

# **“Thinking Together About Other Stuff”**

*How Better Thinking is Leading to  
Better Doing*

*Ohio Quality & Productivity Forum - 2000*

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Presented by

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The Boeing Company

Canoga Park, CA 91309

# Agenda

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- ✓ Bill Bellows - Introduction & Overview - Better Thinking
- ✓ Tim Higgins - Thinking Roadmap
- ✓ Joe Onstott - Better Value

# Utilization of Thinking

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- ✓ Where are we going ?
- ✓ Where does this fit in ?
- ✓ Where did this come from ?
- ✓ What is my role ?
- ✓ What is this part of ?
- ✓ Where should we invest ?

# Utilization of Thinking

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- ✓ ...about managing variation
- ✓ ...about managing resources
- ✓ ...about seeing systems
- ✓ ...about psychology
- ✓ ...about the utility of theories

# Assumptions

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- ✓ A better way to operate an organization is to invest resources with the ability to delight customers
- ✓ Better investment results from discovering opportunities to invest
- ✓ The discovery of opportunities for investment is limited by how thinking is conditioned

# What is needed ?

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Thinking that  
promotes  
***better***  
discovery

# The role of better thinking...

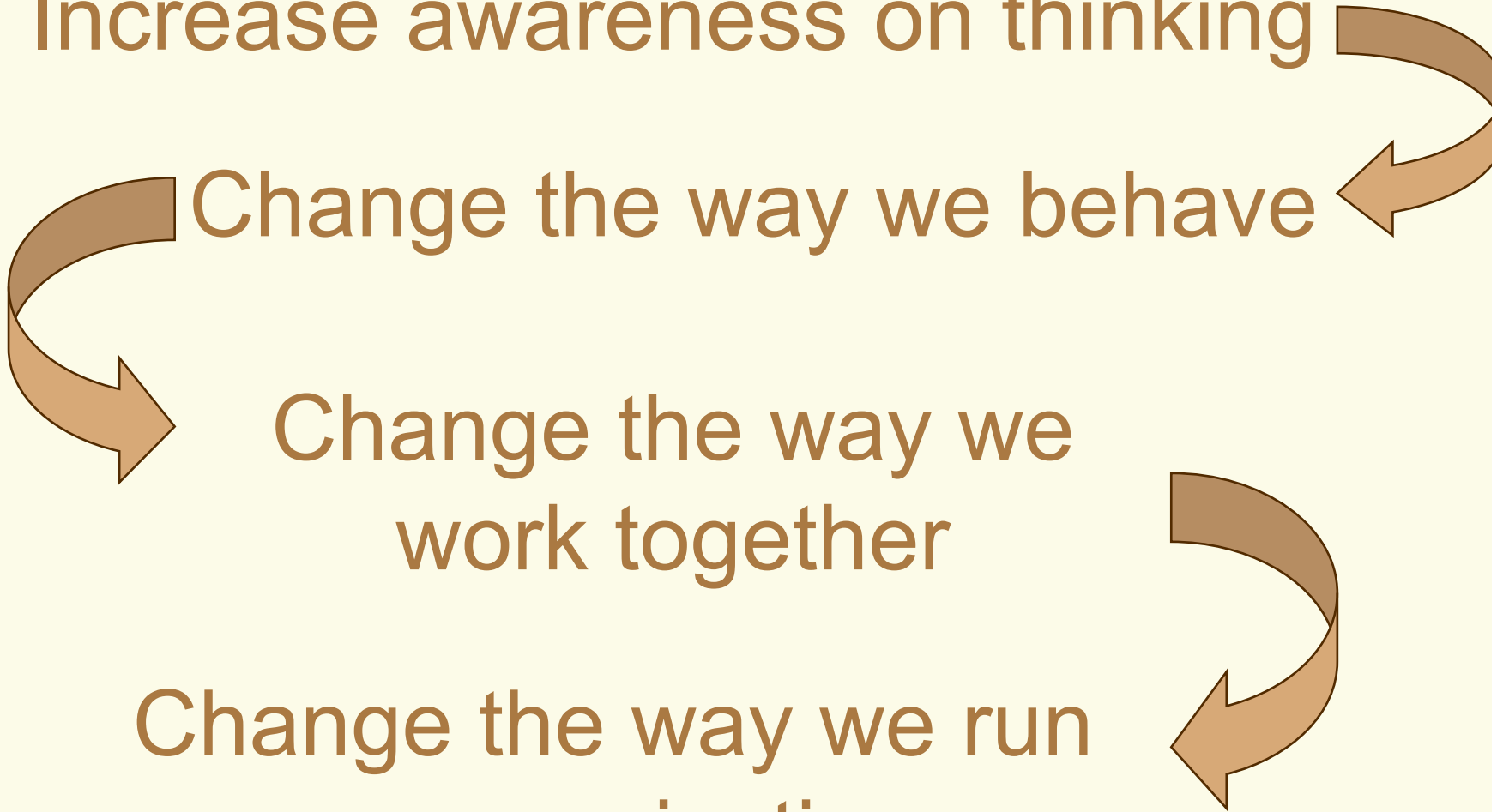
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Increase awareness on thinking

