

# Spurring Creativity and Innovation During Tough Times - and Good Times Too

*Robert Epstein, Ph.D.*

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Deutsche Messe  
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# The Failure to Innovate

The New York Times

Tuesday, March 10, 2009

## Business

WORLD U.S. N.Y. / REGION BUSINESS TECHNOLOGY SCIENCE HEALTH SPORTS OPINION ARTS STYLE TRAVEL

### General Motors Corporation

GM: NYSE; Cyclical Consumer Goods & Services/Auto & Truck Manufacturers

At close 03/10/2009



*“The enterprise that does not innovate ages and declines. And in a period of rapid change such as the present...the decline will be fast.” –Peter Drucker*

On innovative ideas, the EV1 electric vehicle in the 1990s, only to then deprive those projects of further financing because money was needed elsewhere or because they were not delivering enough profit.

The failure has been frustrating to those who remember the high value placed on innovation by legendary company leaders like Alfred P. Sloan Jr. and Charles E. Wilson, who felt G.M. could sell cars to the masses by demonstrating it was out in front.

“Until the 1960s, innovation was part of G.M.’s DNA,” said John Casesa, a veteran industry analyst with the Casesa Shapiro Group. “Now, it’s a matter of trying to play catch-up.”

In the early 1990s, the company lagged Chrysler’s Jeep and Ford by five years in bringing an S.U.V. to market with mass appeal. Once it had ramped up its offerings, G.M. was reluctant to move from big profitable vehicles to building small, less profitable cars, even when gas prices spiked.

#### 2007: A Slump Begins

And as the price of gasoline at the pump topped \$4 a gallon, G.M. (and many of its rivals) was surprised by auto buyers’ dramatic shift toward the smaller, more fuel-efficient cars and away from the pickups and sport utility vehicles that had served as its mainstay.

52-week low	\$1.27
Market capitalization	1.0B
Avg. volume (10-day)	15.5M
Shares outstanding	610.5M
Dividend (yield)	n.a.
Ex-dividend date	n.a.

#### Key Fundamentals

P/E ratio	n.a.
Earnings per share	-\$54.58
Revenue	\$149.0B
Profit margin	-20.91%
Return on equity	n.a.

Fundamentals are for the trailing 12 months  
[View financials »](#)

# No Excuse

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- There's no excuse for this failure
- Practices that stimulate creativity and innovation can be *embedded* into every level of an organization
- Scientific research can guide this process and assure success
- Creativity is not just for startups and not just for crises
- It can be *guaranteed*, though embedding, year-round, in crises and in good times

# The Implementation Problem

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- GM's failure was not just about innovation
- It was also about a failure to *implement*; I saw this firsthand....
- So the challenge is twofold:
  1. To *embed* practices that guarantee creativity and innovation on an ongoing basis
  2. To establish processes that assure that new ideas are *evaluated* and, as resources allow, *implemented* on an ongoing basis
- How?

# Overview

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- *Exercise: “Capturing a Daydream”*
- The relationship between *creativity and innovation*
- *Myths* about creativity
- *Generativity Theory*: A formal, predictive, empirically-validated theory of the creative process
- *Creativity competencies*: Specific, measurable, *trainable* skills and abilities that predict creative output
- *Embedding*: Altering policies and procedures – often at *no cost* – so that creativity and innovation are stimulated year-round (BMW, Pixar, Nintendo, Genentech)
- *The Innovation Net*: Setting up an evaluation and implementation screening system
- *Tweaks for tough times*: Small changes that make a big difference

