

Deming's Profound Changes

Transforming from Taylor to Deming

-or-

Changing Your Philosophy Can
Change Your Future

Dan Robertson

In2:InThinking Forum - Los Angeles, CA
April, 2004

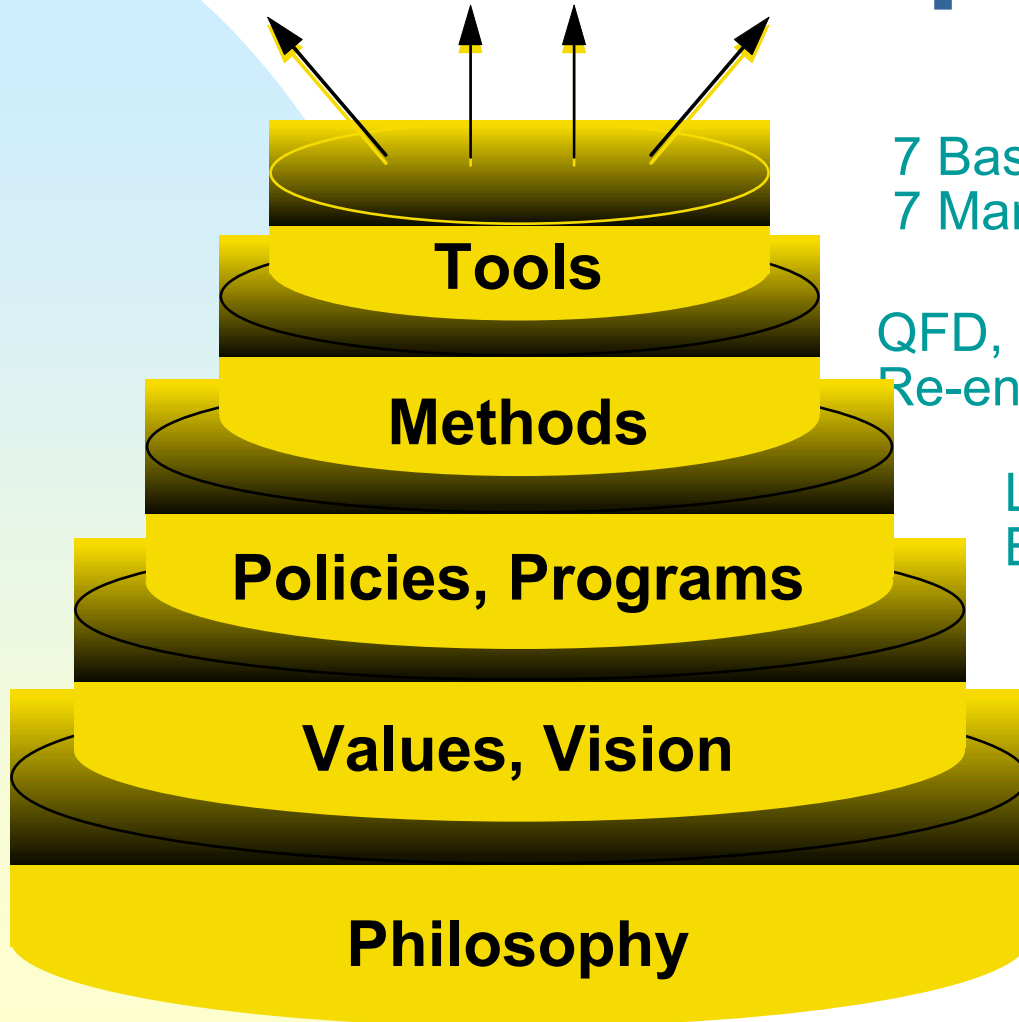
Overview

- Dr. Deming introduced 4 changes to the thinking of Japanese managers
- Those 4 changes reflect a fundamental change in philosophy for western management
- The barriers to achieve those changes still exist today
- Tools do exist to help in reducing and removing those barriers!