Change the way we behave

Change the way we  
work together

Change the way we run  
our organizations



# Question

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✓ *What is this a part of ?*



# Water and Rock Logic

## **Water Logic**

- ✓ *What is this a part of ?*
- ✓ *Where did this come from ?*
- ✓ *What will this lead to ?*



## **Rock Logic**

- ✓ Event focussed
- ✓ Part focussed
- ✓ Piece focussed

# Past Data: Entirely Snap Fit

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“When Pipp’s crew got done taking apart and reassembling the Toyota truck, they were speechless. They hadn’t once needed to pick up a mallet. The truck was entirely snap-fit. They had never seen anything like it.”

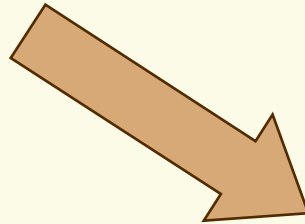
Source: *Phophets in the Dark*, David Kearns and Gerald Nadler

# Opportunity

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Potential Energy

*“Better Thinking”*



Kinetic Energy

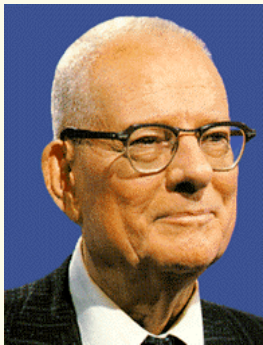
*“Better Value”*

# Thinking Roadmap

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Better Thinking results from following  
a Thinking Roadmap. Ours is  
based on an integration of the  
management theories of

