

# Learning Theory & Practice

John Cleveland

Innovation Network for Communities

# Points of Inquiry

- **What is learning?**
- **How does learning happen?**
- **What characteristics are typical of powerful learning processes?**
- **How do learning processes differ in classroom, organizational and community settings?**
- **What is the connection between learning and continuous improvement?**

# Premises

- **Learning is a natural process; we are all “hardwired” to learn**
- **The core process of learning is common across individuals, organizations and communities**
- **Our understanding of learning and its dynamics has advanced dramatically in the last three decades**
- **Rapid learning is a core driver of competitiveness in the global economy**
- **Advances in information technology are now positioned to genuinely transform student, organizational and community learning**
- **Communities colleges can play a leadership role in advancing and modeling best practice in classroom, organizational and community learning processes**

# Powerful Learning Exercise

**TIME: 30 minutes**

**PROCESS:**

**5 minutes:**

**Each participant uses the worksheet on the next page to describe a recent powerful learning experience and reflect on the principles that made it work.**

**10 minutes:**

**Share your principles at the table.**

**5 minutes:**

**Large group brainstorm on common principles.**

**10 minutes:**

**Discuss implications for learning in organizations and in classrooms.**



# Your Learning Experience

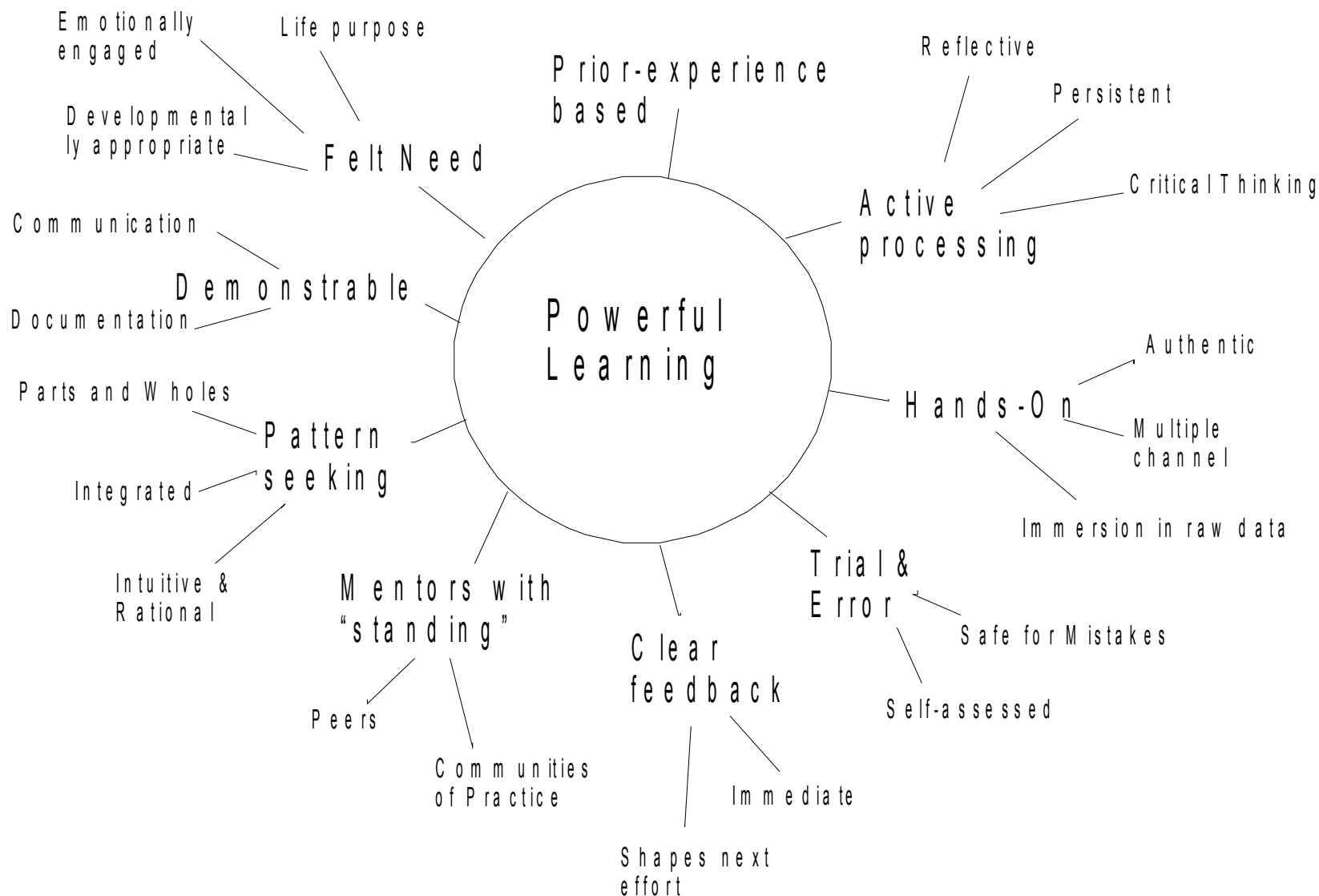
## DESCRIBE YOUR LEARNING EXPERIENCE:

- What was the context? What was the content?
- Why did it happen?
- Was there a “teacher”
- How did you know you had “learned” something?

## DESCRIBE WHAT MADE IT “POWERFUL.”

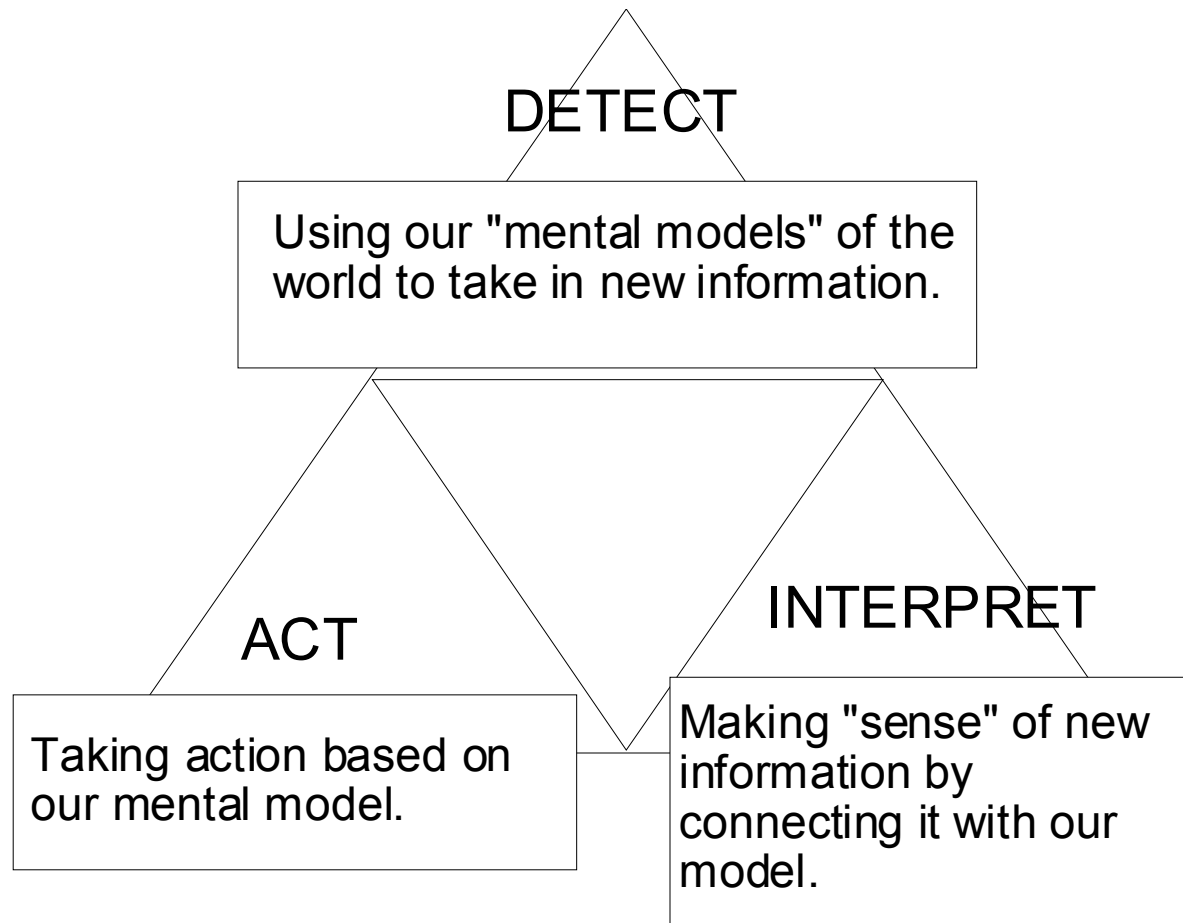
- WHAT CHARACTERISTICS CONTRIBUTED TO ITS SUCCESS?