Choose Your Philosophy —Choose Your Future

- Ideas have consequences
- Quality, market share, success—all are effects, and *can't be sought directly*
- We must seek the causes in order to gain the effects
- The philosophical level is where the action is—not in tools, techniques, methods, policies, programs, experience, stories
- You won't see or hear anything in your pursuits that doesn't support some philosophy—although it may be unstated
- Consider your philosophy...
 - ◆ - How do you value individuals?
 - ◆ - What do you think management's job is?
 - ◆ - Are you aware of a system?
 - ◆ - How do you predict the future?
 - ◆ - Why do things vary so much?

The Progression From Philosophy to Action



7 Basic QC Tools,
7 Management & Planning Tools

QFD, SPC, DOE, Taguchi, Covey,
Re-engineering, Off-Shoring, Teams

Lean, Layoffs, Downsizing, ISO,
Benchmarking, Baldrige, 6 Sigma

Some OD approaches, Covey

Juran, Deming

Philosophical Time Line...1/3

State-of-the-art management beliefs — late 19th century:

- Businesses have existence separate from their owners
- The purpose of a business is to make a profit for its owners
- The worker is like a bionic machine
- Scientific and engineering methods should be used to improve business processes - use of Newtonian foundation

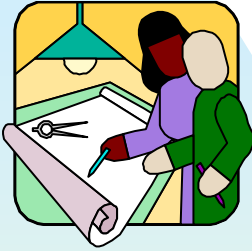
Taylor's Scientific Management — early 20th century:

- Reduce worker knowledge to laws and rules and formulae.
- Scientifically select and develop the workmen.
- Bring together the science and the scientifically-selected workmen.
- Divide equally the work between the workmen and management.

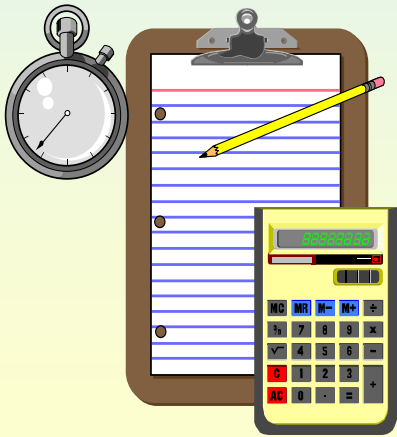
Extensions to Taylorism — 1st half 20th century:

- Centralized control of de-centralized functions - Sloan
- Behaviorism - Skinner
- Control by staff organizations such as finance, legal, purchasing
- Business ownership by outsiders; ownership as a commodity
- Reliance on inspection to obtain quality

Taylor's Principles of Scientific Mgmt.



1. Develop a science to replace the old rule-of-thumb knowledge of the workmen, which the workmen kept in their heads. Reduce this knowledge to laws and rules and formulae.
2. Scientifically select the workmen, then progressively develop them.
3. Bring together the science and the scientifically-selected workmen.
4. Divide almost equally the work of the establishment between the workmen on one hand, and the management on the other.

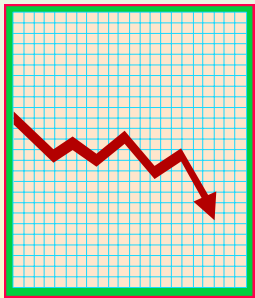


Consider, if you will...



- What happened to Taylor's ideas?
- Thinking about Taylor and today's work, what words come to mind?