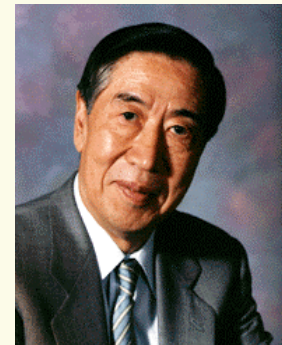
**Dr. W. Edwards Deming**



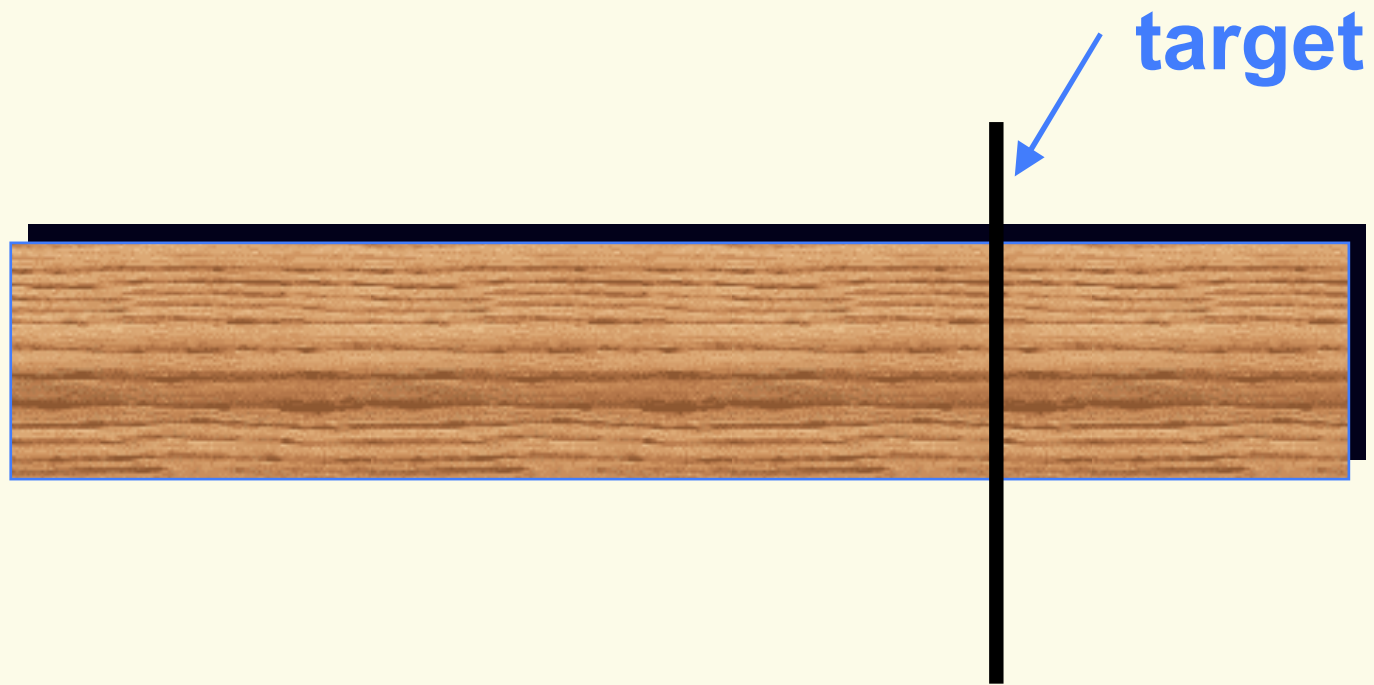
and

**Dr. Genichi Taguchi**

and others...

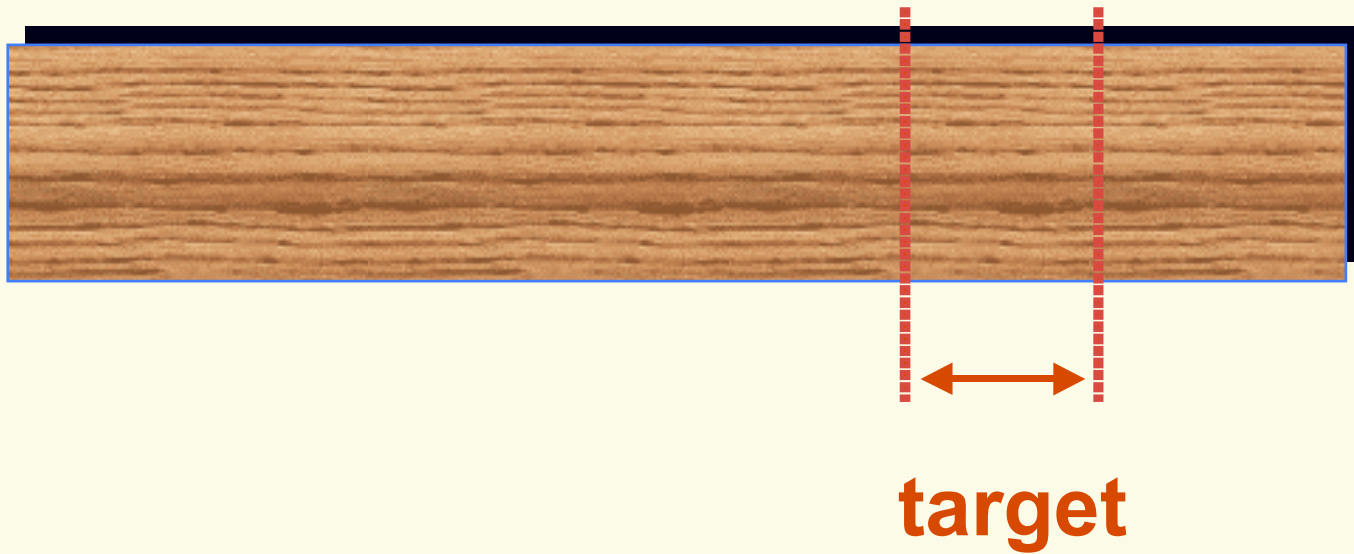


# Question: Cutting Wood



# Question: Cutting Wood

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# Investment

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- ✓ Water Logic
- ✓ Spending \$ to save \$
- ✓ Spending *time* to save **time**
- ✓ Spending *resources* to save **resources**
- ✓ Examples
  - ✓ college education, roof repair, time with kids