# Capturing a Daydream

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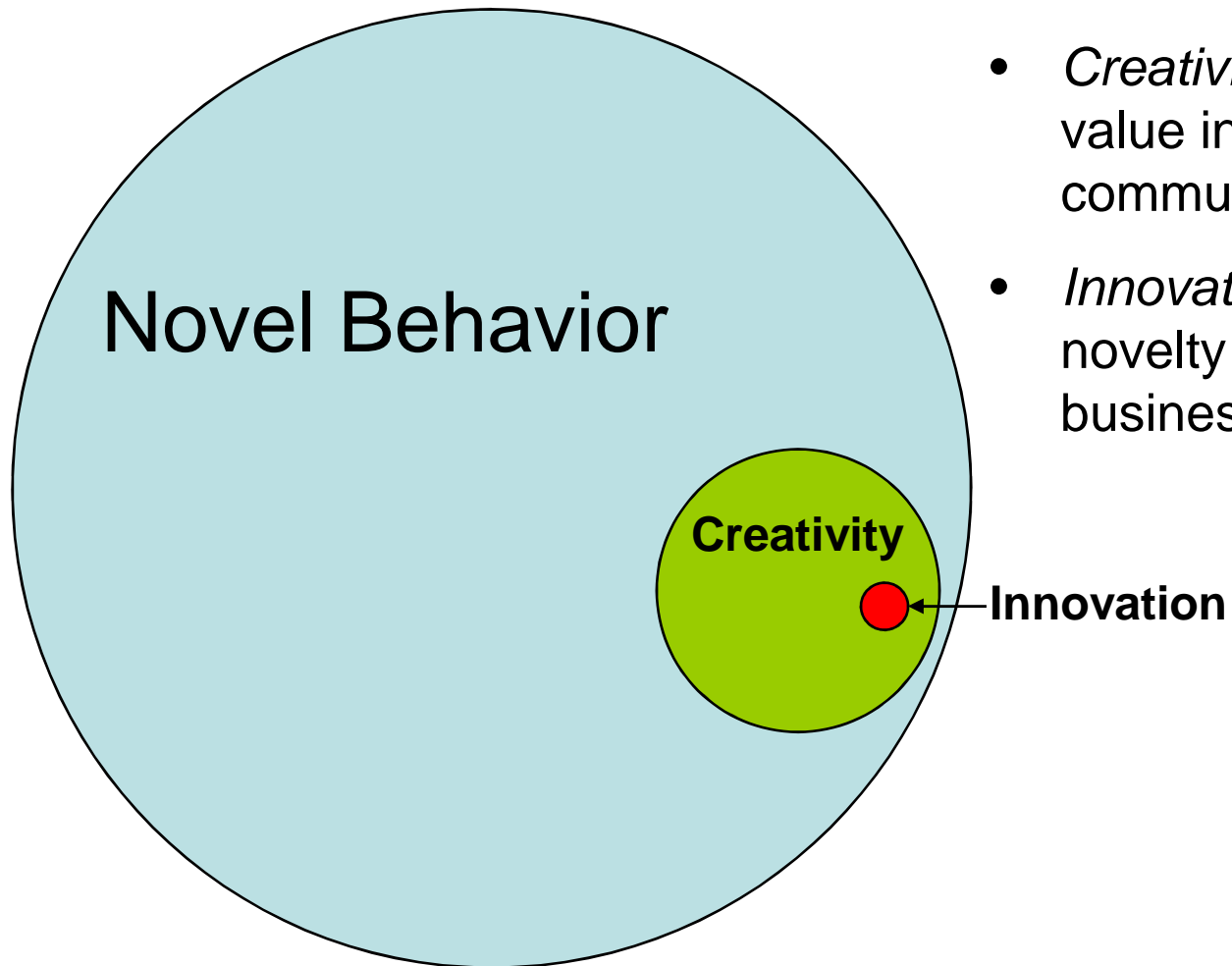
# Lessons

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- The processes underlying creative expression – “generative processes” – operate in everyone, every day
- We all have roughly equal creative potential, largely untapped
- Our social environment normally inhibits creative expression – a vast loss of human resources
- *How do we release this vast potential?*

# Innovation vs. Creativity

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- *Creativity*: novelty and value in the larger community
- *Innovation*: significant novelty and value in business