# A Summary of Over 2000 Exercises



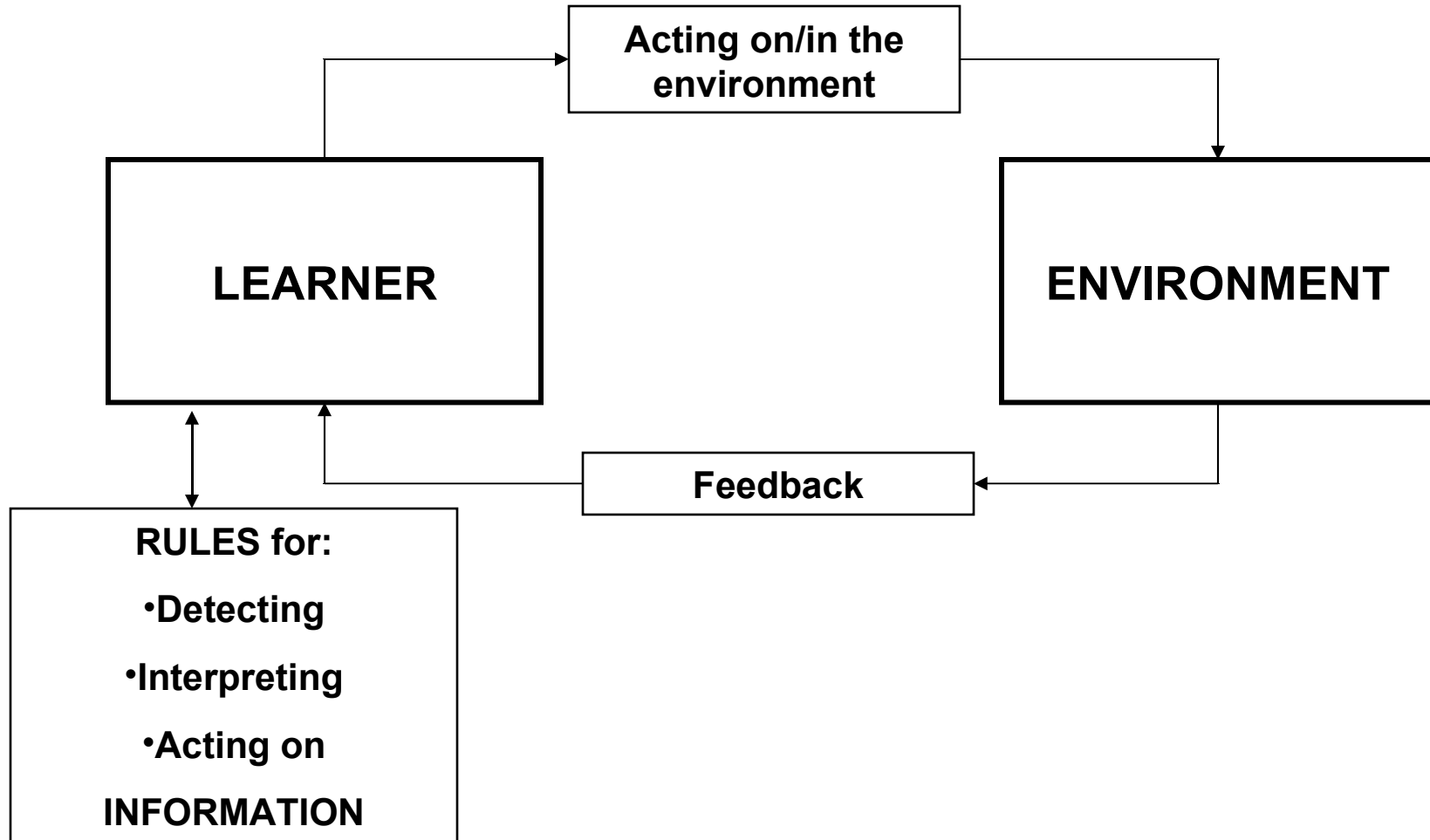
# What Is Learning?

**Learning is a universal process for detecting information, interpreting it, and use it to take action.**



# Single Loop Learning

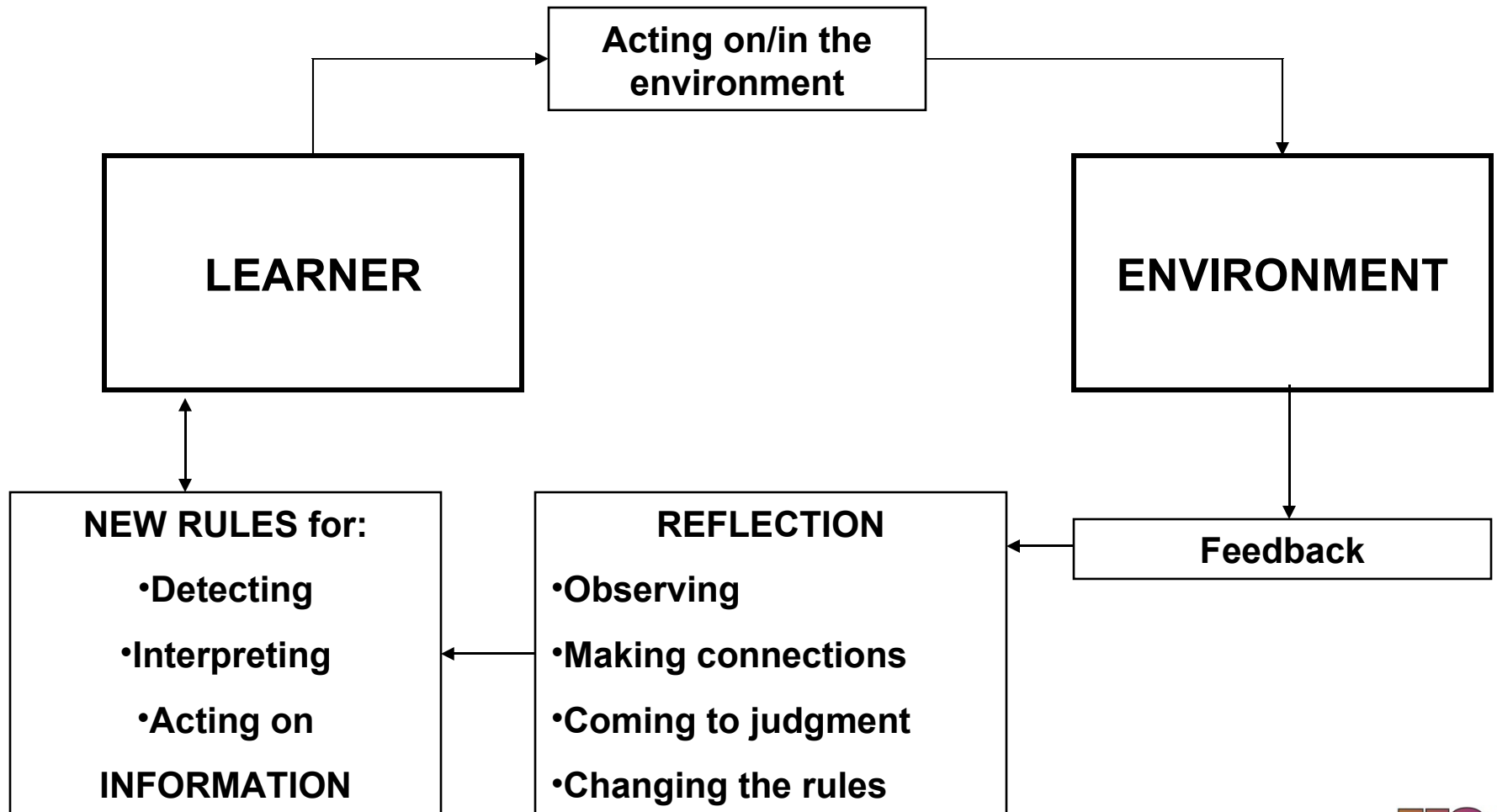
“Single loop” learning involves learning how to better adjust behavior to be consistent with your current set of “rules” for interpreting information.





# Double Loop Learning

“Double loop” learning involves using a process of reflection to change the rules you use for detecting, interpreting and acting on information.



# Learning is Natural

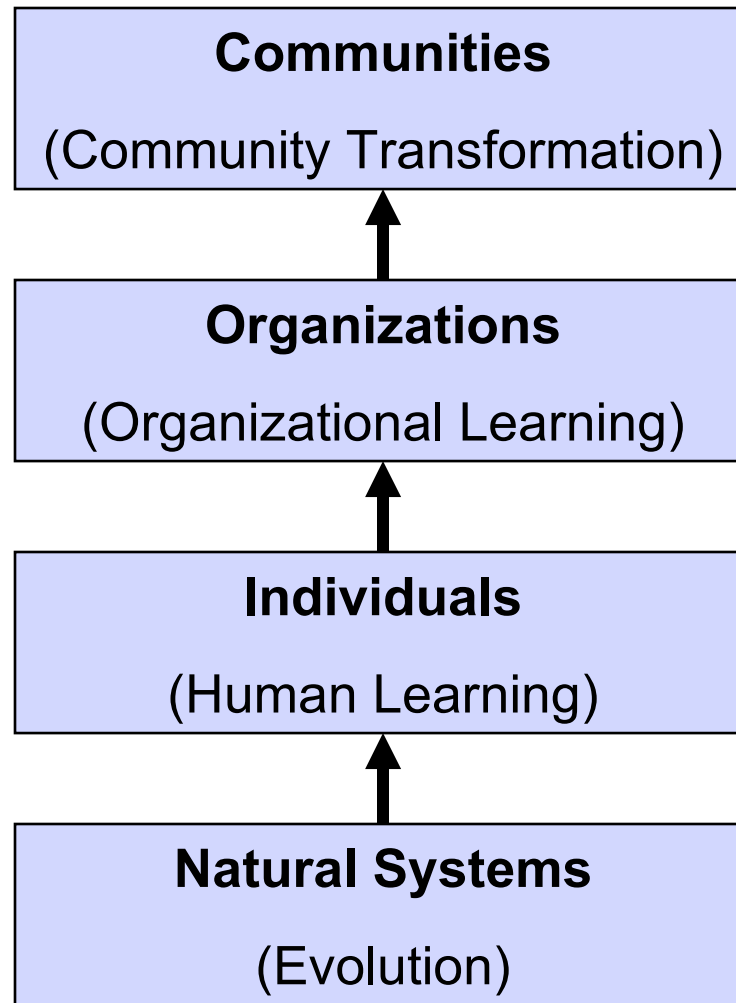
But education and schooling need to be designed...