# Picking Up Nails

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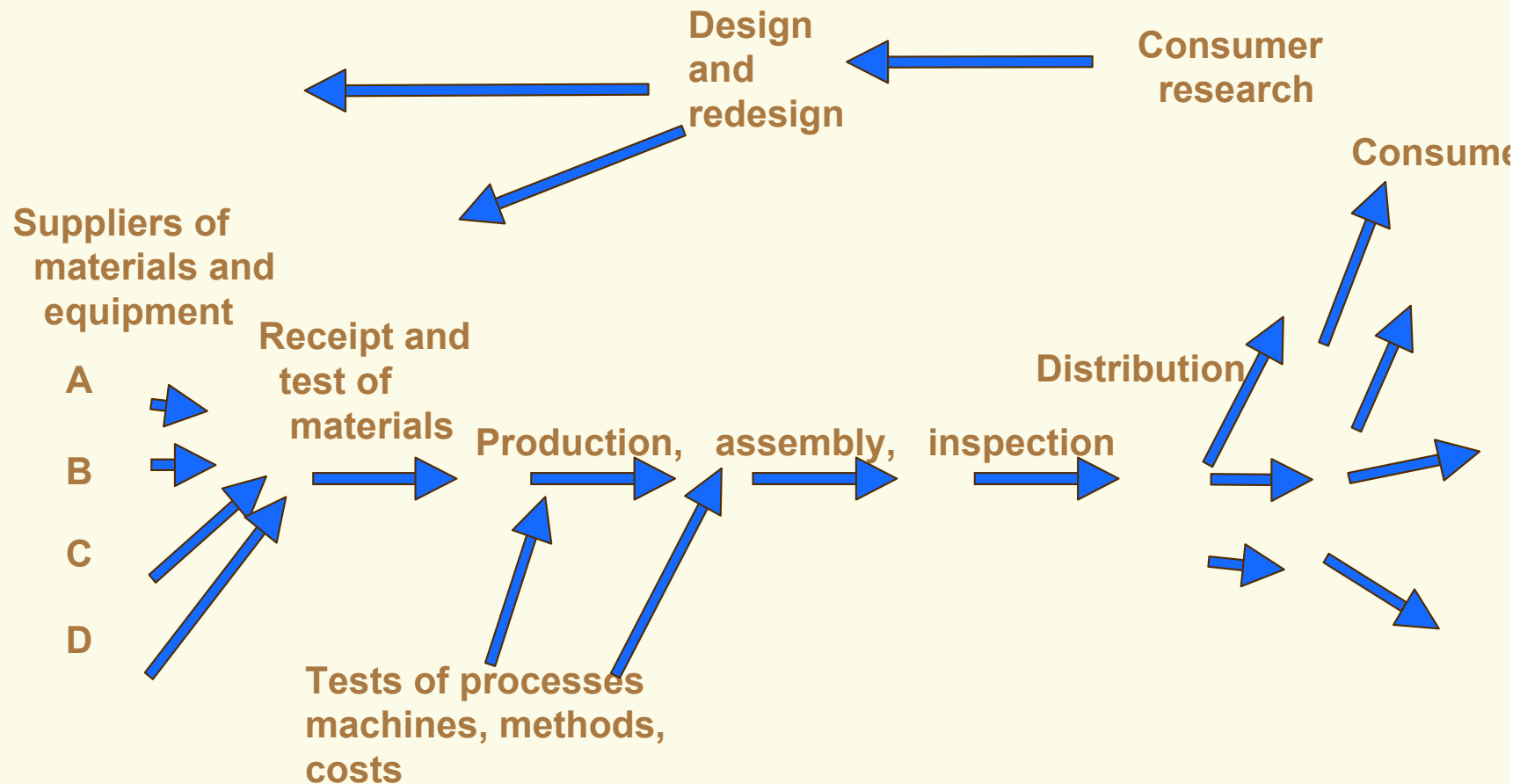
**Spending time (yours)  
to  
Save time (others)**