# Do You Have Creative Potential?

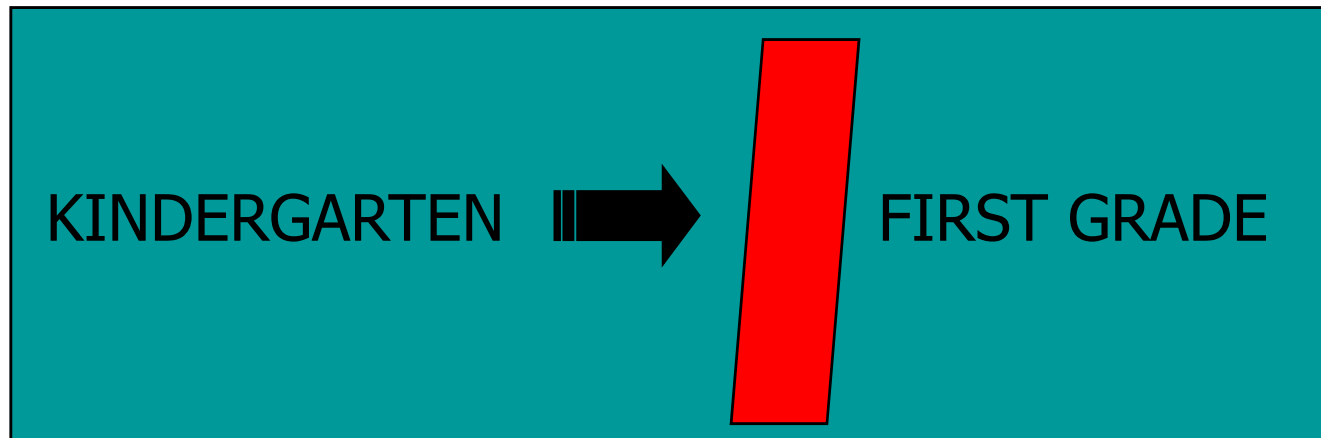
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- Your behavior varies
- Your behavior is always new in some sense
- You find your way through novel environments
- You solve problems, large and small
- You dream, daydream, and experience the hypnogogic state (Dali, Edison)

# What Happened to All That Creativity?

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- Socialization
- “The Creativity Barrier”



- Leaving creativity to the misfits



# Understanding Novel Performances

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- Effects of experience
- Moment-to-moment analysis
- Modeling
- Real-time simulation

# “Insight” in the Pigeon

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Epstein et al., *Nature*, 1984

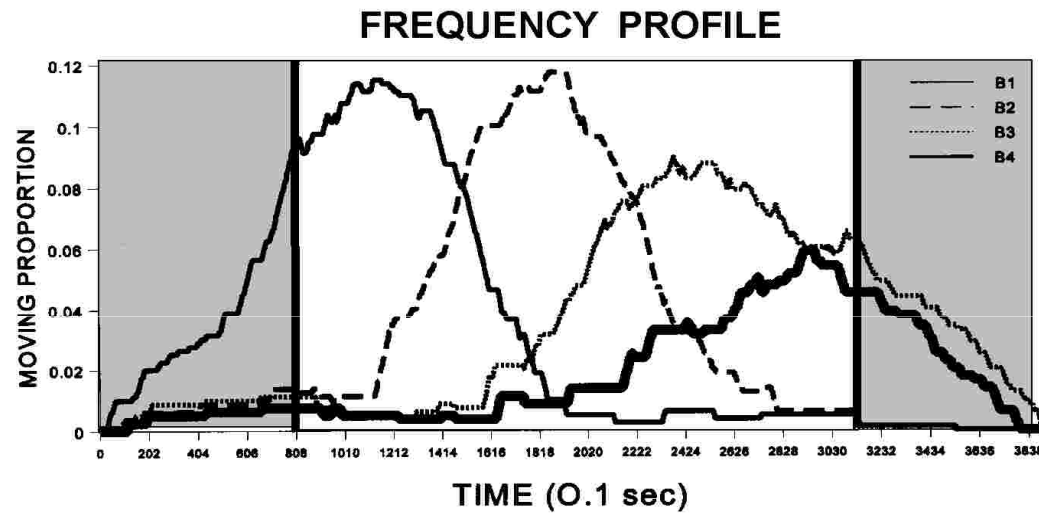
# From Pigeons to People

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# Frequency Profile

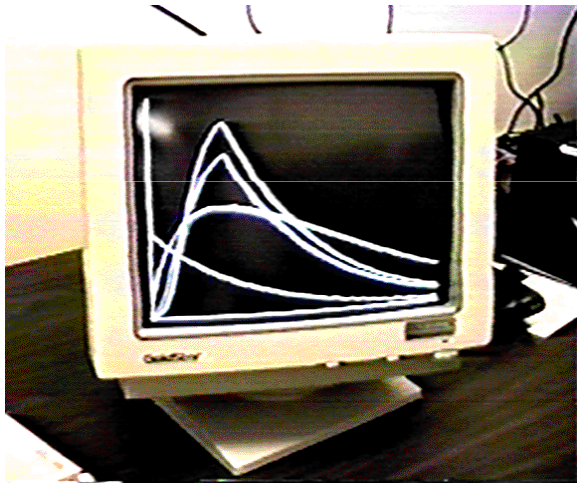
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- Displaying the behavior of the individual post hoc or in real time

