

GECCO '18 Companion, July 15–19, 2018, Kyoto, Japan

© 2018 Copyright is held by the owner/author(s).

ACM ISBN 978-1-4503-5764-7/18/07.

<https://doi.org/10.1145/3205651.3207886>



Shift Your Laboratory into Higher Gear

with Three Shift Skills & Four Smooth Rules

Dave Goldberg

ThreeJoy Associates, Inc.

deg@threejoy.com

www.threejoy.com

Check in

1. Name
2. Institution or Organization
3. **Prompt:** I came to this workshop because...

Actual Slides:

www.threejoy.com/GECCO2018



**Surprising
journey**

1989



GENETIC ALGORITHMS

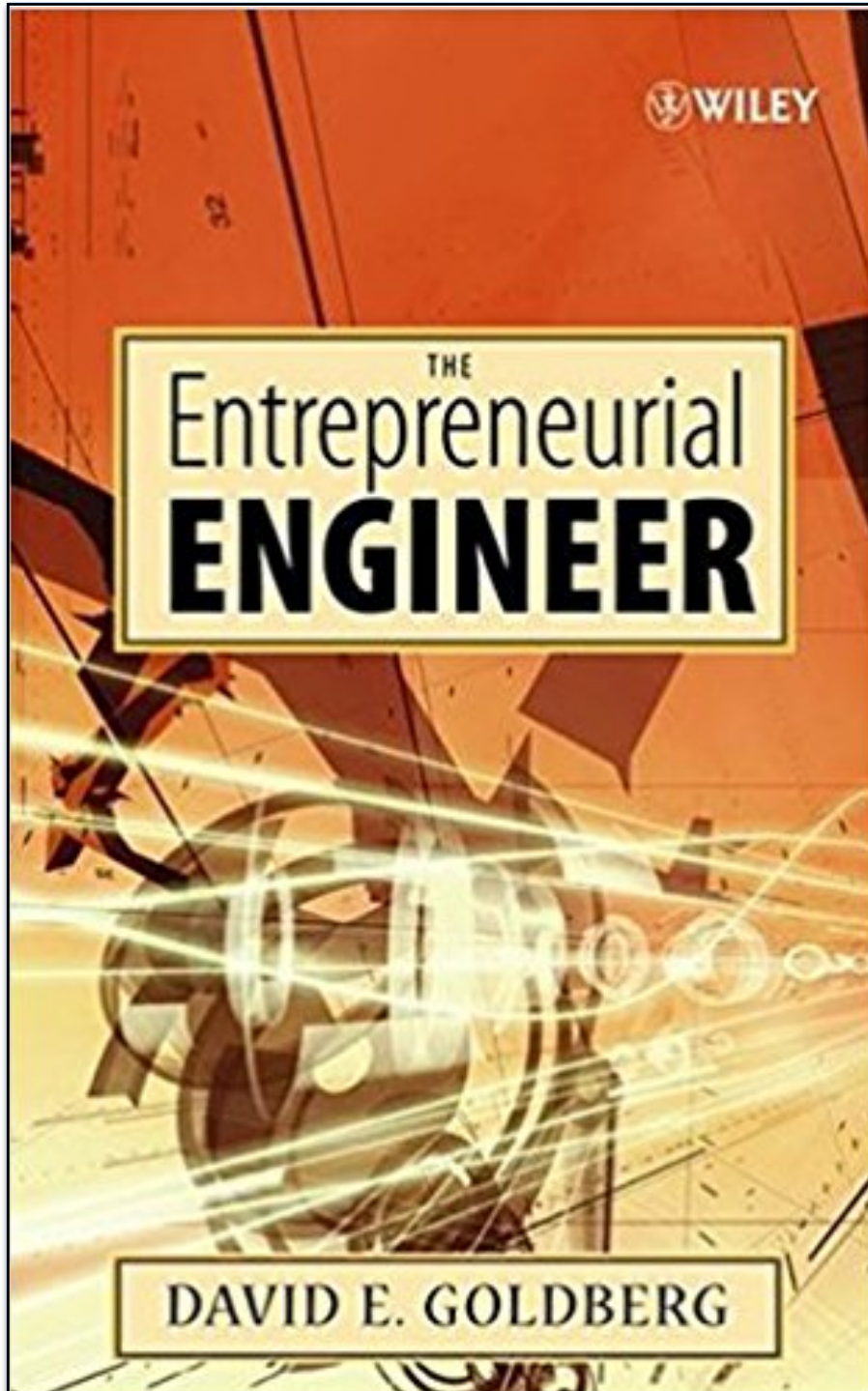
*in Search,
Optimization &
Machine Learning*

DAVID E. GOLDBERG

2004



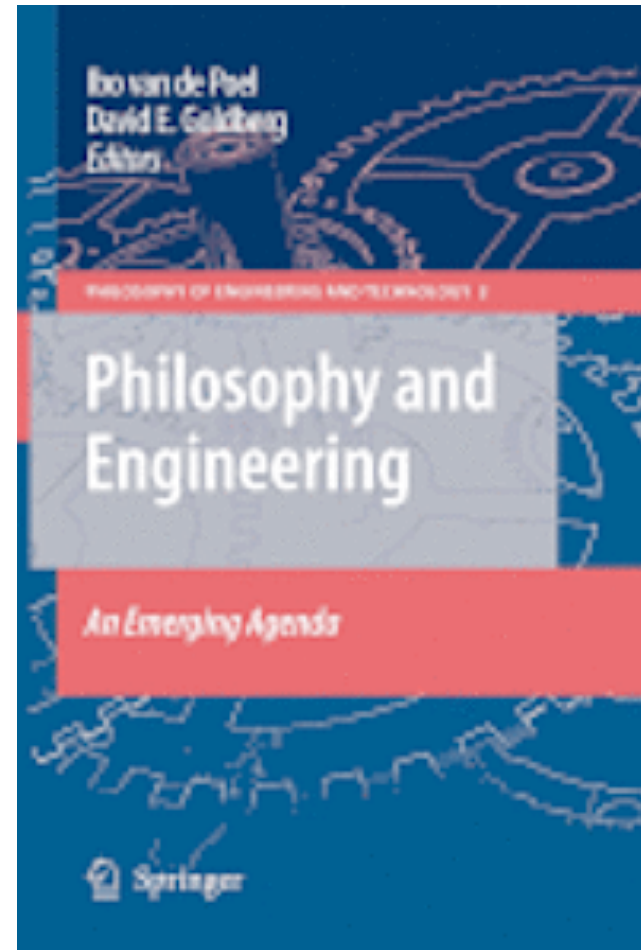
 sharethis



2006

2006: Philosophical turn

- Tweet entitled:
Philosophy of engineering not a contradiction in terms
- Led to WPE 2007 & fPET
- Also led to ETSI and iFoundry