***Minimizing Loss to  
Society***



# Seeing Organizations as Systems

## The Process View ( “work with” )



Source: *The New Economics*, W. Edwards Deming, 1993

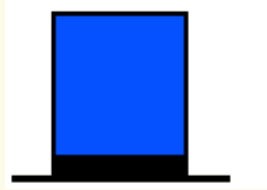
# A Thinking Roadmap

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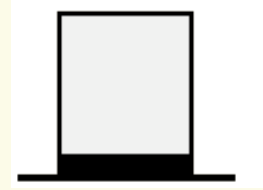
- ✓ Understanding Variation
- ✓ Understanding Taguchi Methods
- ✓ Problem Solving & Decision Making
- ✓ The New Economics Study Session
- ✓ Partnering Workshop
- ✓ Six Thinking Hats
- ✓ Lateral Thinking
- ✓ Managing Variation as a System

# Thinking Hats

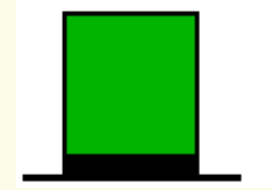
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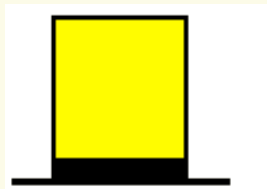
Managing  
the thinking



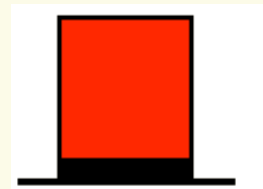
Information



Creativity



Benefits



Feelings



Cautious

Source: *Six Thinking Hats*, Dr. Edward de Bono, 1993

# Better Value

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- ✓ Design, development and manufacture of End Item Products that meet target price, schedule and quality

*By what method?*

- ✓ Design for Producibility (manufacturability)

# Better Value - A traditional approach

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## ✓ Producible Design definition:

An end product that is manufacturable testable, inspectable, and supportable using standard processes with minimum variability, requiring minimum tooling, meets high quality, ensures rapid cycle time, and is minimum cost