Flaws of Taylorism



- Belief in management control as the essential precondition for increasing productivity
- Belief in the possibility of optimal processes
- A narrow view of improvement
- Low-level suboptimization instead of holistic, total-system improvement
- Recognizing only one cause of defects: people
- Separation of planning and doing
- Failing to recognize systems and communities in the organization
- Considering workers to be interchangeable, bionic machines

Philosophical Time Line...2/3

- 20th century discoveries:
- Relativity and quantum theory - Einstein, Planck
- Uncertainty principle - Heisenberg
- Knowledge is no longer absolute - Bridgman, C. I. Lewis
- Variation and economic loss - Shewhart
- Appreciation for a system - Deming

Philosophical Time Line...3/3

Expanding American & Western Euro economies: 1950-1970s:

- Growth by default
- Regional vs. global competition
- Success validated popular management paradigm
- Poor management obscured by rapid growth
- Slower rate of change

Neo-Taylorism — Latter half 20th century:

- Management By Objective - Drucker
- Imitation of “Best Practices”
- Win-lose, reward-punishment systems
- Internal competition
- Contracting core competence to reduce costs
- Portfolio careers
- Disposable human resources - The “virtual corporation”

2004: Neo-Taylorism...1

More Sizzle, Less Steak

- Using suppliers to do what was formerly done in-house, on the pretext of saving money, instead of improving internal operations
- Yielding up the core competencies of the organization
- Being a broker for someone else's products in preference to being a producer yourself
- Believing in certification as a guarantee of quality
- Paper entrepreneurialism

2004: Neo-Taylorism...2

Does Anyone Really Understand?

- Management answers to market analysts and bankers
- Imitation of others without understanding why, how or even if they got their results
- Incessant reorganizations, interchangeable managers
- Obsession with outcomes rather than methods
- Chasing awards, prizes, and publicity
- Suboptimal strategies such as MBO, quotas, ranking/rating
- Measurement systems which ignore variation
- Obsession with control rather than improvement
- Your boss is your customer

2004: Neo-Taylorism...3

Low Valuation of the Individual

- Putting people in competition with one another, e.g. ranking
- “Downsizing” and “Off-shoring” to avoid the costs of retaining loyal employees
- Expectations of 24/7 availability
- Cultivating an atmosphere of fear:
 - Layoffs and threats of layoffs
 - Threats of using outside vendors for jobs now done in-house
 - Selling off units that don't meet imposed objectives
 - Using rewards and punishments to obtain compliance

"Things are more like they are now than they ever were before."

- Dwight D. Eisenhower

Your thoughts, please...



- What of Taylor's approach is worth keeping?
- What would you change?