Summer 2007



Illinois Foundry for Innovation in Engineering Education

www.ifoundry.illinois.edu

31 December 2010: Resigned professorship & tenure

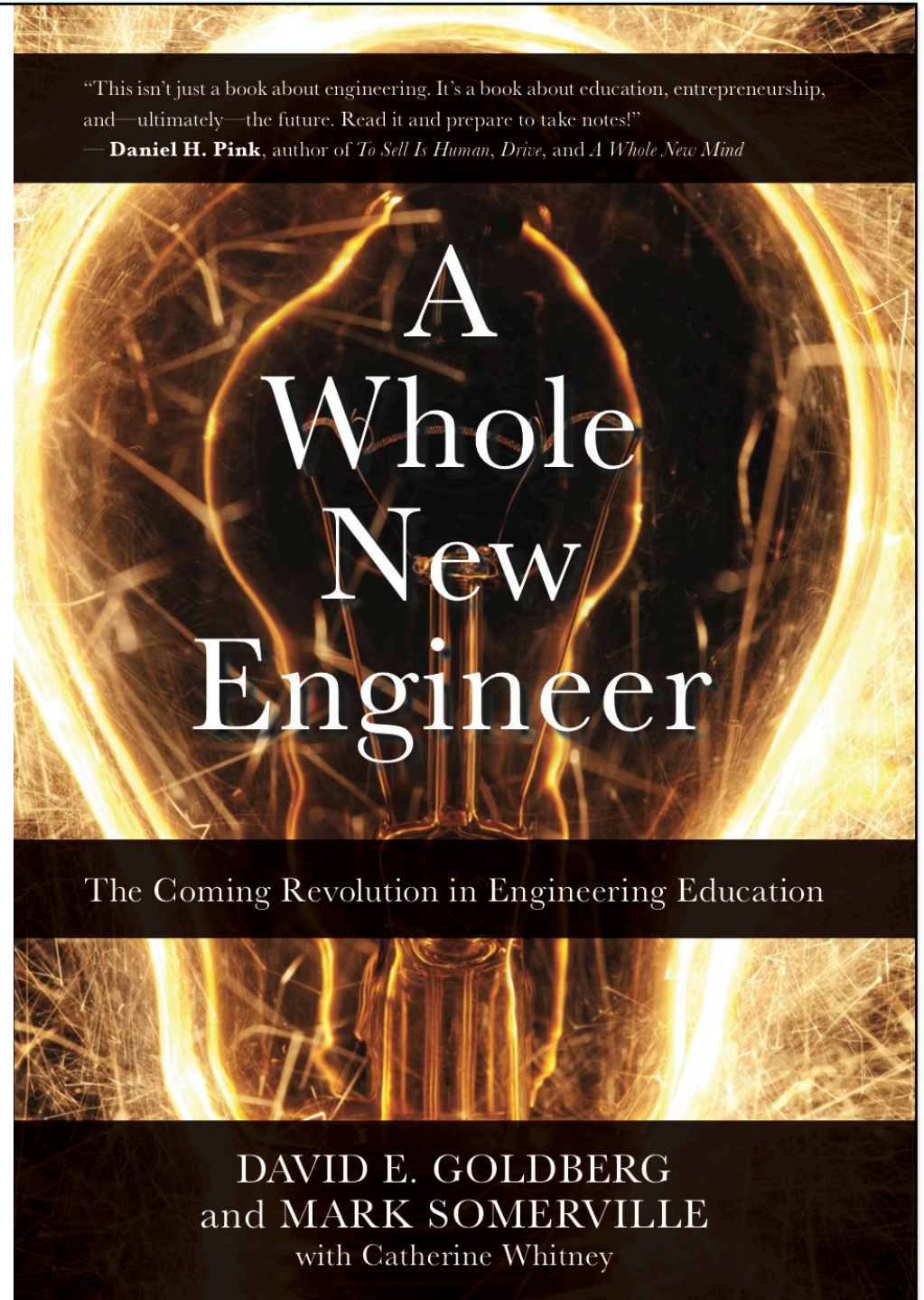


ThreeJoy = Consulting, Coaching, & Training

3 Joys = Engineering, Learning & Community

October 2014

www.wholenewengineer.org



Georgetown Leadership
Coaching Certificate





**Surprising
journey**

Reflection & Discussion

What are (what will be) your greatest challenges researcher or lab member/leader?

Process:

- Jot down thoughts individually.
- Talk in pairs or small groups.
- Debrief.

Debrief

Institutional/organizational life has changed...

"A thoughtful and provocative...
picture of what it takes to make a great 21st...

"Interesting... and smart." — The Boston Globe

ATIONAL BESTSELLER

THE RISE OF THE CREAT CL

...and how it's tra
leisure, commu
everyday life

ARD FLORID

2002

The New York Times and BusinessWeek Bestseller
"THIS BOOK IS A MIRACLE. Completely original and profound."
—Tom Peters, author of *In Search of Excellence*

UPDATED
WITH NEW
MATERIAL

A WHOLE NEW MIND



WHY RIGHT-BRAINERS
WILL RULE THE FUTURE

DANIEL H. PINK

2005



2005

World Is Flat

BRIEF HISTORY OF
21ST-CENTURY CENTURY

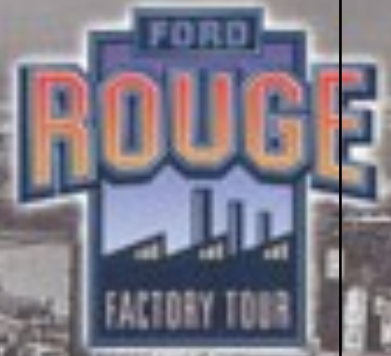
Thomas L. Friedman

Democratization of information

WW2 Information	Creative Era Information
Hard to access	Easy to access
Expensive	Free or cheap
Sequestered	Widely shared

Ford Rouge Plant, 1947

Dearborn, Michigan

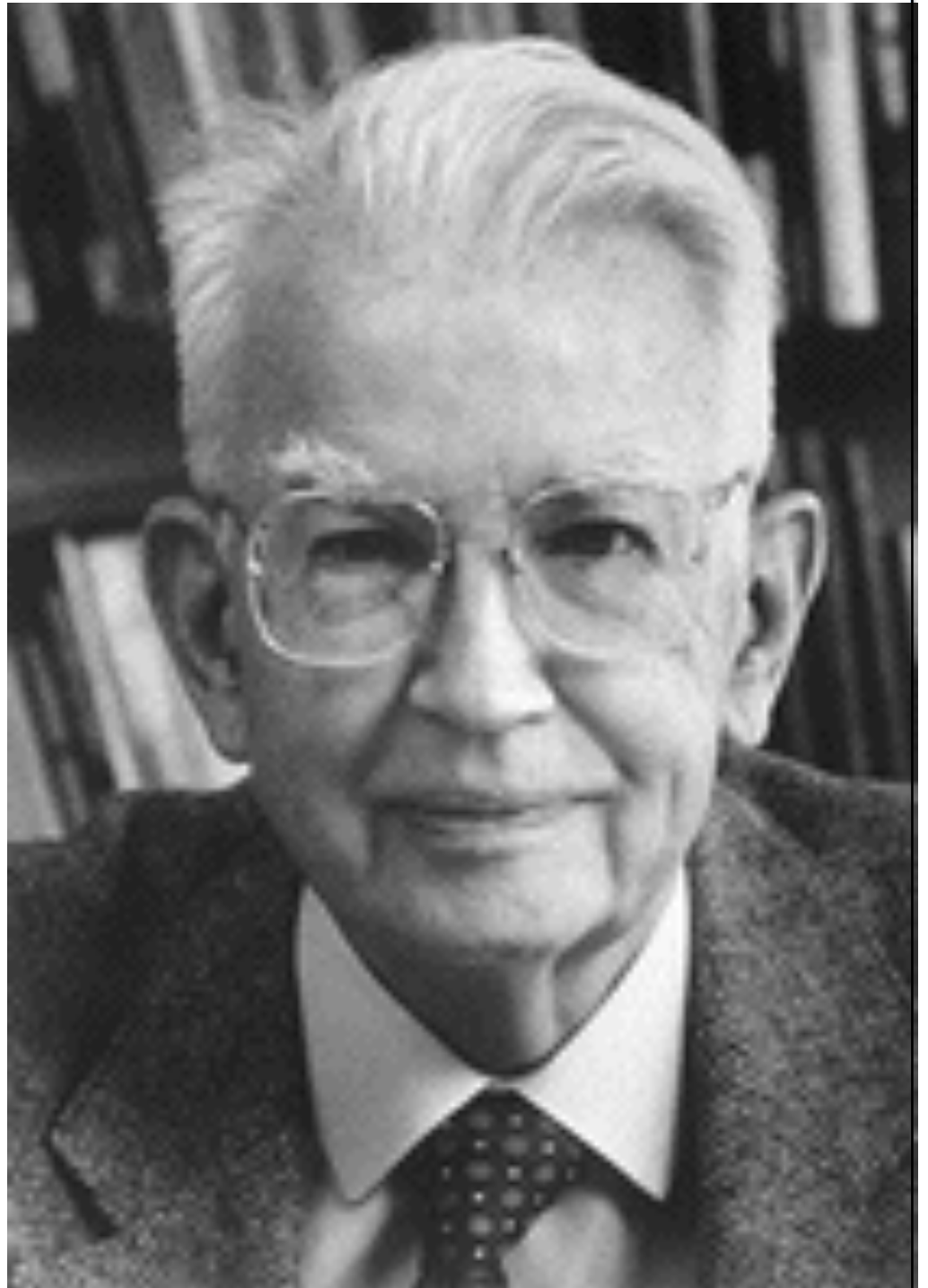


“Returns to scale” replaced by...