**LEARNING** – An interactive process common to all living things that involves changing rules for detecting, interpreting and acting on information.

**EDUCATING** – The deliberate development of knowledge, skills and values, carried out by a wide variety of social institutions.

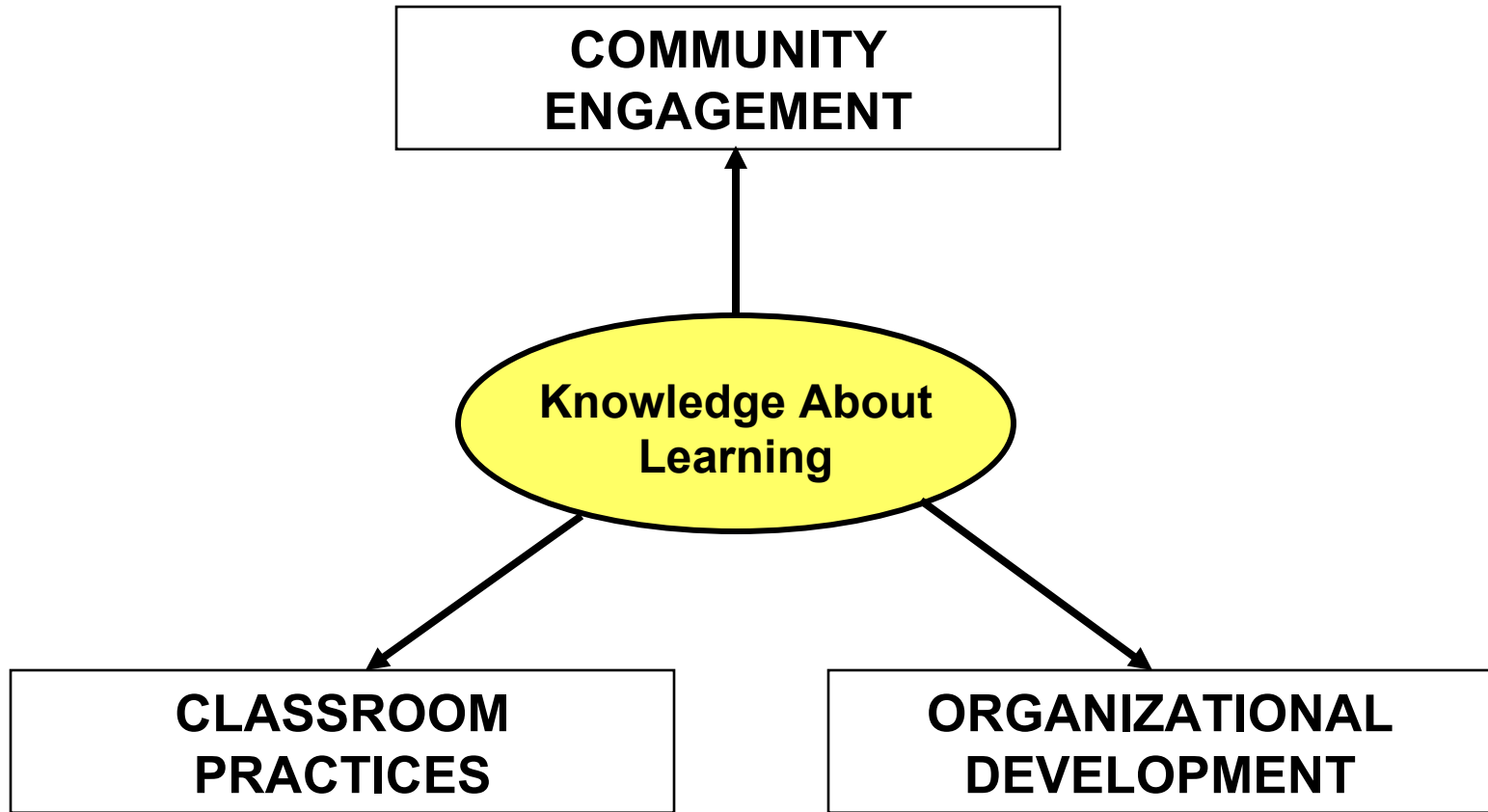
**SCHOOLING** – The use of formal institutions of learning and trained individuals to accelerate learning and education.

# Learning Happens At Many Different Scales



# A Common Organizing Principle

Knowledge about learning can guide strategy in several different areas...

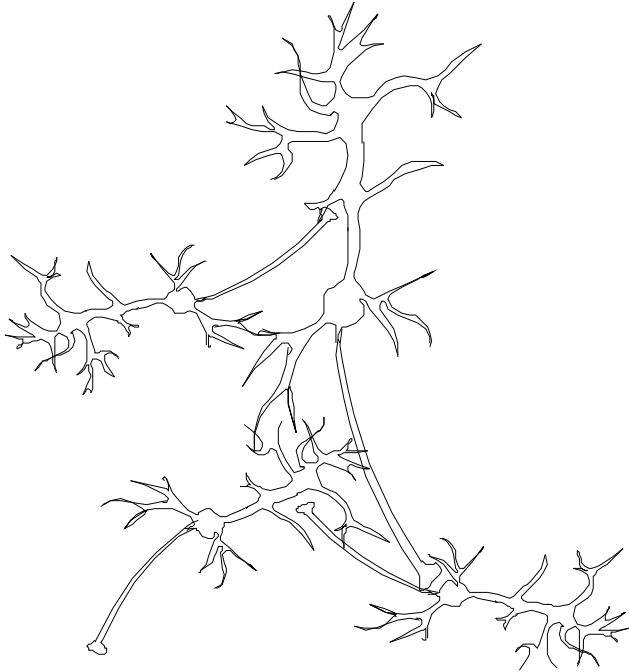


# New Perspectives On Learning

- **The sciences of self-organization and complexity**
- **Brain research**
- **The study of intelligence, brain dominance and learning styles**
- **The social nature of learning**
- **Information technology**
- **The emergence of the “knowledge economy”**

# The Human Brain – Our “Learning Organ”

An extraordinarily complex network of densely connected neurons...



- **Between 500 and 6,000 connections between each neuron**
- **The networks develop through a process of self-organization**
- **We start with 200 billion; networks are created by “pruning”**
- **“Neurons that fire together wire together” – repeated use creates networks**
- **Mental effort “grows dendrites” that connect neurons together**
- **Massive levels of parallel processing**
- **Non-linear behavior**

# Characteristics of the Brain

## The brain is unique

- No two brains are alike

## The brain is dynamic

- It changes, adapts and grows through our lifetime

## The brain is modular

- It has many areas dedicated to different functions; each person uses the brain with different preferences

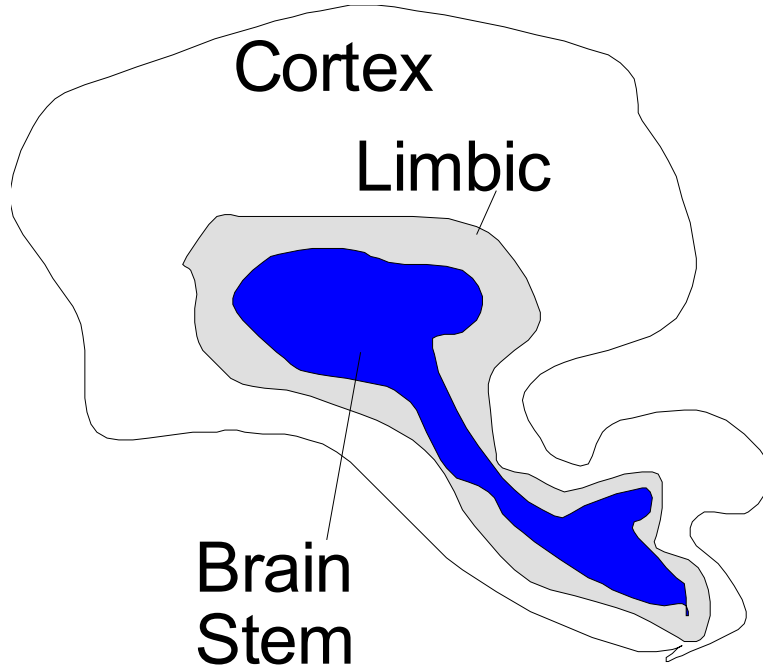
## The brain is whole

- The modules are inter-connected and talk to each other; the brain naturally seeks whole patterns

Some words used to describe the brain:

- *Unique*
- *Specialized*
- *Parallel-Processing*
- *Interconnected*
- *Iterative*
- *Dynamic*
- *Plastic*
- *Malleable*
- *Situational*
- \* *Pattern-Forming*
- \* *Self-organized*
- \* *Layered*
- \* *Triune*
- \* *Nonlinear*
- \* *Emergent*
- \* *Creative*
- \* *Complex*
- \* *Adaptive*

# The Triune Brain



## Brain stem

shared with reptiles, governs autonomic systems, physical survival, instincts, taboos

## Limbic brain

shared with mammals, houses emotions, social bonding, relationships, long-term memory

## Neo-cortex

Human phenomenon, allows abstract thinking, language, planning, symbolic logic, models, “rule” changes



# Triune Brain – So What?

Under conditions of stress, the brain “downshifts” its center of processing from the higher order thinking of the neo-cortex to the social bonding of the limbic brain or the survival instincts of the reptilian brain.