Deming's Profound Changes

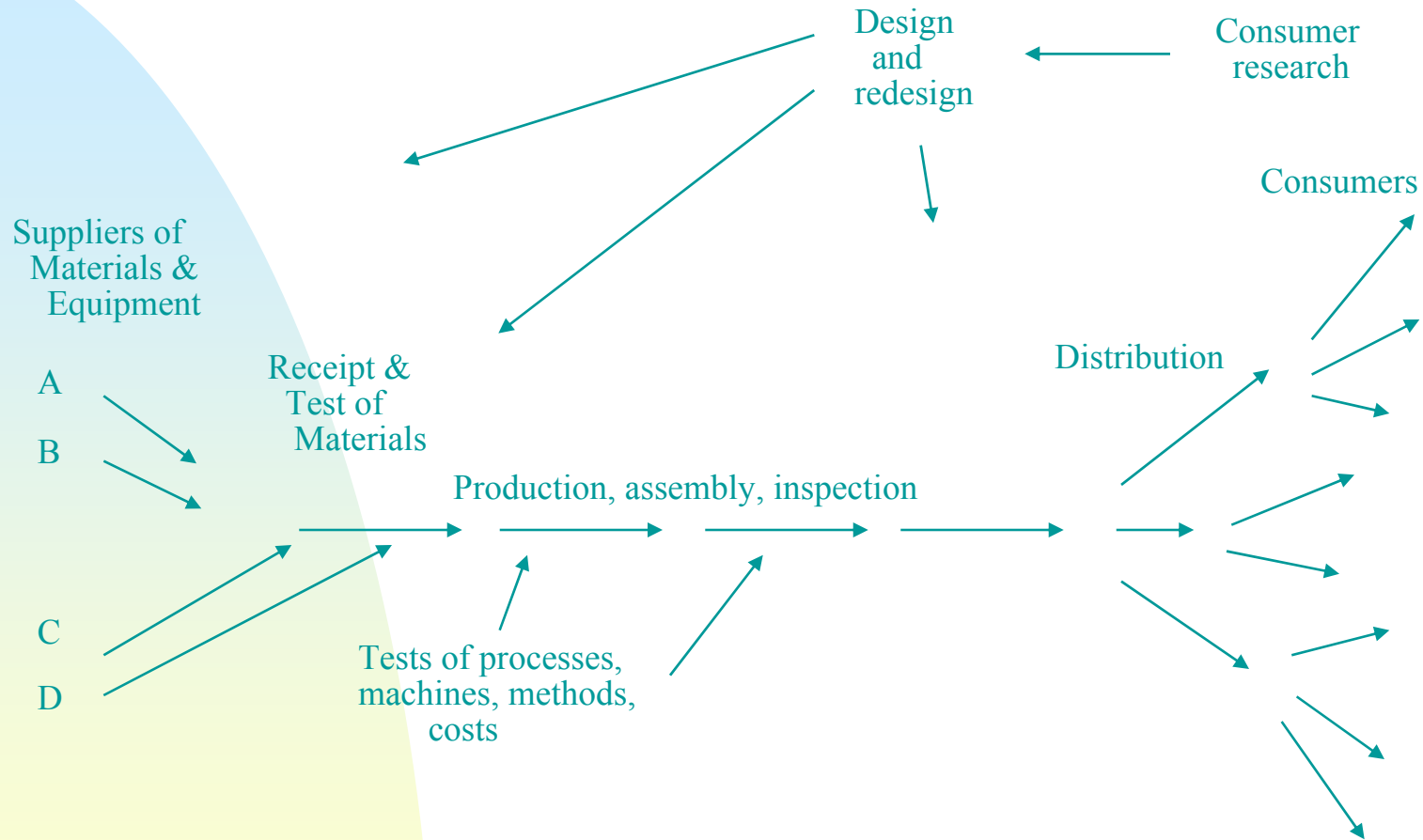
... Lead to Understanding the System and Reducing Complexity

- The benefits of profound change show up as you reduce complexity
- A non-linear ripple effect of benefits occurs

Systems Thinking & Complexity

- Taylor and Deming both took a systems view
- There are different types of systems within an organization
- Understanding complexity provides new insights to system behavior

Deming's system view



* W. Edwards Deming, notes on "The New Economics for Industry, Education, Government" -- Production viewed as a system

Some Principles of Systems

- A set of components with a unifying purpose
- Each component has an effect on the whole.
- Each component depends on at least one other component
- Interdependence
- Delayed response - Cause-effect relationships can be difficult to perceive
- System inputs, processes and outputs have natural variation
- Systems exhibit entropy. Effort is needed to consume entropy.
- The sum of the functioning of the components \neq system.

Compiled by John Dowd

Types of Systems w/in an Organization...1/2

Formal Systems:

- Written documentation, organization charts
- Hierarchical in structure
- Suppliers and customers not usually handled, or considered as terminal nodes
- Reflect the structure of management versus structure of work

Informal Systems:

- “Shadow” organizations that do the actual work
- Usually recognized by management
- Networks which cross organizational boundaries
- Cooperation outside of formal job descriptions
- Through observation, people find how to actually get their work done
- Usually not documented
- Reorganizations may not affect the informal systems
- True cross-functional self-directed work-teams!

Types of Systems w/in an Organization...2/2

Intangible Systems:

- Comprise the knowledge and lore of the organization which tell people their limitations and where they really stand.
- Nourish the human factors which bind the organization into a system
- Can reassure people that their efforts are valued and that they have an impact on the ultimate success of the group
- Fosters cooperation among all the people in the system.
- The systems that management influences most directly; for better or worse.
- Allows further reduction of complexity, so the division and concurrency of work can be the greatest possible.
- Typically ignored by other management philosophies.
- All the gains achieved in the tangible systems will go for naught unless the intangible systems are improved as well.