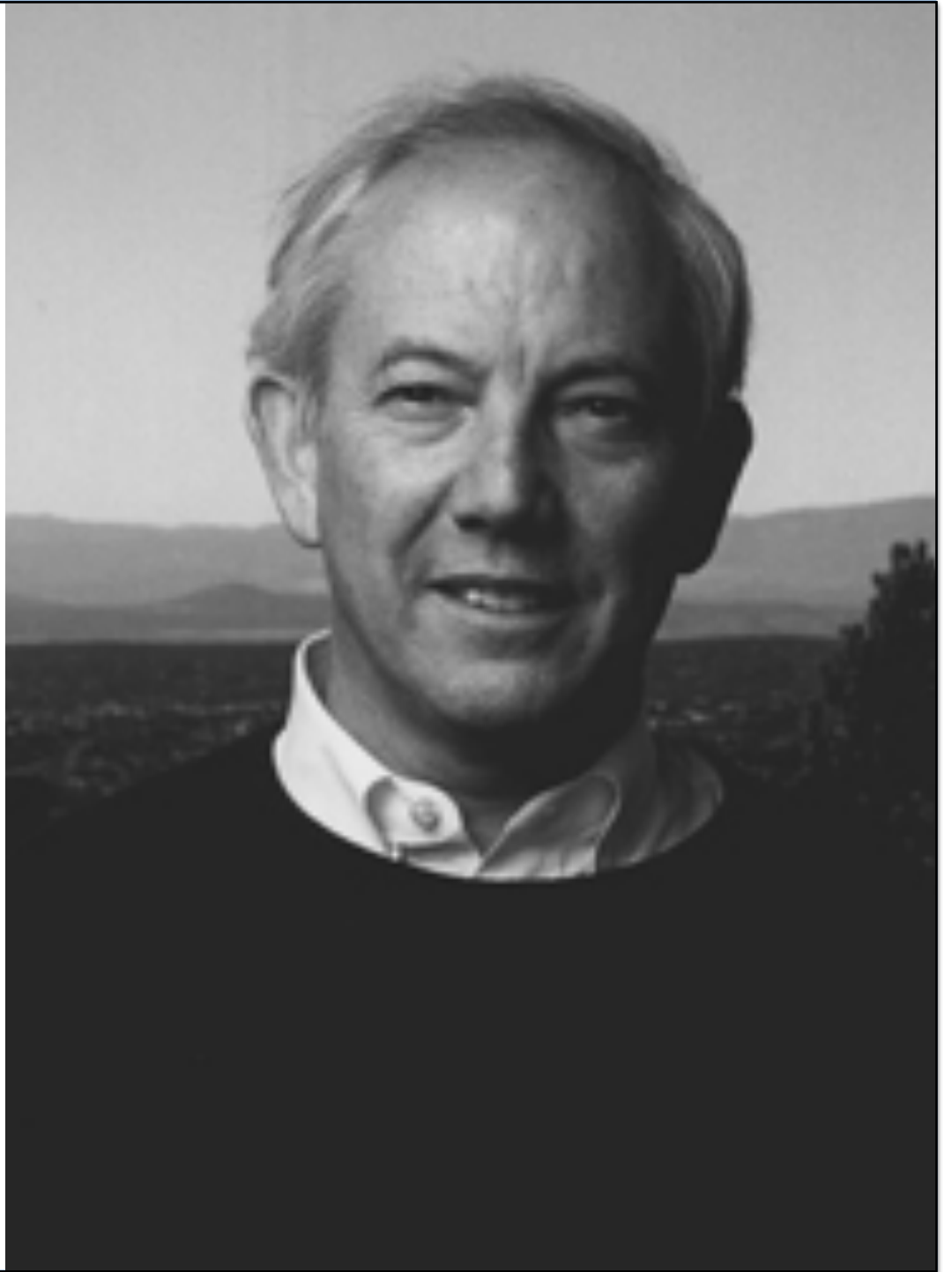
“Stick to core competence”



Ronald Coase:
Transaction costs

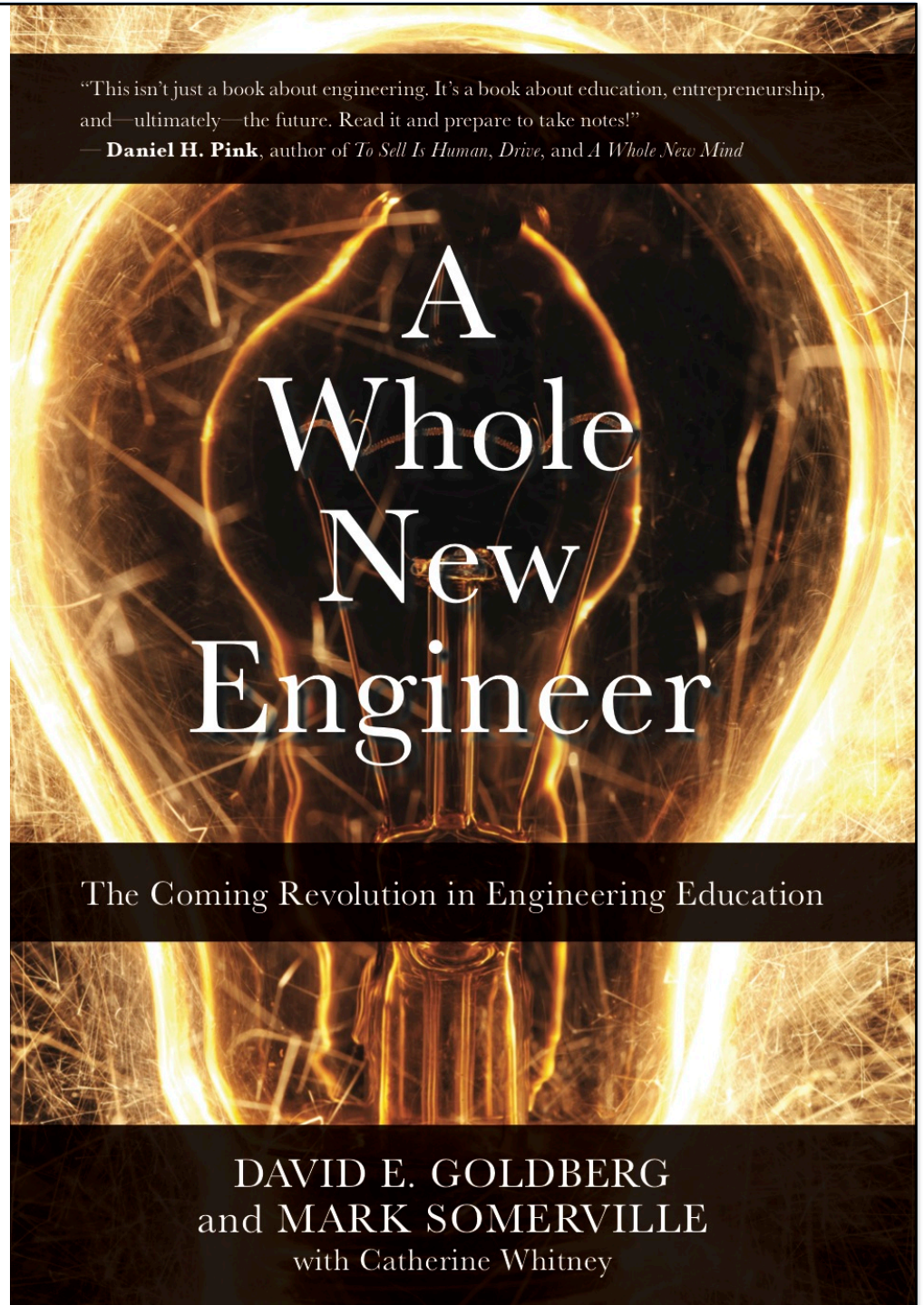


W. Brian Arthur:
Network returns



More in chapter 3

www.wholenewengineer.org



What does this mean for researchers?

Practitioner's way of knowing as ...