Challenging  
Learners

Creating A “Safe”  
Environment

Powerful Learning  
Requires A  
Dynamic Balance

# Triune Brain – So What?

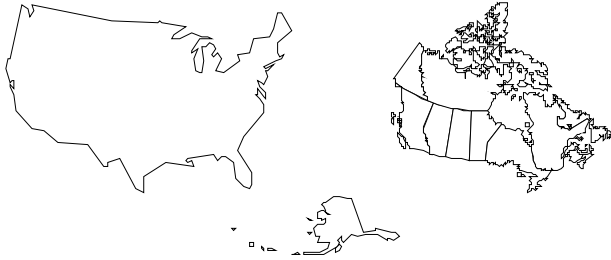
Different kinds of “rules” for detecting, interpreting and acting on information are associated with different layers of the brain...So adjust your learning “technology” to fit the layer you are working on.

<b>Easiest to Change (Neocortex)</b>	<b>Harder to Change (Limbic)</b>	<b>Hardest to Change (Reptilian)</b>
<ul style="list-style-type: none"><li>✓Theories</li><li>✓Models</li><li>✓Methodologies</li><li>✓Standards</li><li>✓Protocols</li><li>✓Routines</li><li>✓Processes</li><li>✓Conventions</li><li>✓Regulations</li><li>✓Laws</li></ul>	<ul style="list-style-type: none"><li>✓Habits</li><li>✓Common Sense</li><li>✓Values</li><li>✓Traditions</li><li>✓Customs</li></ul>	<ul style="list-style-type: none"><li>✓Prejudices</li><li>✓Ideology</li><li>✓Superstitions</li><li>✓Rituals</li><li>✓Addictions</li><li>✓Doctrine</li><li>✓Dogma</li></ul>

***“A paradigm shift, then, is a change to a new game, a new set of rules... And when the rules change the whole world can change...It is still a great risk in our society to offer new rules for the game.”***

***Joel Barker, Future Edge***

# Two Interacting Memory Systems



## TAXON MEMORY

*Information stored in “lists”*

- 1) Acquired through practice & rehearsal
- 2) Linked to extrinsic motivation
- 3) Resistant to change
- 4) Isolated from one another
- 5) Not initially meaningful

--Renate and Geoffrey Caine, Making Connections: Teaching and the Human Brain

## LOCALE MEMORY

*Information stored in “maps”*

- 1) Unlimited capacity
- 2) Related to context
- 3) Forms quickly, changes rapidly
- 4) Continuously updated
- 5) Motivated by novelty, curiosity, expectations
- 6) Enhanced by sensory stimuli

# Two Memory Systems for Two Kinds of Learning

**TAXON MEMORY**



**Mastery Learning**

Taking pre-existing knowledge and making it second nature so that it can be performed effortlessly.

**LOCALE MEMORY**



**Discovery Learning**

Exploring the world; making accurate maps of the world; and using those maps to make predictions, formulate explanations, imagine alternatives and make plans.

# A Recent Article on Discovery & Mastery

***“Everything developmental psychologists have learned in the past 30 years points in one direction – children are far, far smarter than we would ever have thought. Their brains are more connected, more flexible, and more active than they will ever be again. They already think abstractly, reason, and draw the right conclusions from data.”***

***“Schools don’t teach the same way children learn...Children seem to learn best when they can explore the world and interact with expert adults.”***

Source: New York Times, Sunday, 1.26.04, Education Life Section, P. 26, “How We Learn”

# A Recent Article on Discovery & Mastery

***“In a sense, routinized learning is less about getting smarter than getting stupider: its about perfecting mindless procedures. This frees attention and thought for new discoveries.”***

***“The two modes of learning [discovery and mastery] seem to involve different underlying mechanisms and even different brain regions and the ability to do them develops at different stages.”***

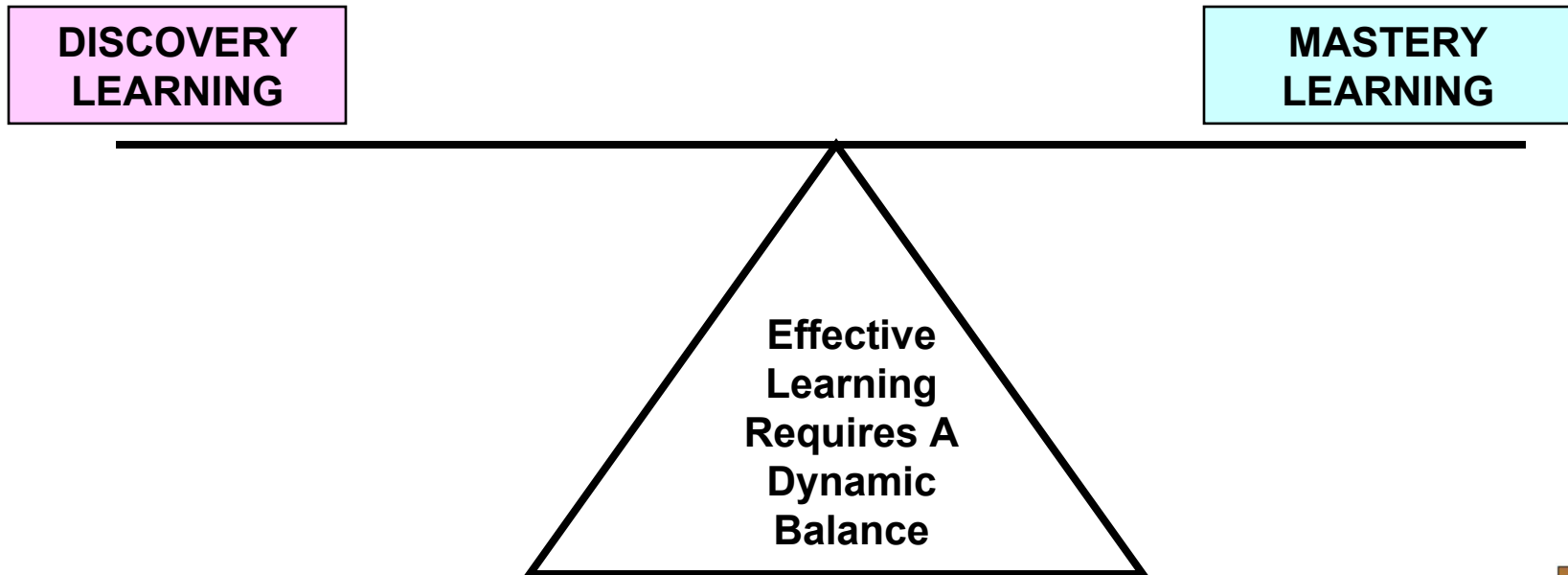
***“The activities that promote mastery may be different from the activities that promote discovery. What makes knowledge automatic is what gets you to Carnegie hall – practice, practice, practice... Mastering these skills [reading, writing, math] is absolutely necessary for discovery in a wider world.”***

***“What makes for learning is the right balance of both learning processes, allowing children to retain their native brilliance as they grow up.”***

Source: New York Times, Sunday, 1.26.04, Education Life Section, P. 26, “How We Learn”

# Effective Learning Requires a Balance

- Powerful learning requires a good balance between these two kinds of learning, and knowing the differences in approach and technique.
- Discovery requires “safety”; Mastery often requires challenge.
- Ultimately, mastery creates the basis for genuine creativity and discovery in the world.
- For some adults, the skills of discovery need to be “refreshed.”



# Techniques to Support Discovery

## 1. Start with what students already know

- Attend to culturally specific information
- Speak to the world they actually find around them

## 2. Teach students to inquire and generate their own knowledge

- Active processing means defending “messy” classrooms
- Expect students to assess their own and each others’ work

## 3. Teach in “wholes” rather than fragments

- Paradoxically, this requires MORE, not LESS disciplinary expertise
- Explore multiple contexts for information
- Place knowledge in real world contexts