# Transformation Equations

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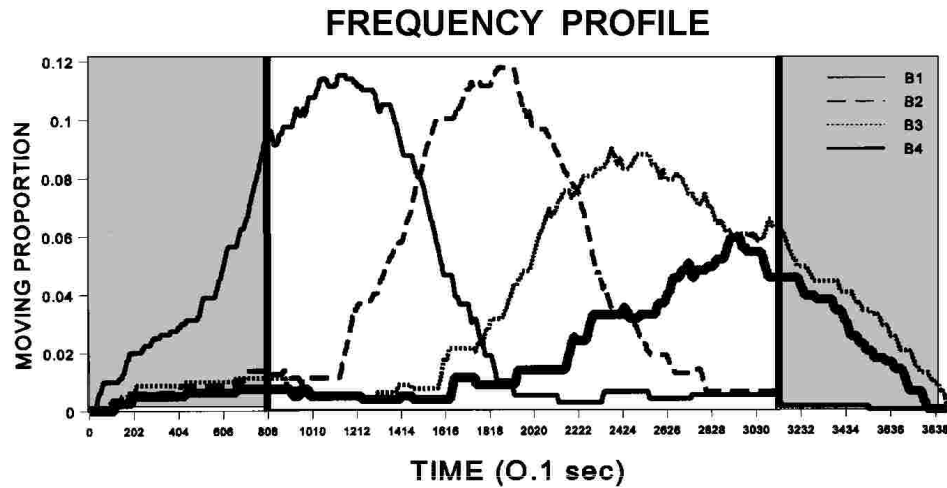
Extinction:  $Y_{n+1} = Y_n - Y_n * \epsilon$

Reinforcement:  $Y_{n+1} = Y_n + (1 - y_n) * \alpha$

Resurgence: for  $\lambda_{yy'} < 0$  and  $y'_n - y'_{n-1} < 0$ ,  
 $Y_{n+1} = Y_n + (1 - y_n) * (-\lambda_{yy'}) * y'_n$

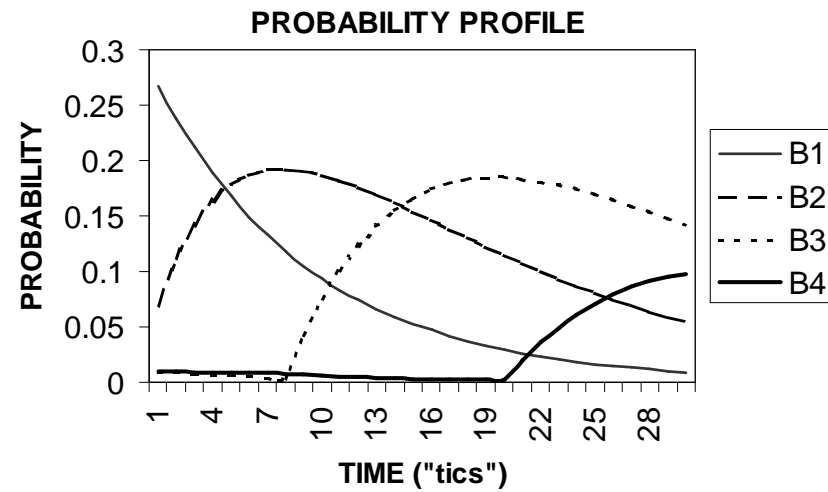
Automatic Chaining: for  $\lambda_{yy'} > 0$  and  $y'_n - y'_{n-1} > 0$ ,  
 $Y_{n+1} = Y_n + (1 - y_n) * \lambda_{yy'} * y'_n$

# Novel Behavior Is...



Orderly...

...and predictable



# Lessons from the Science

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- Generative mechanisms are *universal*
- Creativity can be *engineered* for specific ends
- People need to learn to *pay attention to* and to *preserve* their new ideas
- *Failure* is valuable for creativity, because it causes ideas to compete
- *Broad training* is important for creativity, because it makes ideas available to compete
- *The physical and social environments* can stimulate creativity by causing ideas to compete