Complexity...

Components arising from system size:

- ✓ Number of units
- ✓ Volume
- ✓ Dimension

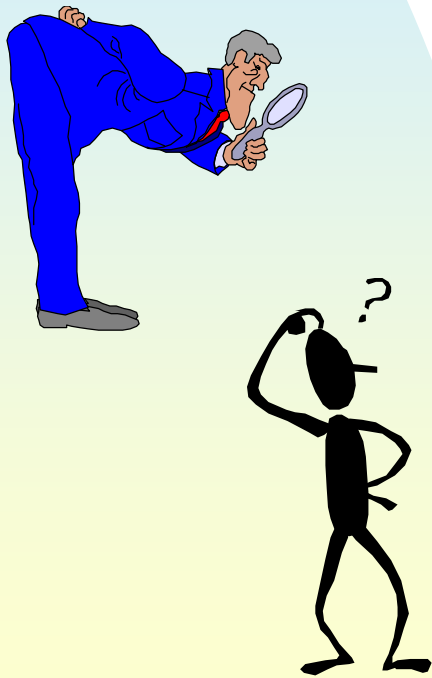
Components arising from system impact:

- ✓ Process time
- ✓ Special or common-cause variation
- ✓ Context level

Management Promotes Complexity

Some of the ways they do:

- Non-linear flow of work
- Working around missing resources
- Tampering by over-adjustment
- Promoting factionalization
- Ineffective communication



If We Can Reduce Complexity...

Do more with less effort to find areas with highest reward/risk ratio

✓ Increase leverage

New options areas are easier to find

✓ More breakthroughs

Problems are easier to identify and solve

✓ Home runs

Deming's Profound Changes

Changes in management philosophy brought to the Japanese by Dr. Deming after World War II

- Every system has variation; hence, the information needed to create optimum systems is unknown and unknowable.
- Using the scientific method we learn what's unknown but knowable faster.
- By observing the operation of the system, built-in flaws can be detected and isolated.
- Complexity can be reduced and entropy lowered by removing the built-in flaws.

Deming's Profound Changes ... I

- Every system has variation; hence, the information needed to create optimum systems is unknown and unknowable -

- All systems will have built-in flaws; “optimum systems” are impossible
- Expecting a process to perform identically in another place or time is foolish
- Dictates an emphasis on continual learning & improvement

Deming's Profound Changes ... II

- Using the scientific method we learn what is unknown but knowable faster -

- Shewhart first applied the scientific method to business in 1930s, giving us the Plan, Do, Study, Act cycle.
- Theory is necessary for observation, to gain knowledge.
- People must be able to tell the truth without fear— (There will be occasions where existing theory is proven to be wrong.)
- Deep “process knowledge” is also required.

Deming's Profound Changes ... III

- By observing the operation of the system, its built-in flaws can be detected and isolated -

- Requires a process orientation.
- The emphasis is on dynamic observation, versus static/ abstracted views.
- Must stabilize the system before improving it.

Deming's Profound Changes ... IV

- Complexity can be reduced and entropy lowered by removing the built-in flaws -

- Management is a key source of increased complexity:
 - Working around missing resources
 - Non-linear flow of work
 - Tampering by over-adjustment
- Reducing complexity is the key to improving productivity
- We're always fighting the return to a less ordered state, therefore it takes continuous improvement just to stay even

Taylor & Deming - A Qualitative Comparison

Taylor

Monitoring
Regulations
Specifications
Correct worker "slackness"
Worker-focused
Passive worker
Compliance
Punishment
Set quotas

Dramatic
Needs "upkeep"
Reductive
Authoritarian
Management
Departmentalize
Worker as commodity

Deming

Analysis
Statistical Control
Innovation & natural efficiency
Correct built-in systems flaws
System-focused
Involved worker
Empowerment
Education
Remove productivity obstacles
by solving mat'l/equip. problems
Evolutionary
Self-perpetuating
Synergistic
Democratic
Leadership
Work in teams across boundaries
Worker as contributor

Opportunity Knocks!