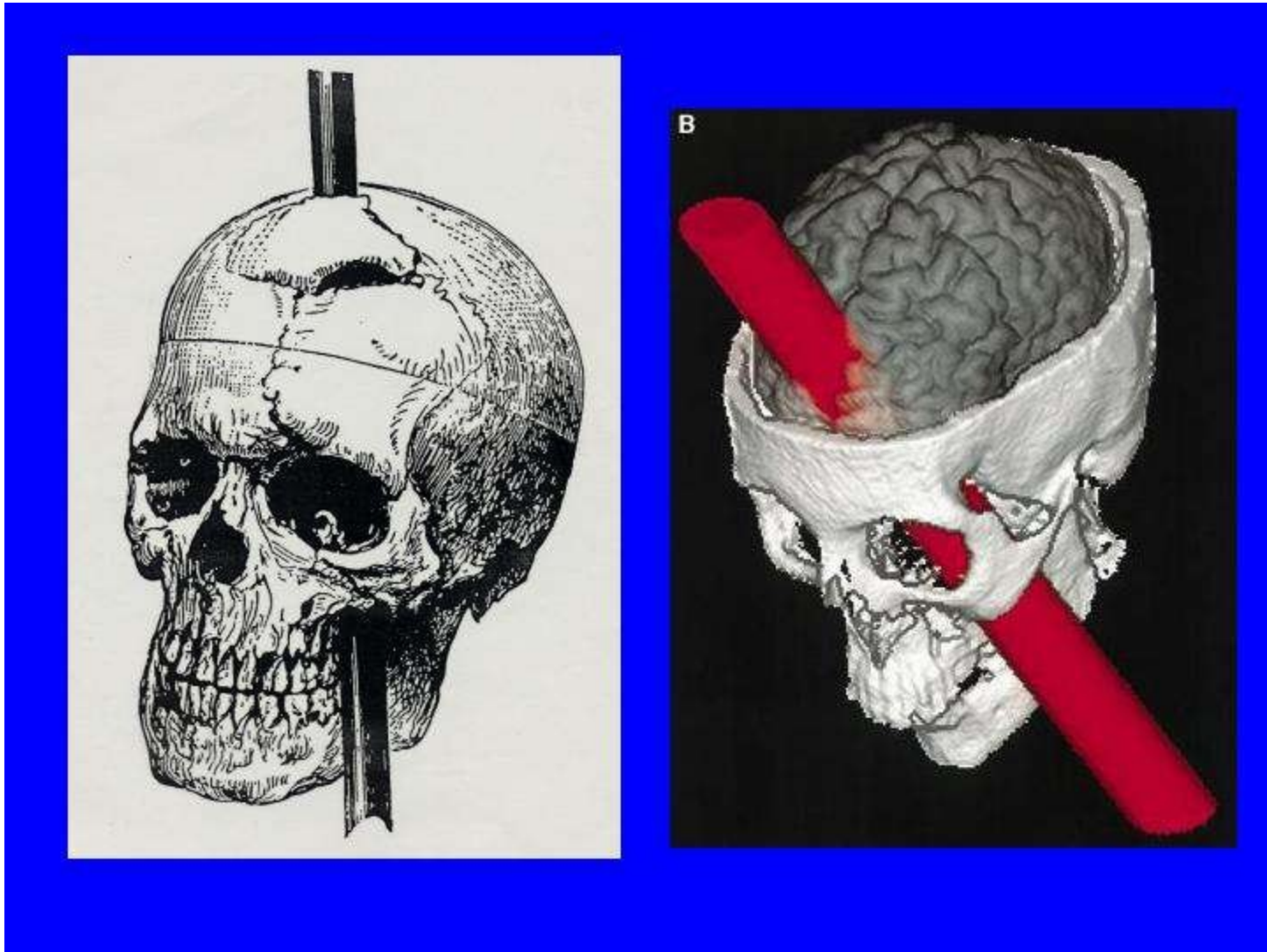
# Emotions Play a Strong Role in Learning

- ✓ The limbic system (home of the emotions) plays a critical role in the shift from short to long-term memory.
- ✓ Emotional reflexes (“fast and sloppy”) are essential to reasoning – without them to guide us to promising possibilities, we would endlessly process alternatives.
- ✓ Life success depends far more on “emotional intelligence” than on IQ.

***“Reason is the graceful unbundling of intuition.”***

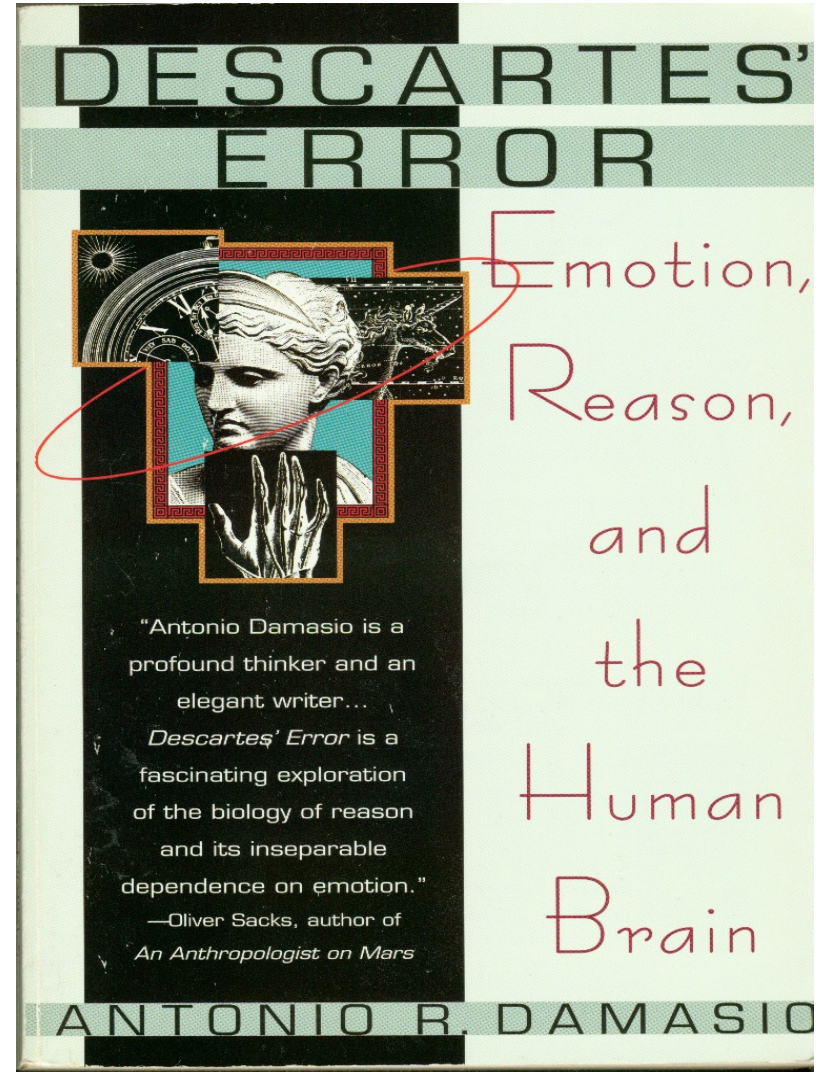
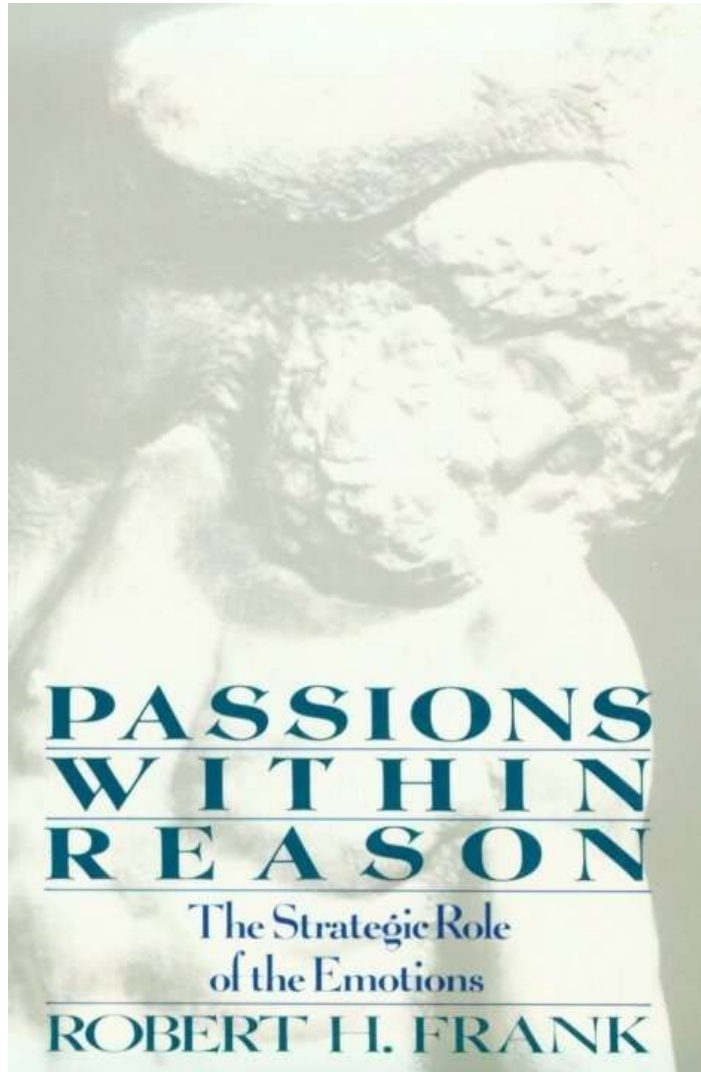
**Ken Wilber**