# Four Core Competencies: Essential for Individual Creativity

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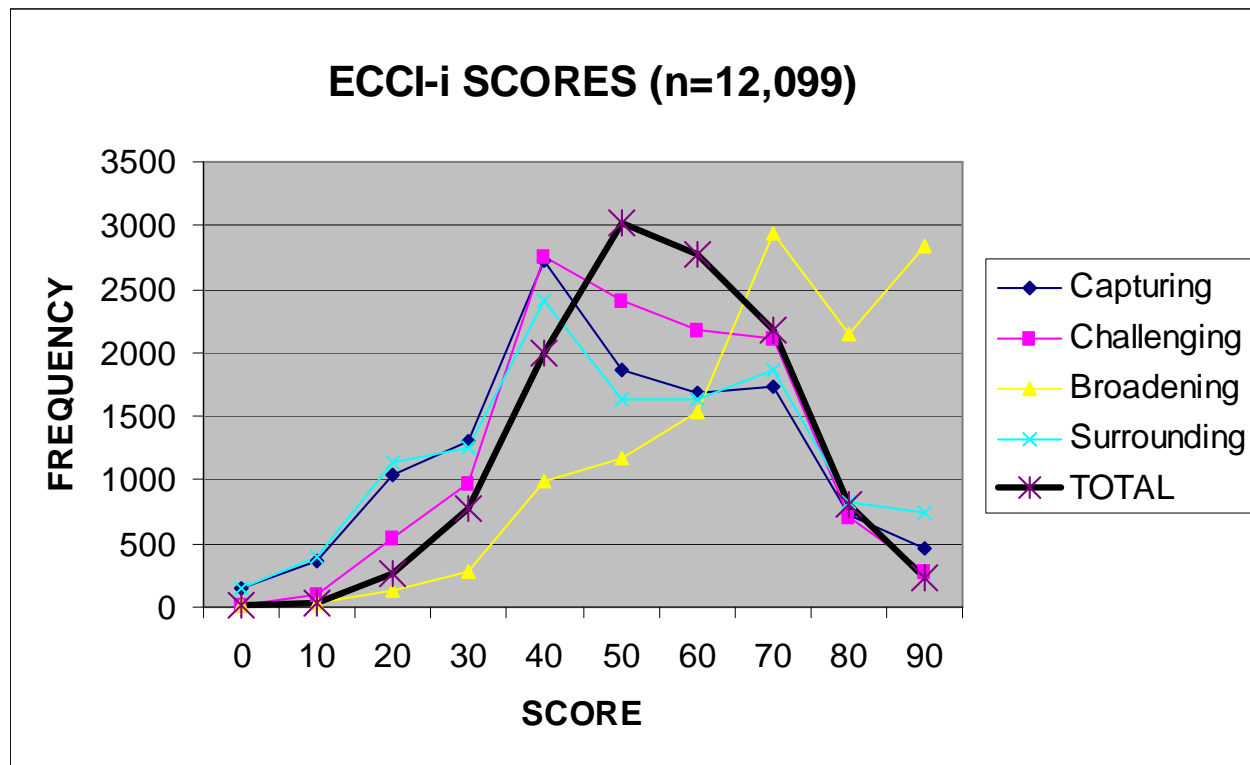
- Capturing
- Challenging
- Broadening
- Surrounding

# Core Competencies: Definitions

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- **Capturing** / *Preserves New Ideas*: You preserve new ideas as they occur and manage resources and time to aid in this process.
- **Challenging** / *Seeks Challenges*: You subject yourself to difficult tasks that require performance well outside your current level of skill or expertise.
- **Broadening** / *Broadens Skills and Knowledge*: You seek training, experience, and knowledge well outside your current areas of expertise.
- **Surrounding** / *Manages physical and social environments*: You create interesting, ever-changing physical and social stimulation.

