Becoming a Successful Change Master
5 Subtle Shifts Toward the New Missing Basics of Effective Practitioners

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Individually, then Pairwise: What are the 1-3 biggest challenges facing Polytechnic education in these fast-paced times?
Debrief
Reread 2 go-to books

1. Idea of meeting reminded me of early 20th century tumult & reforms.
Reading Schön again…

2. Helped integrate and better communicate my engineering ed reform journey since leaving the university.
Roadmap

1. Key turning points in my journey.
2. Revisiting *The Reflective Practitioner*.
3. Implications for technologists, their education, their educators.
Roadmap

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Surprising journey
Started career as engineer, engineering educator, AI researcher...
1989

GENETIC ALGORITHMS

in Search, Optimization & Machine Learning

DAVID E. GOLDBERG
1990-2006: Philosophical turn

- Tweet entitled: *Philosophy of engineering not a contradiction in terms*
- Led to WPE 2007 & fPET
- Also led to ETSI and iFoundry.
- Following 16 year reading & Teaching Company jag as economics, philosophy, history hobbyist.
1994-2007: Educational Reformist Turn

Illinois Foundry for Innovation in Engineering Education

www.ifoundry.illinois.edu
Resigned tenure & professorship: 31 December 2010
ThreeJoy = Consulting, Coaching, & Training
Georgetown Leadership Coaching Certificate
A Whole New Engineer

The Coming Revolution in Engineering Education

DAVID E. GOLDBERG
and MARK SOMERVILLE
with Catherine Whitney

“This isn’t just a book about engineering. It’s a book about education, entrepreneurship, and—ultimately—the future. Read it and prepare to take notes!”

—Daniel H. Pink, author of To Sell Is Human, Drive, and A Whole New Mind
Surprising journey
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Practitioner’s way of knowing as ...

1. Technical rationality
2. Reflection-in-action
Practitioner’s way of knowing as...

1. Technical rationality
2. Reflection-in-action

Dominates
Technology is taught as mere application of “the basics” (match, science, tech science).
Many technologists accept taught view....

Some have argued against...
The Missing Basics

• “The basics” = math, science, and engineering science.
• Reflections on 20 years in industry-sponsored senior design.
• After 4 years students don’t know how to
  – Experiment/Measure: Bacon-Locke 101.
  – Communicate: Newman 101
• Call these the missing basics (MBs).
• Using term “soft” accepts MBs as outside engineering.
• Fundamental to engineering, organizational & learning prowess.

TED Talk: https://www.youtube.com/watch?v=Rp9PfqUQ8a4

Senior design problem: Reducing dusting flour in a tortilla factory.
Practitioner’s way of knowing as ...

1. Technical rationality
2. Reflection-in-action

Denigrated: “Soft skills”
Takeaway 1: Polytechnic education embeds an incomplete (largely mistaken or at least misleading) understanding of the epistemology of professional practice.
New Year's = Special Time of Reflection

Yogi Berra
Yogi on decisions: “When you get to the fork in the road, take it.”
Yogi on practice. “In theory there is no difference between theory and practice. In practice there is.”
An architect & a therapist walk into a bar...
Chapter 3: Design as a Reflective Conversation with the Situation
Chapter 3: Design as a Reflective Conversation with the Situation

• Conversation with the situation.
• Conversation with other practitioners.
• Conversation with the client.
• Conversation-in-action.
Takeaway 2: Practice is fundamentally conversational.
Zero intentional emphasis on conversation
Chapter 4: Psychotherapy: The Patient as a Universe of One
A story that changed my life as an educator.
Georgetown story
2010-11: 3 pro-bono clients
Stuck
The Morning: 18 March 2011
Breakthrough
Dave’s fundamental dictum of coaching: Not knowing is more helpful to clients than knowing.
Practitioner’s way of knowing as ...

1. Technical rationality
2. Reflection-in-action
Practitioner’s way of knowing as ...

1. Technical rationality
2. Reflection-in-action

is about knowing.
Practitioner’s way of knowing as ...