Deming offers a transformation to a new kind of world:

- System thinking
- Cooperation and collaboration
- Knowledge-creating
- Restoration of the individual
 - ◆ Joy in work
 - ◆ Intrinsic motivation
 - ◆ Self esteem
 - ◆ Contributing to improvement and innovation
- Market research to anticipate customer needs
- Enhanced competition in the marketplace
- New concerns of management
 - ◆ Aim of the system
 - ◆ Optimizing
 - ◆ Helping people, recognizing differences



Understanding Change

- Evolutionary
- Revolutionary
- Change in the process of change itself

Phases of Learning

- Solving problems by rote
- Defining problems
 - ◆ Pick out problems from non-problems
 - ◆ Develop hypotheses and analyze results
- Questioning problems
 - ◆ Understand the source
 - ◆ Use of scientific method
 - ◆ Understand the problem and add back new knowledge

Ultimately -- Adopt a principle of learning

Hierarchy of Change

- Changing a physical thing
 - Changing the way we do things
 - Changing our mind-set & theories
 - Changing our relationship with the universe
 - Changing what we think the universe is
 - Changing our values
- Learning and change go on at many different levels -
- Change comes from new knowledge -
- With focused effort, beneficial change can be accelerated -

Axiom 1: Control of a Business

TAYLOR

Control of a business is established by staffing positions of responsibility and authority with professional managers trained in the theory of scientific management and systems analysis.

DEMING

Control of a business is via leadership and cooperation.

	TAYLOR	DEMING
CONTROL:	<ul style="list-style-type: none">• Control is the goal• Management are the most important employees	<ul style="list-style-type: none">• Control is the effect• Everyone is important
LEADERSHIP:	<ul style="list-style-type: none">• Goal = maximum efficiency of the defined system• Method = prescription	<ul style="list-style-type: none">• Goals =<ul style="list-style-type: none">• learn• help people• set the goals for the organization• Method = example
COOPERATION:	<ul style="list-style-type: none">• A goal to be enforced by standards and threats	<ul style="list-style-type: none">• An effect of leadership which makes people secure

Axiom 2: Division and Concurrency of Work

TAYLOR

Improvements are due to management's increasing the division of work, and increasing concurrency (different aspects of work being done at the same time), within a project or among projects or processes.

DEMING

Improvements are due to increasing division of work, information and creativity, and to increasing concurrency, within a project or process, or among projects or processes.

- Adam Smith's 200 year old statement still holds.
- Division of labor, cooperation and specialization are all factors of the same principle.
- This principle allows global markets to be reality.

Axiom 3: Using Systems

TAYLOR

Develop systems to perform repetitive tasks.

DEMING

Develop systems to perform repetitive tasks.

- Deming looks upon the system in a holistic way.
- The aim of a system must be to benefit all of its parts.
- Systems are built around repetitive tasks.

Axiom 4: Optimum Systems

TAYLOR

The optimum system can be created by proper formulation of the objectives of the system and evaluation of alternatives to meet those objectives. The information will be available to create an optimum system.

DEMING

No system is ever truly an optimum system: every system must be analyzed to understand the natural behavior of the system and the variation within it. Information for creating an optimal system is unknown and unknowable.

- Optimum systems are not possible.
- Control charts allow management to differentiate between causes of variation, minimizing economic loss.

Axiom 5: Finding Causes

TAYLOR

Once a system has been properly defined and installed, any failure to meet stated objectives must come from outside the system.

DEMING

Inconsistencies and contradictions which become apparent upon analysis of the system may be used to detect and isolate the built-in flaws of the system.

- Use of the scientific method brings out inconsistencies and contradictions between theory and observation.
- It's a tough job to continue looking for flaws.
- The difference is between goal posts and loss functions.