# Core Competencies in the General Population

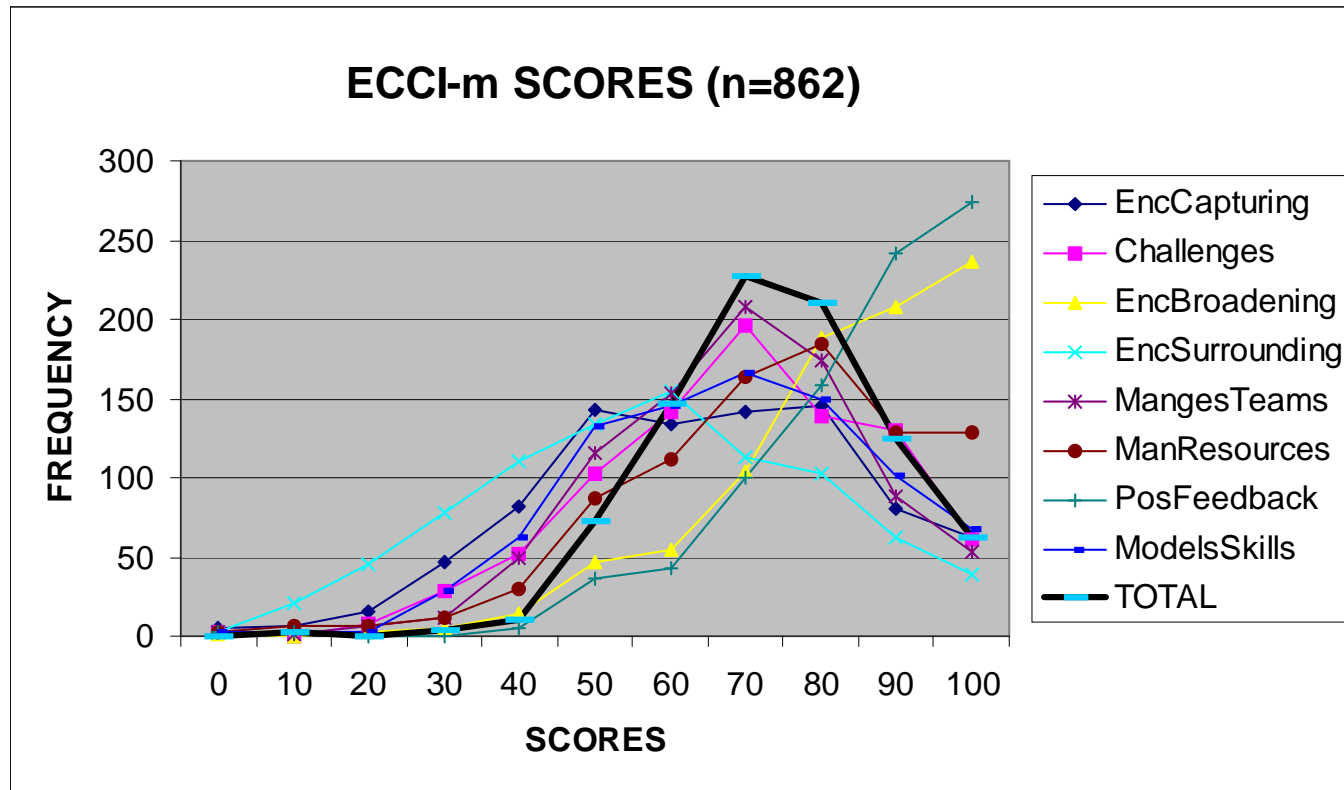


## Managers: Eight Competencies (ECCI-m)

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- *Encourages the Preservation of New Ideas*
- *Challenges Others*
- *Encourages Broadening of Knowledge and Skills*
- *Manages Surroundings to Stimulate Creativity*
- *Manages Teams to Stimulate Creativity*
- *Manages Resources to Stimulate Creativity*
- *Provides Feedback and Recognition to Stimulate Creativity*
- *Models Appropriate Creativity-Management Skills*