1. Technical rationality
2. Reflection-in-action

The Reflective Practitioner

How Professionals
Think in Action

Donald A. Schön

Practitioner's way of knowing as ...

1. Technical rationality
2. Reflection-in-action

Dominates

Copyrighted Material

The Reflective Practitioner

How Professionals
Think in Action

Donald A. Schön

Copyrighted Material

Practitioner's way of knowing as ...

1. Technical rationality
2. **Reflection-in-action**

Denigrated:
“Soft skills”

Copyrighted Material

The Reflective Practitioner

**How Professionals
Think in Action**

Donald A. Schön

Copyrighted Material

Democratization of information

WW2 Information	Creative Era Information
Hard to access	Easy to access
Expensive	Free or cheap
Sequestered	Widely shared

Extant theory is merely a kind of info.

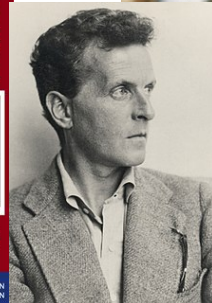
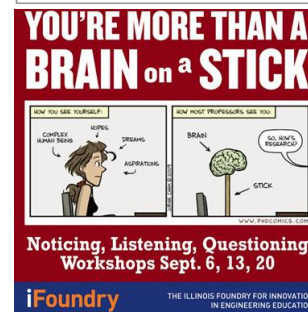
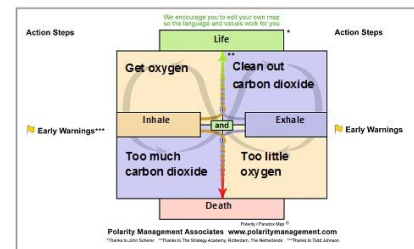
Returns to expertise diminished.

Returns to reflection-in-action increased.

Claim: 5 Core Shifts of Change Mastery

5 Shifts

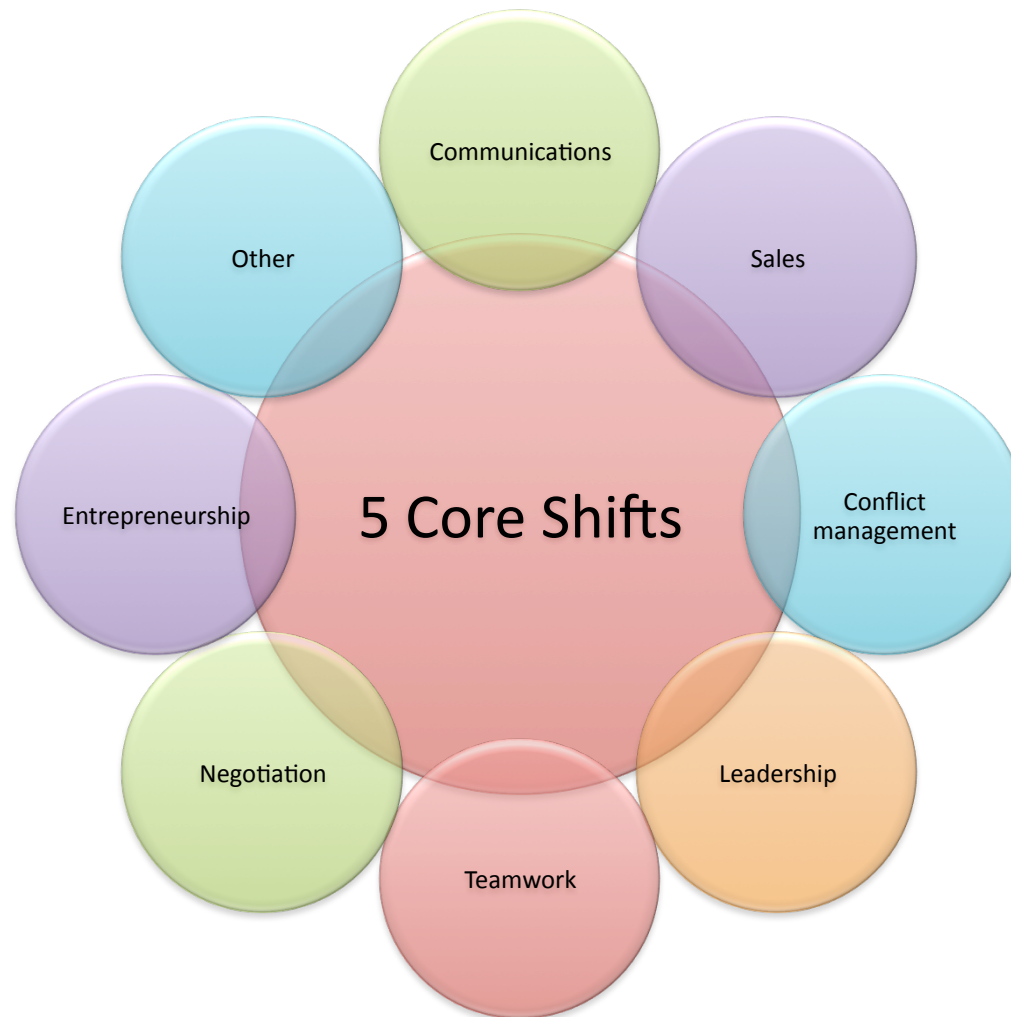
1. Yogi-Schoen shift
2. Brain-on-a-stick shift
3. Wittgenstein's shift
4. Little bets shift
5. The shift shift



More detail at threejoy.com/change1, [change2](http://threejoy.com/change2), [change3](http://threejoy.com/change3)

Shift as small change to something you already do well that gives great change power.

Conversation-in-Action (“Shift”) Skills





A word about presence

A word about comfort

A word about discomfort

Choice Map™

We choose moment by moment

anything that impacts us at any moment
Thoughts Feelings Circumstances

START

Choose

Learner Path

Judger Path

React



Marilee Adams, Ph.D.
800-250-7823
www.inquiryinstitute.com

JUDGER PIT

SWITCH

Ask Learner Questions to Avoid Judger Pit

Switching Lane

JUDGER

- Automatic Reactions
- Blame Focused
- Win-Lose Relation

LEARNER

- Thoughtful Choices
- Solution Focused
- Win-Win Relating

What happened?
What do I want?
What are the facts?

What assumptions
am I making?
What can I learn?

What are they thinking,
feeling, and wanting?
What am I responsible for?

What are my choices?
What's best to do now?
What's possible?

Whose
fault is it?

What's wrong
with me?
What's wrong
with them?

Why am I such a failure?
Why are they so stupid?
Why bother?



NOTICING, LISTENING, AND QUESTIONING

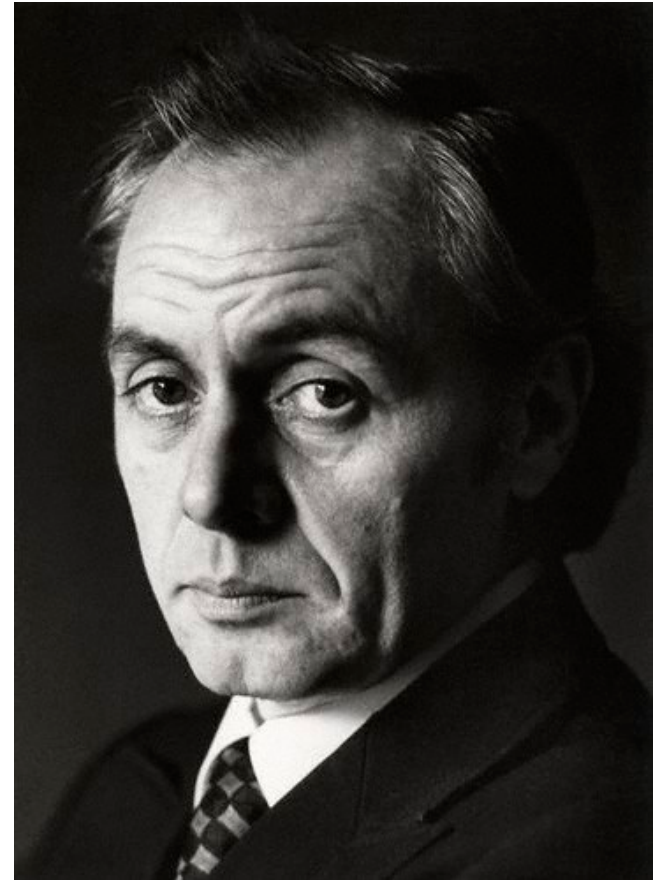
Noticing

Right now: What do you notice?