Axiom 6: Role of Management

TAYLOR

Continuously monitor the status of the system for deviations from the system objectives to see if improper worker selection, poor motivation, inadequate training, or weak supervision are the causes of missed objectives.

DEMING

Create a secure environment so everyone can apply the first five axioms without fear. Offer support, reassurance, and appreciation.

- Management must look after both the tangible and intangible systems.
- Encourage cooperation versus competition.

Will We Enjoy Deming's “New Kind of World”?

OPPOSING FORCES

- Inertia (Paradigm Paralysis)
- Reward for failure
- Deflecting blame & scapegoating
- Paper entrepreneurialism
- Trade wars
- Win-lose vs. win-win
- Forced distribution of rewards
- Lack of understanding of
fundamental principles and
inconsistency in practice

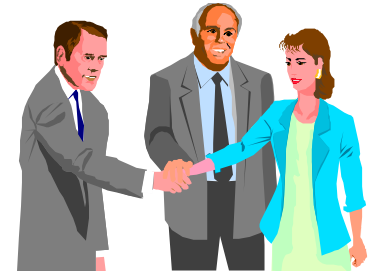
SUPPORTING FORCES

- People always trying to do their best
- Influence of Deming infrastructure
- Changes in education at all levels
- Leverage of PDSA
- Increased demand for quality
- Trend towards more open trade
- Old ways are not working anymore
- Greater acceptance as understanding
of Deming philosophy grows
- Growing acceptance of continuous
learning & improvement

What Can Be Done?

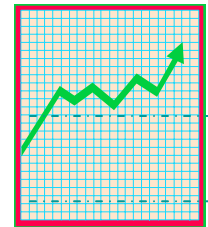
General Guidelines:

- Personal commitment
- Work on bottlenecks
- Look for complexity, not just errors or defects
- Don't copy "success" stories
- Classify: Cosmic Issues, No-Brainers, Low-Hanging Fruit
- Go after No-Brainers if you can



Suggested Approach:

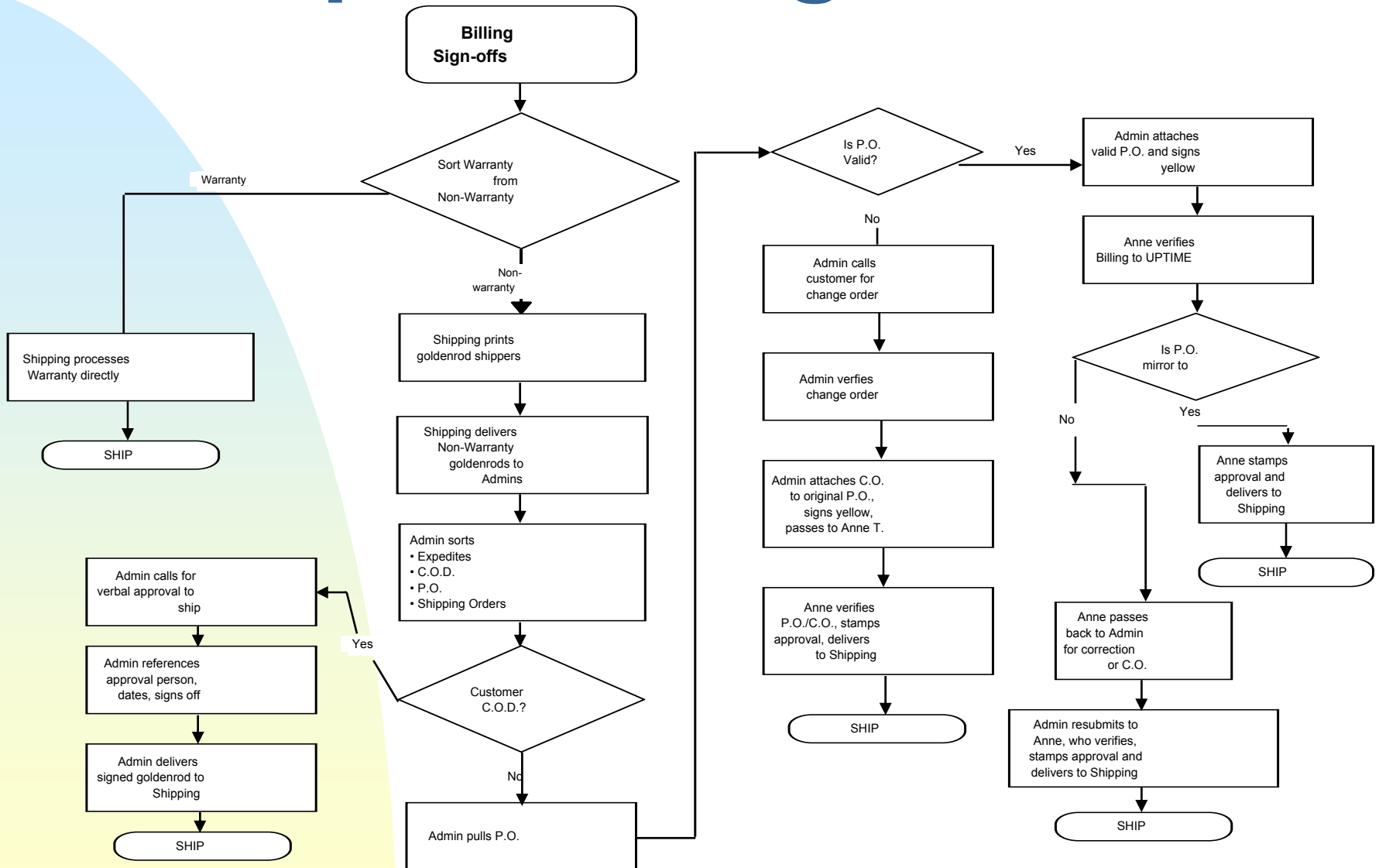
- What's bugging you?
- What's repetitive?
- Bring the process into statistical control
- Find process flaws using process knowledge & stat. tools
- Improve process using the new philosophy, PDSA, and a system-wide viewpoint



Characterizing Issues

	Cosmic Issue	Low-Hanging Fruit	No-Brainer
Time Frame	Long	Medium	Short
Measurements, Data	Unknown	Measurements known, data un-available	Data available
Consensus, Awareness	Low	Moderate	High
Fear	High	Moderate	Some
Development of Trust	Difficult	Moderately difficult	Easy
Return on Investment	Unknown and unknowable	Fuzzy	Certain
Resources Needed to Solve	Unknown	Uncertain but available	Clear
Development of Control	Difficult	Easy	Total
Status of Problem and Solution	Unknown	Problem clear, solution unknown	Clear
Change in Direction	Major	Minor	Minimal
Division of Issue	2 or more low-hanging fruits	2 or more no-brainers	None
Interdependence	High	Moderate	Low

A "Simple" Billing Process



Customer Service Success...

Product Repair Services Improvement Teams:

- Average Repair Turnaround time improvement of 75%
- Average Caller wait time cut in half
- 99%+ Performance to Contract commitments
- 96%+ Performance to Service Partner requirements
- 20% drop in Inventory levels on same activity volume
- Later - increased volumes 50% with same staffing

Making a Difference

- Using the philosophy of Deming's work, every individual can positively effect the system they are in.
- Make a personal commitment to learn and use that knowledge to work on improvements.
- Your actions and results will be noticed and will inspire others to join you!

Thoughts to work and live by...

- "Yoi kangae, yoi shina!" ("Good thinking means good products!")
 - Banner at Toyota's Takaoka assembly plant
- "Listen with your full attention, look for the good in others, have a sense of humor, and say thank you for a job well done."
 - J. M. Smucker Co. corporate code of conduct

Your Philosophical Choice...

...will make a difference...

- to your organization
- to your customers
- to your suppliers
- to society