# Managerial Competencies in the General Population



# Assessment Tools

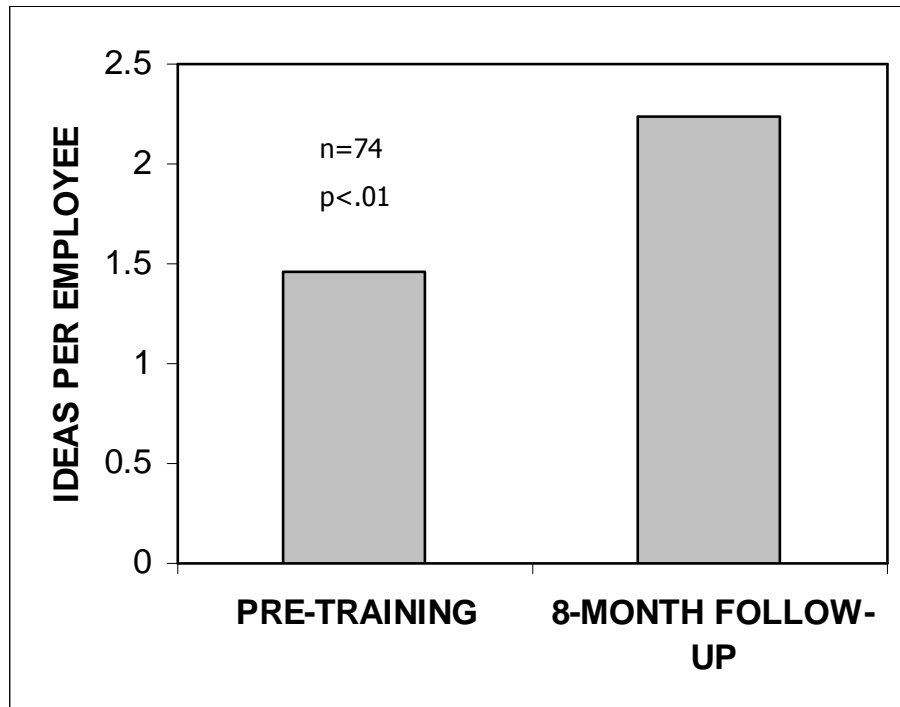
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- Individuals: *Four core competencies* for individual creativity (*ECCL-i*)
- [MyCreativitySkills.com](http://MyCreativitySkills.com)
- Managers: *Eight competencies* for harnessing creativity in others (*ECCL-m*)
- [MyCreativitySkills.com/managers](http://MyCreativitySkills.com/managers)

# Training Creativity Competencies: Long-Term Benefits

(Brea, California, USA; Epstein et al., 2008))

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- *50 percent Increase in ideas expressed*
- *\$4 million in new revenues and non-invasive cost cutting over 8 months*

# Embedding Creativity and Innovation

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- Don't leave innovation to chance
- *Embed* it into policies and procedures

# Everything You Do...

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- Workspace design
- Task and goal structuring
- Suggestion systems
- Improved team utilization
- Management training
- Competency assessment
- Competency training
- Evaluation systems
- Incentive systems
- Materials and supplies
- Policies and procedures
- Improved scheduling
- Process improvement
- New efficiencies and resource utilization
- New products and services

# The Innovation Net

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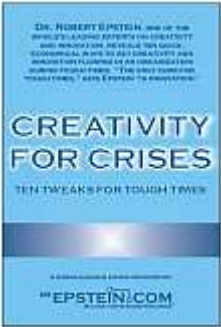
- Problem: Too many ideas
- The best problem you'll ever have
- Solution: The Innovation Net
- Small, lithe, screening group

# Ten Tweaks for Tough Times

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In crisis there is opportunity....



# Tweak #2: **NO BOUNDARIES!**

## *Make All Assignment Open-Ended*

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*“The way to get good ideas is to get lots of ideas and throw the bad ones away.”*  
—Linus Pauling

- Cost: Zero.
- Cases: None.

# Tweak #4: **RETOOL YOUR TEAMS!**

## *Shift, Don't Just Brainstorm*

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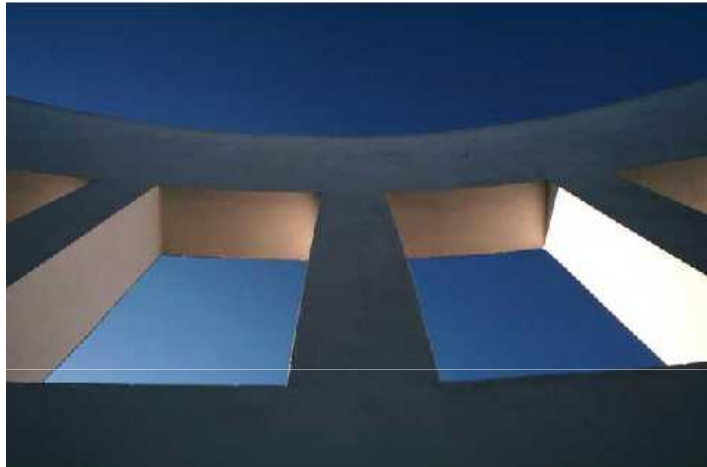
*“A committee is an alien with at least six legs and no brain.”*  
–Unknown

- Cost: Zero.
- Case: BMW makes extensive use of cross-functional teams & informal networks.