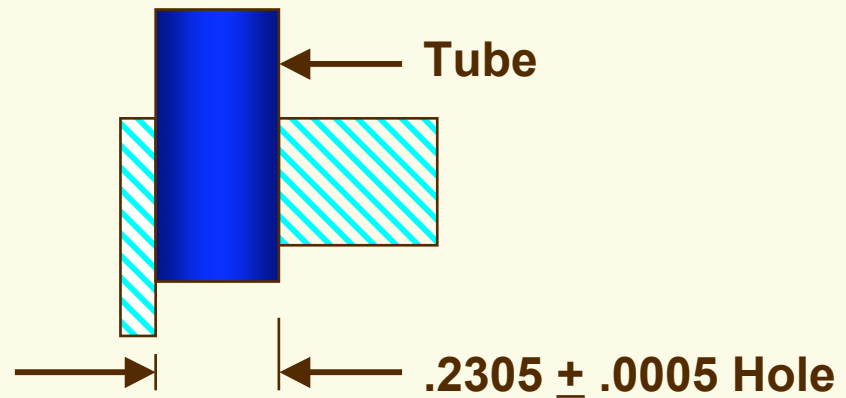
# Better Value - A better approach

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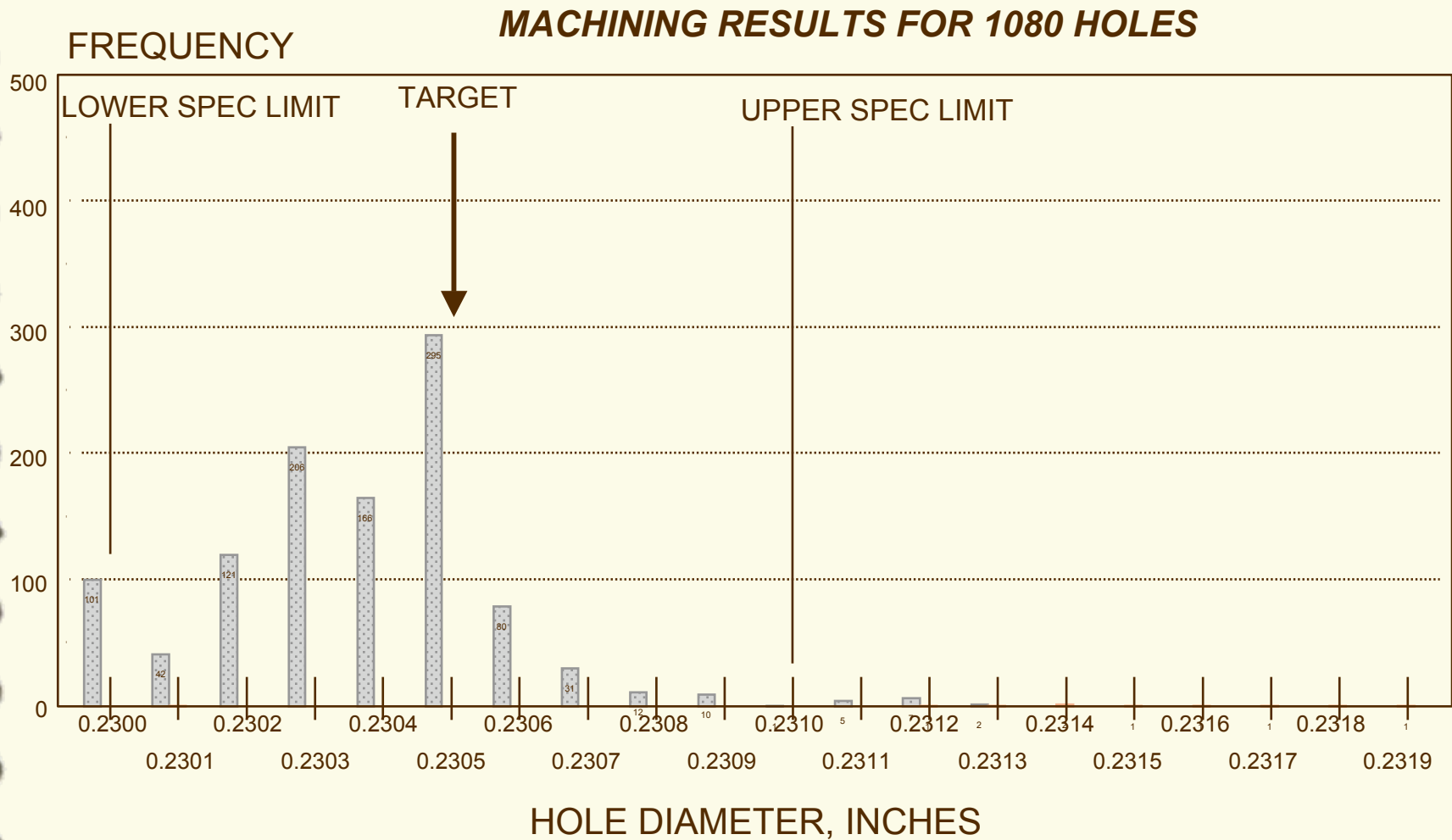
- ✓ Design end items to process capability
  - Manage variation
- ✓ Develop processes to meet design reqts
  - Process control vs. inspection
- ✓ Maximize customer delight by using:
  - The right amount of tooling
  - The right investment of time
  - The right investment of money

# Better Value - Tube Fit in Hole

Consider a tube fit into a hole



# Better Value - Drilled Hole Data



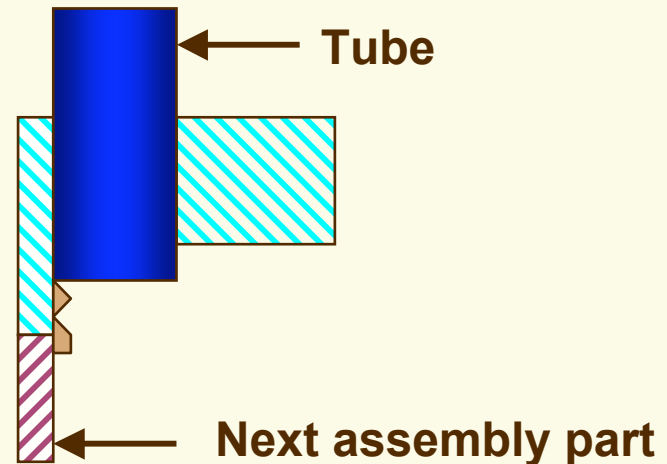


# Better Value - Tube in Hole, Next Assembly

## *Rock Logic*

### **Traditional Approach**

- ✓ Ream/ rework holes
- ✓ Braze flow thru holes
- ✓ Crack welds
- ✓ Add grind operation
- ✓ Add etch operation
- ✓ Add better etch operation