Debrief

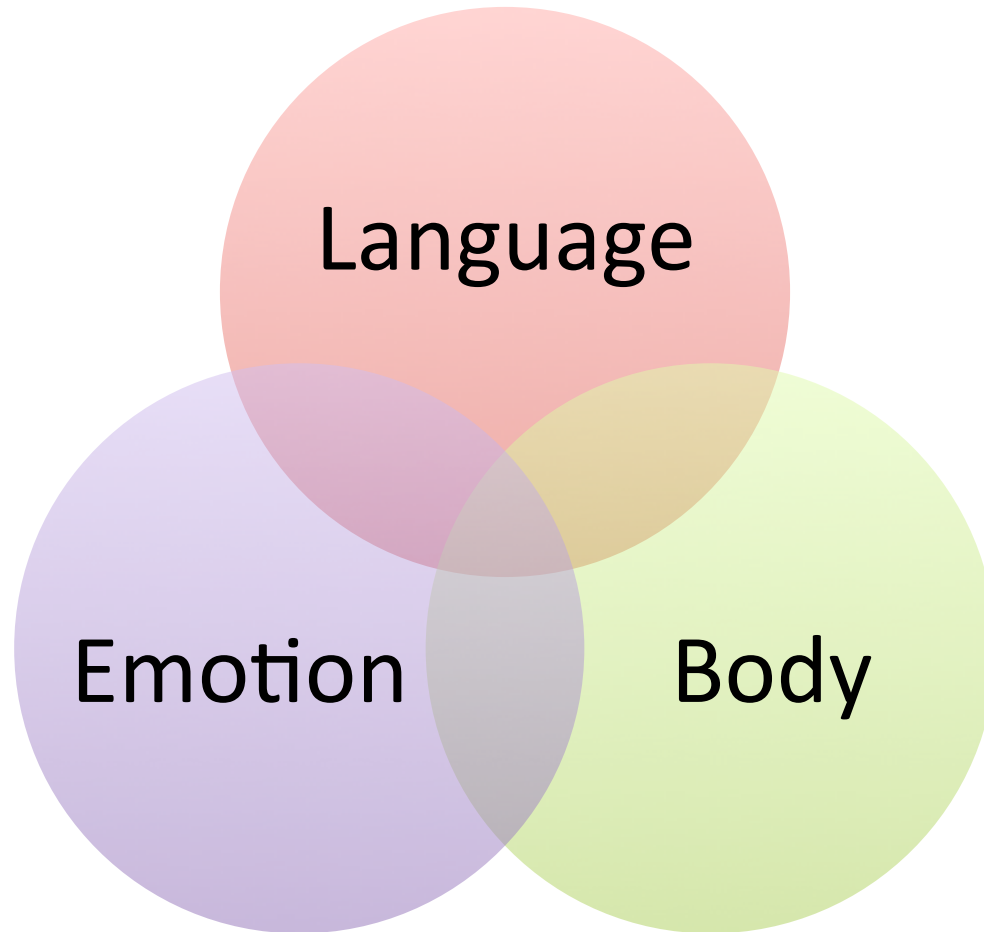
Centrality of Noticing to Change

- The range of what we think and do is limited by what we fail to notice. And because we fail to notice that we fail to notice, there is little we can do to change; until we notice how failing to notice shapes our thoughts and deeds.



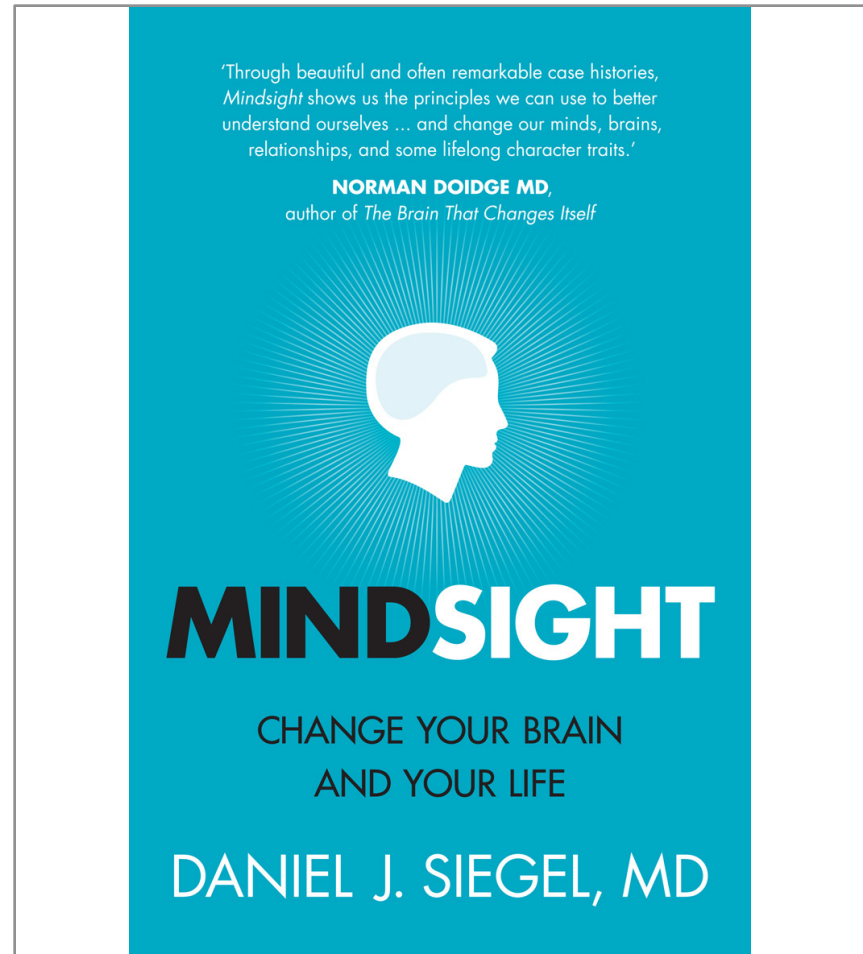
R. D. Laing (1927-1989)

3 Domains of Noticing



Brain Science

- Noticing begets increased connections.
- Meditation and reflection builds connections in prefrontal cortex.
- Exercise self-observation and noticing of others and you get better at it.



Exercise: Pause Practice

- Close eyes.
- Take 3 deep breaths.
- Notice your emotional-mental state.



Listening

Listening Exercise:

A Recent Experience

Identify someone to partner with. Decide which of you will be the listener, and which will be the storyteller.

Stories not deep, dark secret, but exercise better if story is about a challenge with some emotional content.

Level-1 or Internal Listening

- “Level I, our awareness is on ourselves. We listen to the words of the other person, but our attention is on what it means to us personally. At Level I, the spotlight is on “me”: my thoughts, my judgments, my feelings, my conclusions about myself and others. ... At Level I, there is only one question: What does this mean to me?”

Level-I Dialogue*

Student: The new semester is a disaster. I've got five technical classes, profs who keep piling on homework, and I'm not sure that engineering is really even a good fit for me. I really miss drawing and painting like I did in high school. And I've got a big mechanical design proposal due next week.

FACULTY ADVISOR: I went through the same thing when I was your age. The key is to make sure you've got your long-term vision of an engineering career in sight.

Student: That's sort of the dilemma, though. I thought the promise of a job and high pay was enough, but if engineering work is like engineering school, I'm not sure I want any part of it.

FACULTY ADVISOR: That'll work out. Your worries are temporary. Don't let them distract you from the real issues—getting good grades and graduating.

Student: This feels like more than a little distraction.

FACULTY ADVISOR: I'm sure you can tough it out. I had my share of tough semesters too, and I'm glad I stuck with it. In the meantime, let's get back to the concept for your design proposal.

Student: Okay. If you're sure . . .

*Adapted from Whitworth, Laura; House, Karen Kimsey; House, Henry Kimsey; Sandahl, Phillip (2010-11-15). Co-Active Coaching : New Skills for Coaching People Toward Success in Work and Life (Kindle Locations 766-778). Davies-Black. Kindle Edition.