## Tweak #7: **BROADEN THE MIND!**

### *Train Well Beyond Current Expertise*

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*“The creative is the place where no one else has ever been. You have to leave the city of your comfort and go into the wilderness of your intuition. What you’ll discover will be wonderful.”*  
—Alan Alda

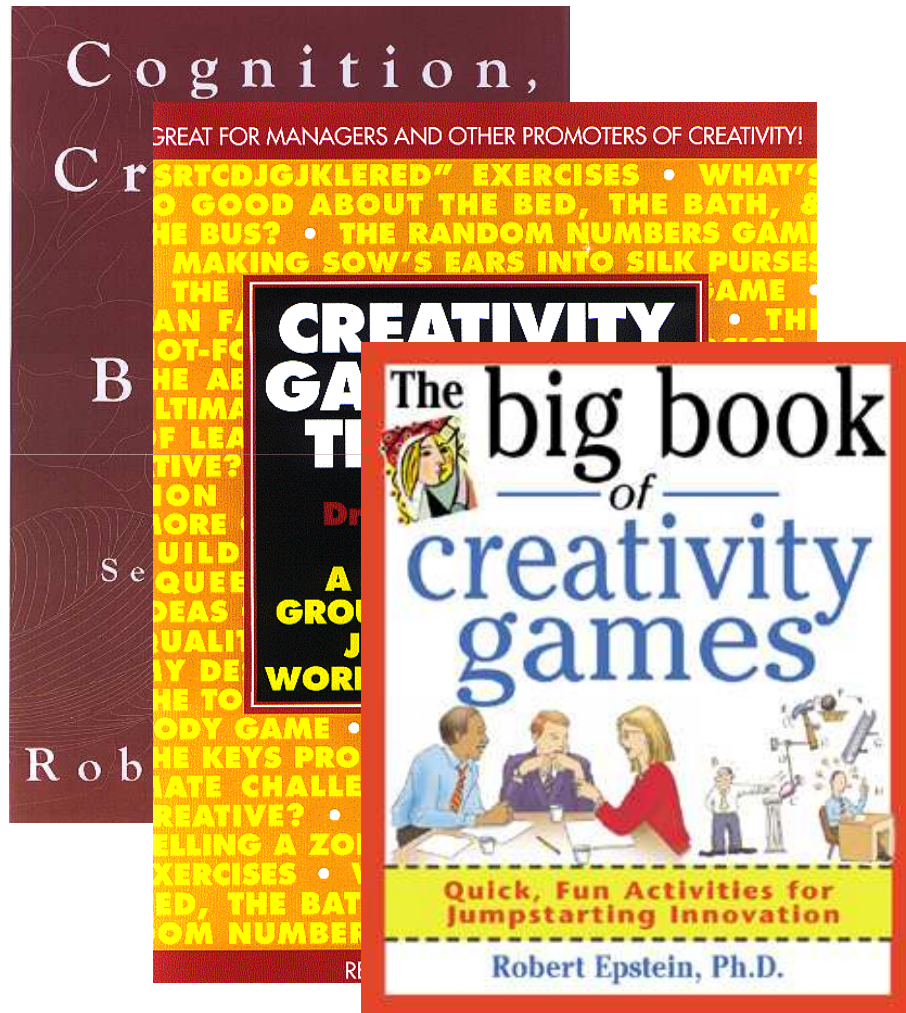
- Cost: Minimal to moderate.
- Case: At Genentech, up to 120 Ph.D.’s are awarded 4-year fellowships to “follow their interests.”
  - Case: To get ideas for feminine-care products, Proctor & Gamble engineers teamed up with biomimicry experts at the San Diego zoo.

# Companies that Use These Practices

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- Google
- 3M
- BMW
- Pixar
- Nintendo
- Dupont
- Lockheed Martin
- Hitachi
- Pfizer
- Bloomberg
- The Body Shop
- Bell Laboratories
- Canon
- Honeywell
- IDEO
- Texas Instruments
- Johnson & Johnson
- Genentech
- Procter & Gamble
- GE Healthcare
- Sony
- Disney

# Background Material



- *Cognition, Creativity, & Behavior: Selected Essays*
- *Creativity Games for Trainers*
- *The Big Book of Creativity Games*
- Scientific reports in *Nature*, *Science*, *Psychological Science*, *Proceedings of the National Academy of Sciences*
- Articles in *Encyclopedia of Creativity*, *Reader's Digest*, *Psychology Today*, *Scientific American Mind*
- [MyCreativitySkills.com](http://MyCreativitySkills.com)
- [CreativityInternational.com](http://CreativityInternational.com)



“The power of imagination  
makes us infinite.”

*John Muir*

*19th Century American Naturalist*