education*
- W. Edwards Deming: *Out of the Crisis*
- Russell Ackoff & Herbert Addison: *Systems Thinking for Curious Managers*
- Linda Sweeney & Dennis Meadows: *The Systems Thinking Playbook*
- Donella Meadows: *Thinking in Systems: A Primer*