# An Extreme Example



## Phineas Gage

# Resources



# Daniel Goleman's "Emotional Intelligence"

Element	Definition	Characteristics
<b><i>Self-Awareness</i></b>	<ul style="list-style-type: none"> <li>•The ability to recognize and understand your moods, emotions, and drives, as well as their effect on others</li> </ul>	<ul style="list-style-type: none"> <li>•Self-confidence</li> <li>•Realistic self-assessment</li> <li>•Self-deprecating sense of humor</li> </ul>
<b><i>Self-Regulation</i></b>	<ul style="list-style-type: none"> <li>•The ability to control or redirect disruptive impulses and moods</li> <li>•The propensity to suspend judgment – to think before acting</li> </ul>	<ul style="list-style-type: none"> <li>•Trustworthiness and integrity</li> <li>•Comfort with ambiguity</li> <li>•Openness to change</li> </ul>
<b><i>Motivation</i></b>	<ul style="list-style-type: none"> <li>•A passion to work for reasons that go beyond money or status</li> <li>•A propensity to pursue goals with energy and persistence</li> </ul>	<ul style="list-style-type: none"> <li>•Strong drive to succeed</li> <li>•Optimism, even in the face of failure</li> <li>•Organizational commitment</li> </ul>
<b><i>Empathy</i></b>	<ul style="list-style-type: none"> <li>•The ability to understand the emotional makeup of other people</li> <li>•Skill in treating people according to their emotional reactions</li> </ul>	<ul style="list-style-type: none"> <li>•Expertise in building and retaining talent</li> <li>•Cross-cultural sensitivity</li> <li>•Service to clients and customers</li> </ul>
<b><i>Social Skill</i></b>	<ul style="list-style-type: none"> <li>•Proficiency in managing relationships and building networks</li> <li>•An ability to find common ground and build rapport</li> </ul>	<ul style="list-style-type: none"> <li>•Effectiveness in leading change</li> <li>•Persuasiveness</li> <li>•Expertise in building and leading teams</li> </ul>

# Emotions – So What?

- **Emotions are the “card file system” for long-term memory**
- **Emotions come into play through engagement. So engagement is paramount – without engagement, no long-term memory occurs**
- **Ritual, play, art, drama enable the long-term memory process**
- **Social skills linked to understanding and management of emotions are a critical “learning outcome”**
- **If your “Boredom Index” is high, you might as well stop trying to teach**

# There Are Many Ways To Be “Smart”

**We use many different kinds of “intelligence” to make sense out of our worlds.**

- **Ned Hermann’s theories about “brain dominance”**
- **Jung, Kolb, McCarthy and others ideas about personality types and learning styles**
- **Howard Gardner’s Theory of Multiple Intelligences**

# Gardner's Theory of Multiple Intelligences

## The seven intelligences:

2. Linguistic
3. Logical-mathematical
4. Spatial
5. Body-kinesthetic
6. Musical
7. Interpersonal
8. Intrapersonal

- ✓ We possess all seven intelligences
- ✓ Most of us can develop all of them to an adequate level of competency
- ✓ They work together in complex ways
- ✓ There are many ways to be “smart” within each intelligence
- ✓ Traditional education rewards a narrow range of intelligences

# Thinking With Both Sides of the Brain

Left Brain Thinking	Right Brain Thinking
<ul style="list-style-type: none"><li>• Logical</li><li>• Sequential</li><li>• Rational</li><li>• Analytical</li><li>• Objective</li><li>• Focus on Parts</li></ul>	<ul style="list-style-type: none"><li>• Random</li><li>• Intuitive</li><li>• Holistic</li><li>• Synthesizing</li><li>• Subjective</li><li>• Focus on Wholes</li></ul>

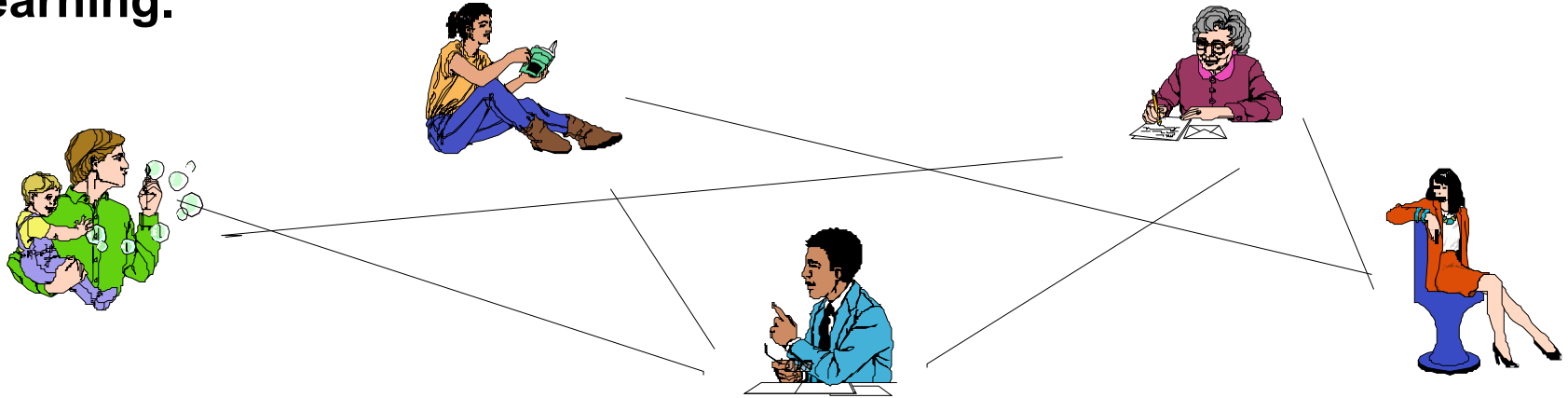


# Many Ways of Knowing – So What?

- **Learners need to have an understanding of their “learning styles” so they can understand why some kinds of learning are more or less difficult for them**
- **Faculty and other “teachers” need to understand their own dominant styles, since it typically drives their pedagogical styles and what kind of learning they reward**
- **Most educational institutions reward a very narrow range of intelligences**
- **Each intelligence has its own language, logic and criteria for excellence – multiple intelligence is not an excuse for sloppiness**

# Learning Is Social

Communities of practice are fundamental to the process of learning.



- L Knowledge is often tacitly integrated in the life of communities
- c Learning is an act of membership in a community of practice
- p “Knowing” and “learning” require engaging in practice

--Xerox Learning Systems, Palo Alto

# Communities of Practice – So What?

- **Authentic adult relationships (“Social capital”) are key to powerful learning**
- **Learning needs to be embedded in authentic adult practice communities**
- **This requires much higher levels of engagement with work-based and community-based learning**
- **The community needs to become a “distributive classroom” for education**
- **Faculty & teachers need to be linked to their professional communities of practice**

# From Physical To Digital

## LEARN ABOUT ANYTHING WITH ANYONE, ANYWHERE, ANYTIME

- **Access to unlimited information**
- **Interactive learning**
- **Multiple media**
- **Simulation**
- **Virtual reality**
- **Distance learning**

# Digital Technology – So What?

- **Technology is a tool to support learning, not a replacement for it**
- **Technology cannot replace authentic practice communities (social capital)**
- **The potential for transformative learning based on information technology is just emerging**
- **It will require wide broadband access in the 10mbs+ range**
- **“Life begins at 100mbs”**
- **The U.S. lags most other industrial nations in this arena**
- **Colleges are on the “leading edge” of this movement**

# Summary of Learning Principles

- ✓ **BALANCE CHALLENGE & SAFETY**
- ✓ **BALANCE DISCOVERY & MASTERY**
- ✓ **ENGAGE THE EMOTIONS**
- ✓ **HONOR MANY INTELLIGENCES**
- ✓ **CONNECT TO AUTHENTIC PRACTICE COMMUNITIES**
- ✓ **LEVERAGE TECHNOLOGY**

# An Example of Learning Principles

University Prep Academy is a Grade 6-12 charter school in Detroit with a 98% African American student base. The following principles drive the design of the school.

Principle	Characteristics of Learning
<b>FUN</b>	<ul style="list-style-type: none"><li>• Engages student's sense of humor and play</li><li>• Isn't boring</li></ul>
<b>AUTHENTIC</b>	<ul style="list-style-type: none"><li>• Connected to real world problems students care about</li><li>• Is connected to real "communities of practice"</li><li>• Involves immediate and practical feedback</li></ul>
<b>ACTIVE</b>	<ul style="list-style-type: none"><li>• Students direct their own learning process and construct their own knowledge</li><li>• Involves a lot of trial and error</li></ul>
<b>INDIVIDUALIZED</b>	<ul style="list-style-type: none"><li>• Customized to respond to the unique capabilities, stage of development, learning style and cultural context of each child</li><li>• Changes as student needs change</li></ul>
<b>RELATIONSHIP-BASED</b>	<ul style="list-style-type: none"><li>• Learning builds strong adult and peer relationships</li><li>• Students have access to mentors who have "standing" in the content area</li><li>• Helps develop authentic communities of practice</li><li>• Peers provide feedback</li></ul>
<b>RIGOROUS</b>	<ul style="list-style-type: none"><li>• Builds competence against curriculum standards</li><li>• Improves ability to perform against standardized tests</li><li>• Develops skills of disciplined inquiry</li></ul>

# The “Formula”



- Small social units
- Continuity in relationships
- Individualized learning plans
- Work and community-based learning
- Project-based learning
- Respect for standards

- Relevance
- Relationships
- Rigor



# Some Contrary Points of View On Learning

***“In reality [schools] routinely and profoundly violate what scientists have come to know about how people learn most effectively, and the conditions under which people apply their knowledge best in new situations...The reality behind the myth is that ‘school’ -- as a technology, as an institution, as a process -- simply does not work as a way to organize learning for living in the real world. Schooling and learning are at odds -- more of one means less of the other.”***

*(Lewis Perelman, School's Out)*

***“We underrate our brains and our intelligence. Formal education has become such a complicated, self-conscious and over-regulated activity that learning is widely regarded as something difficult that the brain would rather not do...But reluctance to learn cannot be attributed to the brain. Learning is the brain's primary function, its constant concern, and we become restless and frustrated if there is no learning to be done. We are all capable of huge and unsuspected learning accomplishments without effort.”***

*(Frank Smith, Insult to Intelligence)*

***There is more than a little evidence (rarely looked at) that at least a considerable share of conventional teaching has negative results: it inhibits, prevents, distorts, or holds back learning.”***

*(Leslie Hart, Human Brain and Human Learning)*

# Organizational Learning

# The Knowledge Economy

- **Knowledge creation is now the key source of wealth creation and competitive advantage.**
- **Successful business organizations are all in the “learning business”.**
- **The traditional top-down control bureaucracy is an ineffective learning design and will not be able to survive in a world of rapid change.**
- **To be effective partners with business, community colleges have to model the learning process in their own organizations.**
- **Community colleges should be positioned as “organizational learning advisors” to business. Most do not have the capacity to do this.**



# Organizational Learning

## THE LEARNING ORGANIZATION:

An organization where the members have the capacity and opportunity to interact with each other to compare, contrast and adjust their “mental models” of the world as they work together to accomplish their personal and collective visions.