Level-II or Focused Listening

- At **Level II**, there is a sharp focus on the other person. The listeners asks questions to understand the other and doesn't give advice or relay their own thoughts and feelings. Sometimes you can see it in each person's posture: both leaning forward, looking intently at each other. At Level 2, there is only one question: What does the other mean by this?

Level-II Dialogue*

Student: The new semester is a disaster. I've got five technical classes, profs who keep piling on homework, and I'm not sure that engineering is really even a good fit for me. I really miss drawing and painting like I did in high school. And I've got a big mechanical design proposal due next week.

FACULTY ADVISOR: In what ways is art important to you? This is a critical period in your engineering education.

Student: Art helps me express myself and it helps me keep a sense of balance. Right now I feel like a bit of a robot.

FACULTY ADVISOR: How can you do art and finish the engineering education you've started?

Student: I suppose I could clone myself.

FACULTY ADVISOR: I can see this is a real dilemma. You've got values to honor in more than one important area of your life. Let's look at some options. Would that be useful?

Student: Yeah. Good. Frankly, I was starting to feel trapped—like there was no way out.

* Adapted from Whitworth, Laura; House, Karen Kimsey; House, Henry Kimsey; Sandahl, Phillip (2010-11-15). Co-Active Coaching : New Skills for Coaching People Toward Success in Work and Life (Kindle Locations 811-822). Davies-Black. Kindle Edition.

2 Types of Listening

- At **Level I**, our awareness is on ourselves. We listen to the words of the other person, but our attention is on what it means to us personally. At Level I, the spotlight is on “me”: my thoughts, my judgments, my feelings, my conclusions about myself and others. **We interrupt the other person to share those thoughts and feelings.** At Level I, there is only one question: **What does this mean to me?**
- At **Level II**, there is a sharp focus on the other person. The listener asks questions to understand the other and **doesn't give advice or relay their own thoughts and feelings.** Sometimes you can see it in each person's posture: both leaning forward, looking intently at each other. At Level 2, there is only one question: **What does the other mean by this?**

Listening Exercise:

First pass: Storyteller tells story to listener & listener listens at **level one**. Listener interrupts storyteller to share his/her personal reactions to what storyteller is saying.

Second pass: Storyteller attempts to tell the same story & listener listens at **level two**. Listener asks questions about ambiguous terms or unclear story elements in effort to understand storyteller's meaning as fully as possible.

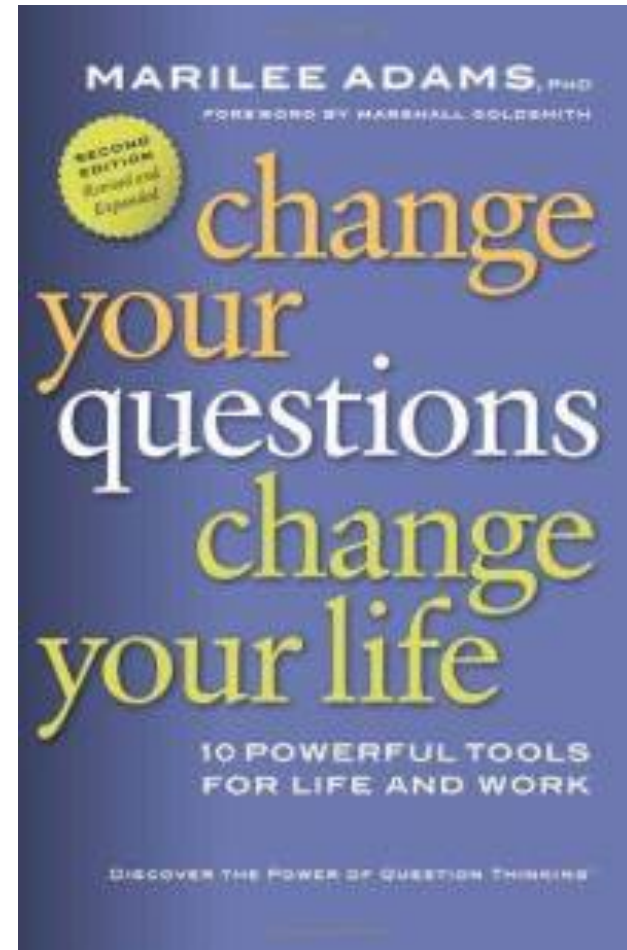
Noticing: Storytellers notice how it feels to be listened to at level 1 vs level 2. Listeners notice how it feels to listen at level 1 vs. level 2.

Debrief

Questions

Powerful Questions

- Different types of questions:
 - Information gathering
 - Open-ended questions
- Powerful questions are usually open-ended.



Shortcut to powerful Qs:

Begin questions with word “What.”

12 What Questions

1. What do you want?
2. What are your choices?
3. What assumptions are you making?
4. What are you responsible for?
5. In what other ways can you think about this?
6. What is the other person thinking, feeling, and wanting?
7. What are you missing or avoiding?
8. What can you learn? ... from this person or situation? ... from this mistake or failure? ... from this success?
9. What action steps make the most sense?
10. What questions should I ask (myself or others)?
11. What can turn this into a win-win?
12. What's possible?

Marilee G Adams. *Change Your Questions, Change Your Life: 10 Powerful Tools for Life and Work* (p. 184). Kindle Edition.

Creating Spaciousness for Self & Others

- Listen at level two (with empathy, without ego).
- Be curious about self or other.
- **For others:** Do not tell stories about yourself.
For self: Listen to your stories with detachment.
- Avoid judging right and wrong.
- These actions create **spaciousness** for the self & others to explore thoughts & feelings more easily

4 Smooth Rules

1. IlliGAL prime directive.
2. Appoint a student lab director.
3. Stay in love & trust & demand excellence.
4. Step into conflict or undesirable behavior quickly and clearly.



IlliGAL prime directive: If someone contributes materially to the ideas or work of a paper they are invited to be co-authors.

Edgar Schein:

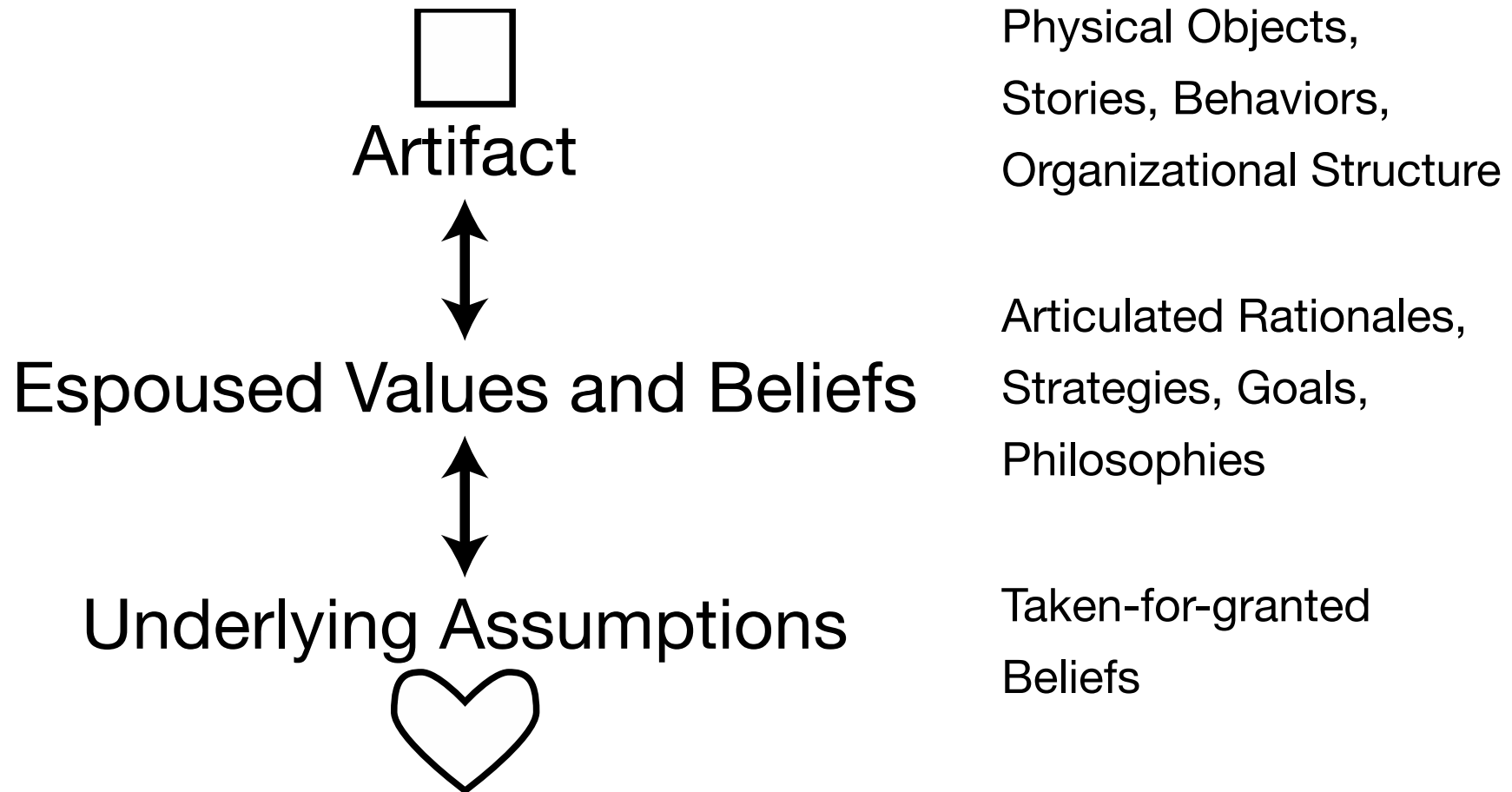
*Culture is a pattern of **shared tacit assumptions** that was learned by a group as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be **taught to new members as the correct way to perceive, and feel** in relation to those problems.*