1. Technical rationality
2. Reflection-in-action

is what we do when we don’t know.
Takeaway 3a: Practice is approaching not fully understood peculiarities of particular cases,.....
Takeaway 3b: ....and getting humans in particular cases to understand and embrace action as well.
Takeaway 4: The best underpinning of conversation-in-action skill is in practice of executive coaching.
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5 Shifts in Polytechnic Education
Shift as small change in practice that gives great power in making change.
5 Shifts

1. Yogi-Schoen shift (Apply theory → CIA)
2. Brain-on-a-stick shift (Feelings allowed)
3. Wittgenstein’s shift (Language is generative action).
4. Sarasvathy’s shift (Planning to little bets)
5. The shift shift (Polarities are everywhere)
Shift #1: Yogi-Schoen Shift
Practice is Applying Theory
Practice is Conversation-in-Action
Focus on Conversation-in-Action

Notice. Listen. Question.
A word about presence
A word about comfort
A word about discomfort
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

Language

Emotion

Body
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.

Storytellers leave the room for 5 minutes; think about a recent challenging experience.
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 . . .

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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.

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 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?
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
Shift #1: Practice is Applying Theory ➔ Practice is Conversation-in-Action
Shift #2: Brain-on-a-Stick Shift
PhD Comic Applies to All Professionals

HOW YOU SEE YOURSELF:

- Complex Human Being
- Hopes
- Dreams
- Aspirations

HOW MOST PROFESSORS SEE YOU:

- Brain
- So, how's research?
- Stick
Practitioner’s way of knowing as ..

1. Technical **rationality**
2. Conversation-in-action
TR’s 2nd Flaw: Reason & rational thought only.
Reason & rational thought →
emotion and embodied thinking
Shift #2: Brain-on-a-Stick Shift
Shift #3: Wittgenstein’s Shift
Language & story as passive description
→ language & story as creative action
Language: Conventional vs. New

Conventional
• We are thinking beings.
• Language separate tool we use from time to time.
• Language is descriptive and large passive.
• Language is merely an extension of thought.

New View
• We are linguistic beings.
• We are in language all the time.
• Language is generative & creative (not merely passive & descriptive).
• Language is action. To speak is to act.
Speech Act Theory: How Language Works

• Speech acts: 5 different types.
• Can describe, promise, command, etc.
• Austin defined “illocutionary act:”
  – Speaker says something.
  – Means something by it.
  – Tries to communicate what he means to hearer.
• Distinction between propositional content and force or type of the speech act.
• Examples:
  – Please leave the room.
  – Will you leave the room?
  – You will leave the room.

J. L. Austin (1911-1960)
Speech Acts in Practice

• 5 “illocutionary” acts:
  – Assertions: commit to truth
  – Assessments: give opinion
  – Requests: ask or direct to do
  – Commitments: commit to do
  – Declarations: cause to exist
• Consider confusion of assertions and assessments.
Applications

1. **Better teamwork:** Requests & commitments.
2. **Better stories:** Rework assertions & assessments.
Shift #3:
Wittgenstein’s Shift
Shift #4: Sarasvathy’s Shift
Mistaken about how entrepreneurs think & act.
Business plan
Entrepreneurs don’t plan: They effectuate ➔ Make little bets.
Little bets necessary in new domains. Little causal knowledge (incomplete theory necessitates doing and learning).
Shift #4: Plan & execute ➔ Little bets & effectuation
Shift #5: Shifting how we shift
Shift #5:
Barry’s Shift
Shift #5: Problem solving as Either-or thinking ➔ polarity management as And thinking
Polarities as opposites that need each other.
Polarities as Management of Essential Diversity

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

Polarity Map

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

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 right pole.

Deeper Fear from lack of balance
Shift #5: Problem solving as Either-or thinking
→ polarity management as And thinking
Observation: All five of the shifts are polarities.
5 Shifts

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4. Sarasvathy’s shift (Planning to little bets)
5. The shift shift (Polarities are everywhere)
Summary
1. Key turning points in my journey.
2. Revisiting *The Reflective Practitioner*.
3. Implications for technologists, their education, their educators.
4. Experienced several CIA skills.
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

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**Coming this fall**

Write to deg@threejoy.com
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