*“Learning in organizations means the continuous testing of experience, and the transformation of that experience into knowledge -- accessible to the whole organization, and relevant to its core purpose.”*

(Peter Senge, The Fifth Discipline Fieldbook)

# Different Forms of Collective Learning

## **A Learning Community:**

A group of individuals who voluntarily come together to accomplish a specific learning agenda together.

## **Communities of Practice:**

A group of people who have informal allegiance to each other because they share certain practices and are exposed to a common class of problems.

## **Learning Organizations:**

An organization skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights.

# Attributes of Effective Learning Communities

## Autonomous Agents:

- Individual players (individuals, teams, organizations) who voluntarily come together to learn, and who retain broad freedom about how they interact.

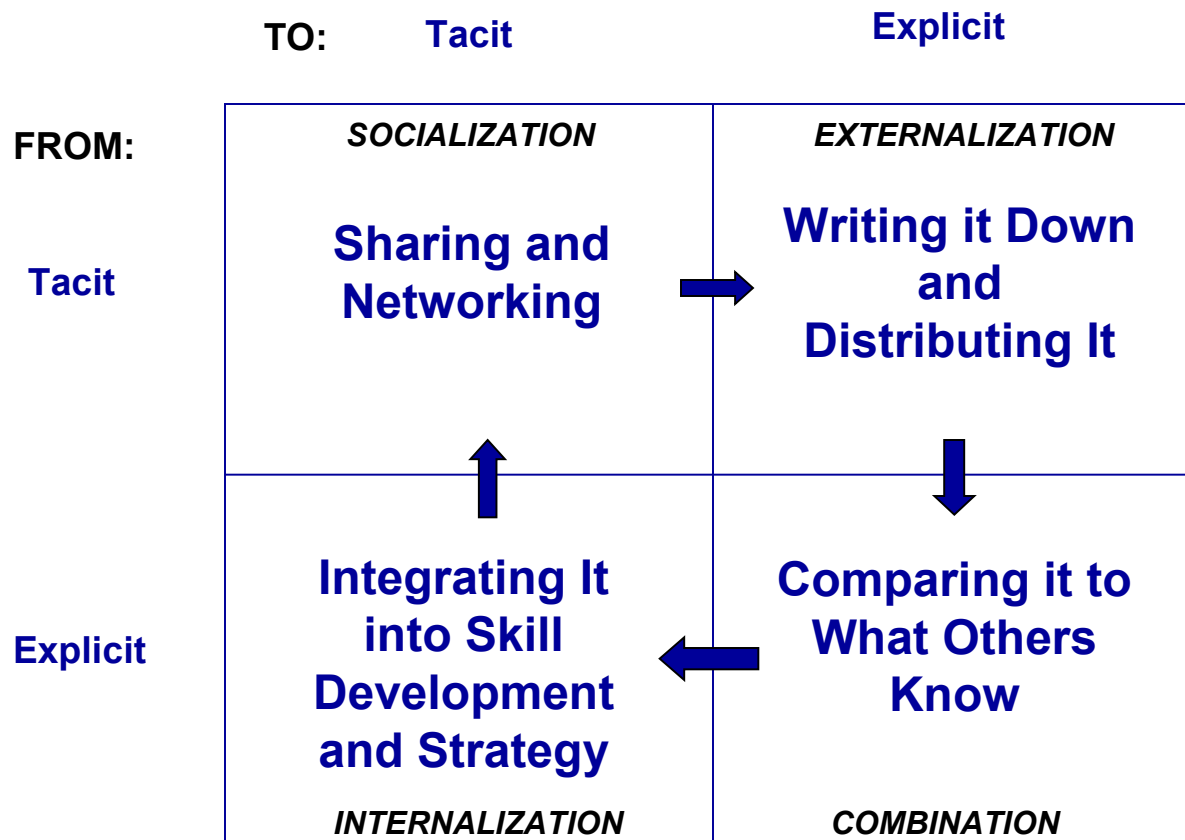
## Networked Connections:

- Enough “shared rules” (frameworks, mental models, values, visions, etc.) to communicate effectively.
- A learning agenda — areas of urgency for developing new knowledge.
- A connecting infrastructure — opportunities and means to interact freely.
- Shared memory — ways of recording and passing on new learning.

## Profuse Experimentation:

- Individual and collective processes for engaging in the action/reflection cycle.
- Measures of success — ways to know if experiments work.

# The Cycle of Organizational Knowledge Creation



## ORGANIZATIONAL ENABLING CONDITIONS:

- Intention
- Autonomy
- Creative chaos
- Redundancy
- Requisite variety

Nonake and Takeuchi, The Knowledge-Creating Company



# The Problem With Bureaucracy

***“The bureaucratic organization is becoming less and less effective,...it is hopelessly out of joint with contemporary realities and...new shapes, patterns and models are emerging which promise drastic changes in the conduct of the corporation and in managerial practices in general. So within the next twenty-five to fifty years, we shall all be witness to, and participate in, the end of bureaucracy and the rise of new social systems better able to cope with 20th and 21st century demands.”***

(Warren Bennis)

***“My definition of a bureaucracy: a business, or any other institution, that exists to carry out an organization.”***

(Stan Davis, Future Perfect)

***“The network is emerging as the signature form of organization in the Information Age, just as bureaucracy stamped the Industrial Age, hierarchy controlled the Agricultural Era, and the small group roamed the Nomadic Era.”***

(Jessica Lipnack and Jeffrey Stamps, The Age of the Network)

***“Much of the apathy, carelessness, and lack of pride so often encountered in the modern workplace is thus not coincidental: it is fostered by the mechanistic approach to organization that dominates work life...Mechanistic organization discourages initiative, encouraging people to obey orders and keep their place rather than to take an interest in, challenge, and question what they are doing.”***

(Gareth Morgan, Images of Organization)



# Classrooms and Organizations

The patterns are similar in both environments...

## ***Traditional Classrooms and Organizations***

- \* *Hierarchical, top-down control*
- \* *Reduction of work to small, separate parts*
- \* *Strong use of extrinsic motivation*
- \* *Working alone*
- \* *Focus on stable, unchanging structures*

## ***New Classrooms and Learning Organizations***

- \* *Focus on flexible, horizontal structures and open information*
- \* *Integrated approaches*
- \* *Focus on intrinsic motivation*
- \* *Emphasis on teamwork*
- \* *Constantly changing structures; form follows function*

# World Class Organizations

## Strategic Focus (Purpose)

World class firms have a clear strategic direction and well-articulated market differentiation. They understand their market segments and competitors and have the capacity for rapid adaptation and innovation. And they consistently seek market positioning where they are at the fore-front of best practice – they exploit the power of knowledge.

## Operational Excellence (Process)

These firms also have the ability to continuously improve their key processes through the use of technology and quality improvement tools and processes. They relentlessly work on the elimination of waste using rigorous measurement tools to track performance. And they use state-of-the-art process and information technologies to interact with customers; manage their own operations; and manage their supply chains.

## Human Capital (People)

World class companies continuously invest in the competence and creativity of their associates. They build cultures that attract and keep the best talent through strong, shared values; trusted leadership; and performance-based reward systems. And they design their organizations to maximize knowledge creation and management.

# World Class Competencies

## PURPOSE

**Competence:** Having a clear strategic direction; understanding your competencies and markets; capacity for rapid innovation.

**Attributes:**

- Clear mission and vision
- Focused market positioning and differentiation
- Organization-wide goals and objectives
- Well-defined financial goals

## PROCESS

**Competence:** Having the ability to continuously improve key processes through the use of quality principles, practices and tools.

**Attributes:**

- Systems thinking
- Rigorous measurement
- Continuous improvement practices for all business processes
- State of the art process and information technologies

## PEOPLE

**Competence:** Building a culture that attracts people's personal energy and supports their ability to understand themselves and work with each other as members of a team.