Schein, Edgar H. (2009-08-13). The Corporate Culture Survival Guide (Kindle Locations 557-559). John Wiley and Sons. Kindle Edition.



Edgar Schein (b. 1928)

Schein's Three Levels of Culture

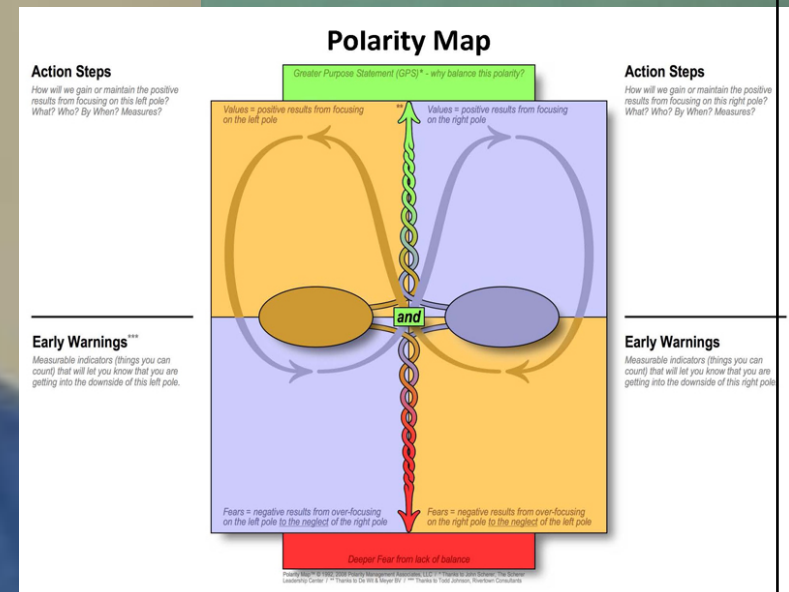
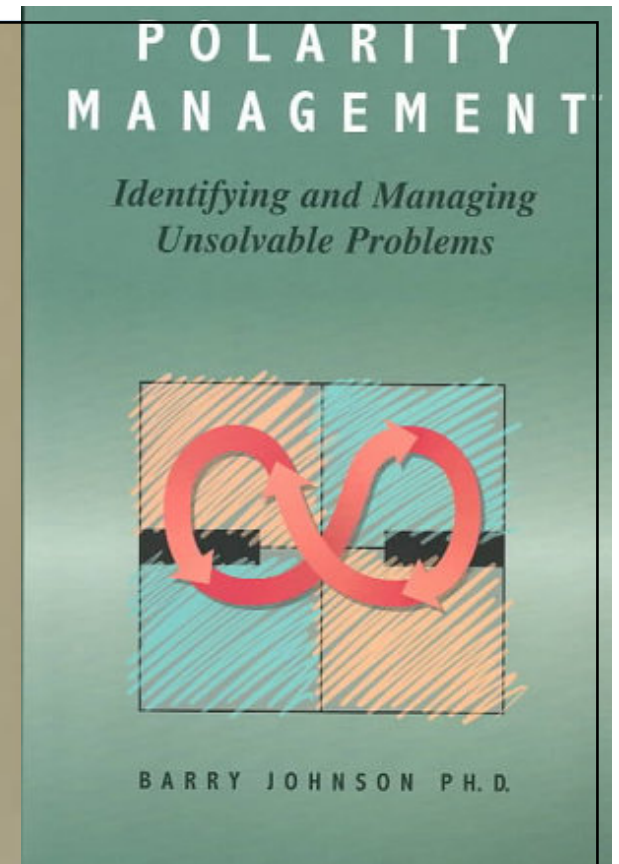


4 Smooth Rules

1. IlliGAL prime directive.
2. Appoint a student lab director.
3. Stay in love & trust & demand excellence.
4. Step into conflict or undesirable behavior quickly and clearly.

4 Smooth Rules

1. IlliGAL prime directive.
- 2. Appoint a student lab director.**
3. Stay in love & trust & demand excellence.
4. Step into conflict or undesirable behavior quickly and clearly.



Polarities: Opposites or contraries that need each other.

Polarity: Doing work & Getting others to work

4 Smooth Rules

1. IlliGAL prime directive.
2. Appoint a student lab director.
3. Stay in love & trust & demand excellence.
4. Step into conflict or undesirable behavior quickly and clearly.

4 Smooth Rules

1. IlliGAL prime directive.
2. Appoint a student lab director.
- 3. Stay in love & trust & demand excellence.**
- 4. Step into conflict or undesirable behavior quickly and clearly.**

Polarity Map

Action Steps

How will we gain or maintain the positive results from focusing on this left pole?
What? Who? By When? Measures?

Action Steps

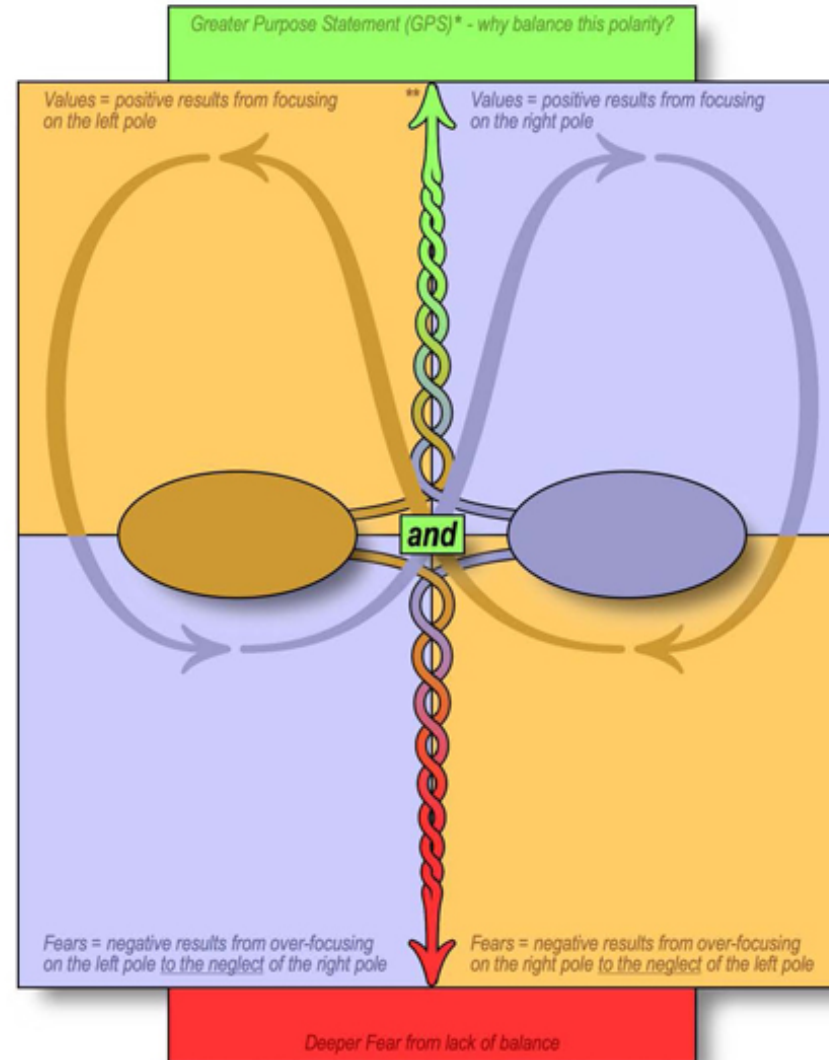
How will we gain or maintain the positive results from focusing on this right pole?
What? Who? By When? Measures?