**Attributes:**

- Strong shared values
- Investment in people
- Teamwork, problem-solving and communications
- Performance-based rewards
- Distributive organizational design
- Knowledge management

# The Process of Organizational Change



# Learning and Continuous Improvement

# CQI and Learning

- **Continuous improvement is simply a specialized and disciplined form of learning that uses a distinct set of processes and tools to increase the performance of systems.**
- **The core “genetics” of the CI process is the scientific method.**
- **The value of a continuous quality improvement framework or culture is that it creates some common learning practices across the organization.**

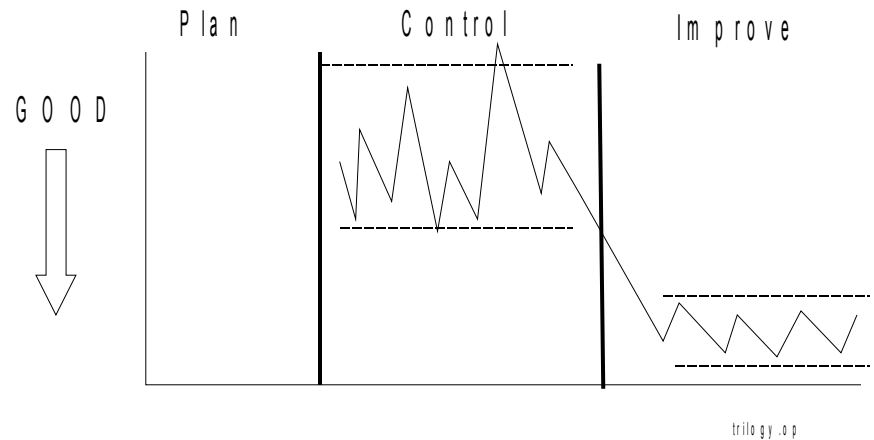
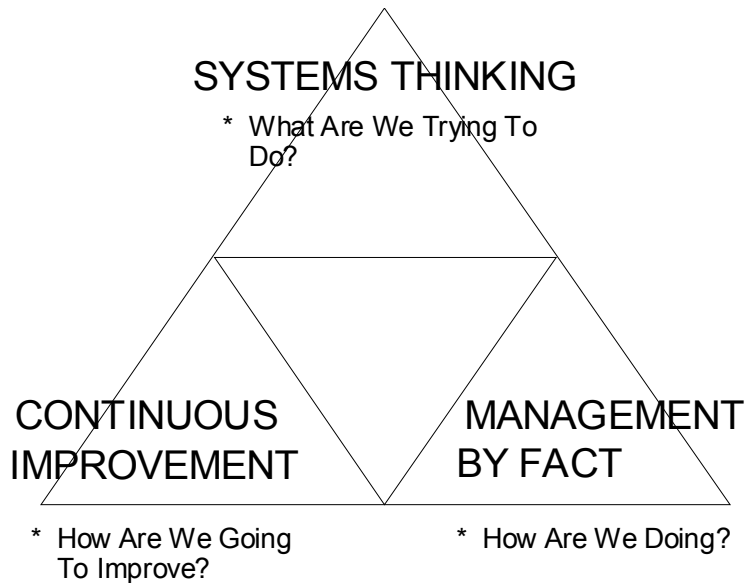
# The Quality Basics

**T Make your “mental model” of your work explicit and visible**

**w Agree on how it is working**

**A Improve it**

# An Organizational Learning Cycle





# Quality Principles

## **Systems Thinking:**

Understanding your work as a system focused on the needs of those you serve

- *85/15 Rule*

## **Management By Fact:**

Using data and knowledge of variation to know how you are doing

- *Process control*

## **Continuous Improvement:**

Using an organized and disciplined way to change the way you work

- *Plan-Do-Study-Act*

# The Essence of the Toyota Production System

## THE FOUR RULES OF TPS

**Rule 1:** All work shall be highly specified as to content, sequence, timing, and outcome.

**Rule 2:** Every customer-supplier connection must be direct, and there must be an unambiguous yes-or-no way to send requests and receive responses.

**Rule 3:** The pathway for every product and service must be simple and direct (flow).

**Rule 4:** Any improvement must be made in accordance with the scientific method at the lowest possible level in the organization.

### Management's Role is to Engage in Socratic Dialogue:

- How do you do this work?
- How do you know it is being done correctly?
- How do you know the outcome is free of defects?
- What do you do if you have a problem?

Source: "Decoding the DNA of the Toyota Production System", 1999, Harvard Business Review

# Creating A Community of Scientists

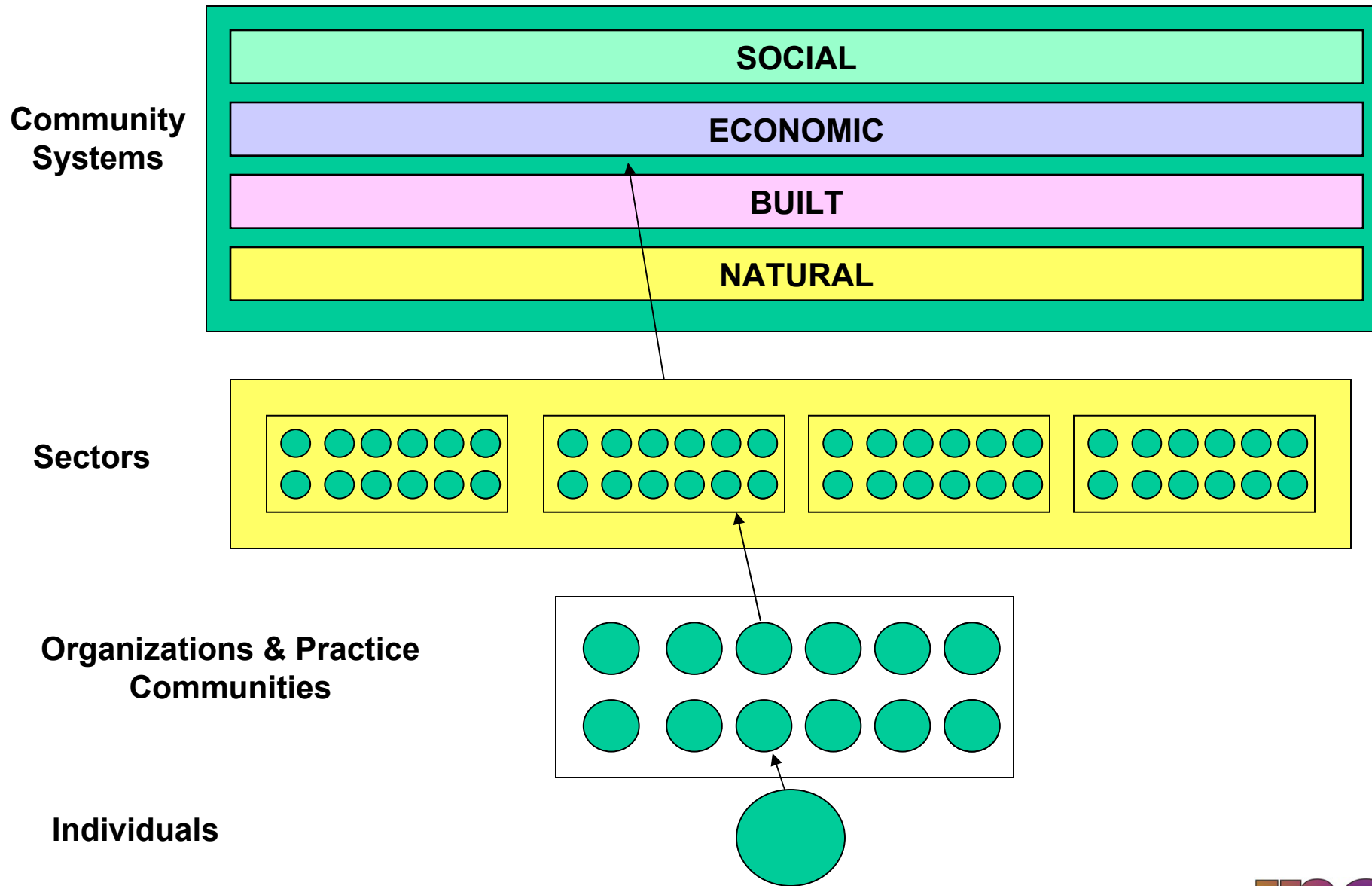
**What TPS had done was to create a “community of scientists” that is continuously conducting experiments on the production process. (“If we make the following specific changes, we expect to achieve this specific outcome.”)**

**The purpose of standardization in this context, is not to enforce discipline, but to enable experimentation – you can’t accurately test a hypothesis for improvement if you don’t have stability in the system you are experimenting on.**

***“The fact that the scientific method is so ingrained at Toyota explains why the high degree of specification and structure at the company does not promote the command and control environment one might expect. Indeed, in watching people doing their jobs and in helping to design production processes, we learned that the system actually stimulates workers and managers to engage in the kind of experimentation that is widely recognized as the cornerstone of a learning organization. That is what distinguishes Toyota from all other companies we studied.”***

# Community Learning

# Levels of Learning



# Four “Layers” of Community Systems

## A Taxonomy for Communities - The Four System Layers



# How Community Change Work is Different

- There is more complexity, diversity and ambiguity.
- It is difficult to get a common language that works across systems.
- Boundaries are not clear cut.
- It is more difficult to create shared purpose and vision.
- Power issues are more complex; politics is more important; race and class matter a lot.
- Logistics are more complicated.

# Hypotheses About Community Change

- **The core process is the same as any other systems change process – just more complicated.**
- **You have to work in multiple sectors/systems, and at a high level of market penetration to get sufficient scale to reach the “tipping point.”**
- **You have to work across class and racial boundaries.**
- **The presences of third party facilitators/brokers is essential.**
- **Ultimately, it is the social capital of the community that makes the difference.**
- **Community change innovators are a special breed of “entrepreneur.” Their work needs to be recognized and supported for these processes to be successful.**





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***The INC Mission is to develop and spread scalable innovations that transform the performance of community systems.***

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