Early Warnings***

Measurable indicators (things you can count) that will let you know that you are getting into the downside of this left pole.

Early Warnings

Measurable indicators (things you can count) that will let you know that you are getting into the downside of this right pole.



Polarity Map™ © 1992, 2008 Polarity Management Associates, LLC / * Thanks to John Scherer, The Scherer Leadership Center / ** Thanks to De Wit & Meyer BV / *** Thanks to Todd Johnson, Rivertown Consultants

Polarity: Unconditional love & demanding excellence.

4 Smooth Rules

1. IlliGAL prime directive.
2. Appoint a student lab director.
3. Stay in love & trust & demand excellence.
4. Step into conflict or undesirable behavior quickly and clearly.

Recap

"A thoughtful and provocative...
d picture of what it takes to make a great 21st...

"Interesting... and smart." — The Boston Globe

ATIONAL BESTSELLER

THE RISE OF THE CREAT CL

...and how it's tra
leisure, commun
everyday life

HARD FLORID

2002

The New York Times and BusinessWeek Bestseller
"THIS BOOK IS A MIRACLE. Completely original and profound."
—Tom Peters, author of *In Search of Excellence*

UPDATED
WITH NEW
MATERIAL

A WHOLE NEW MIND



WHY RIGHT-BRAINERS
WILL RULE THE FUTURE

DANIEL H. PINK

2005



World Is Flat

BRIEF HISTORY OF
21ST-CENTURY CENTURY

as L. Friedman

2005

Practitioner's way of knowing as ...

1. Technical rationality
2. Conversation-in-action

The Reflective Practitioner

**How Professionals
Think in Action**

Donald A. Schön



4 Smooth Rules

1. IlliGAL prime directive.
2. Appoint a student lab director.
3. Stay in love & trust & demand excellence.
4. Step into conflict or undesirable behavior quickly and clearly.

Takeaways: What 1-3 things do you take away from this session?

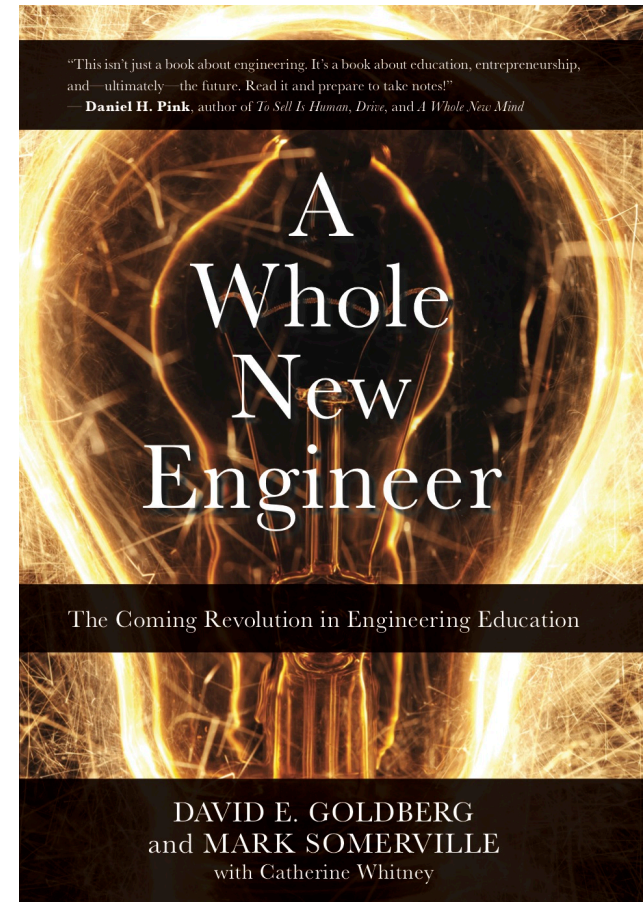
ChangeMasters Club

URL: threejoy.com/coaching-club

Code: SUMMER2018



More info: deg@threejoy.com



New Online Course:

Unleash the Professor Inside

- **Club & a course.** 8 Month course and club to help lecturers and professors adapt to the new realities of academic life.
- **Unique online course & community.** Monthly online course lessons and team coaching.
- **Find your authentic path.** Work on finding authentic path to becoming a professor your way.
- **Building great research culture.** Creating a great research lab.
- **Love to write, write to thrive.** Building the habits & culture of writing personally and in your research group.
- **Create your sticky brand.** Create and propagate your unique and attractive academic brand.

Coming soon

Write to **deg@threejoy.com**

Takeaways: What 1-3 things do you take away from this session?

Top Takeaways

GECCO '18 Companion, July 15–19, 2018, Kyoto, Japan

© 2018 Copyright is held by the owner/author(s).

ACM ISBN 978-1-4503-5764-7/18/07.

<https://doi.org/10.1145/3205651.3207886>



Shift Your Laboratory into Higher Gear

with Three Shift Skills & Four Smooth Rules

Dave Goldberg

ThreeJoy Associates, Inc.

deg@threejoy.com

www.threejoy.com

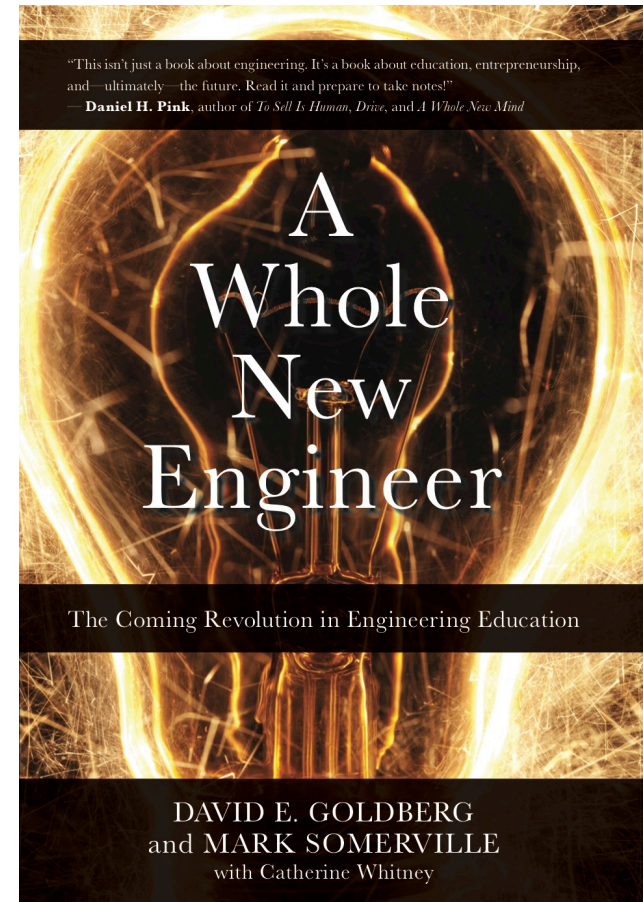
ChangeMasters Club

URL: threejoy.com/coaching-club

Code: SUMMER2018



More info: deg@threejoy.com



www.threejoy.com/GECCO2018