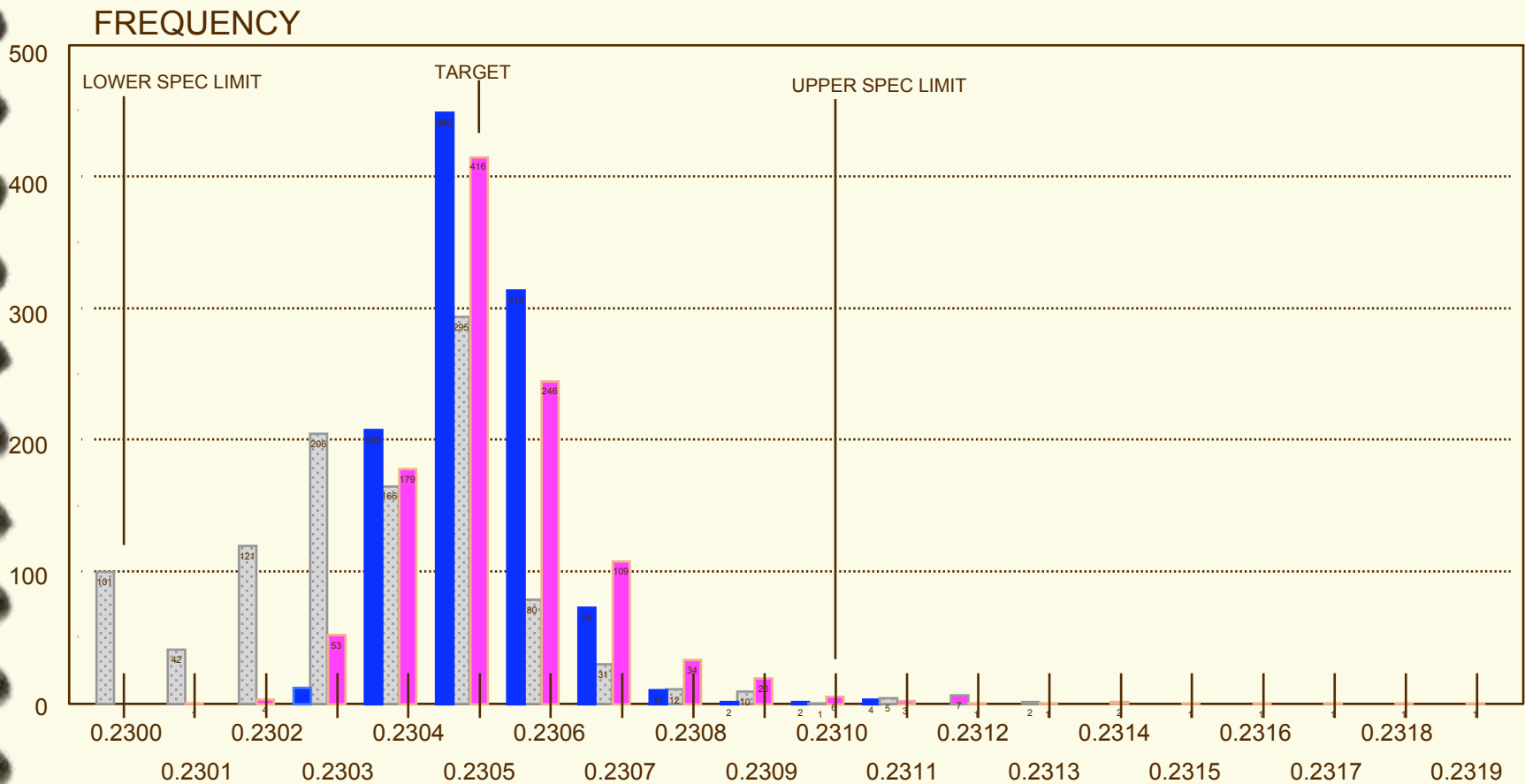
## *Water Logic*

### **Better Approach**

- ✓ Improve hole drilling
  - To target
  - Better distribution
- ✓ Assembly snap fit
- ✓ Successful braze

# Better Value - Drilled Hole Data, Post Taguchi experiment

## MACHINING RESULTS FOR 1080 HOLES - "BEFORE" & "AFTER"

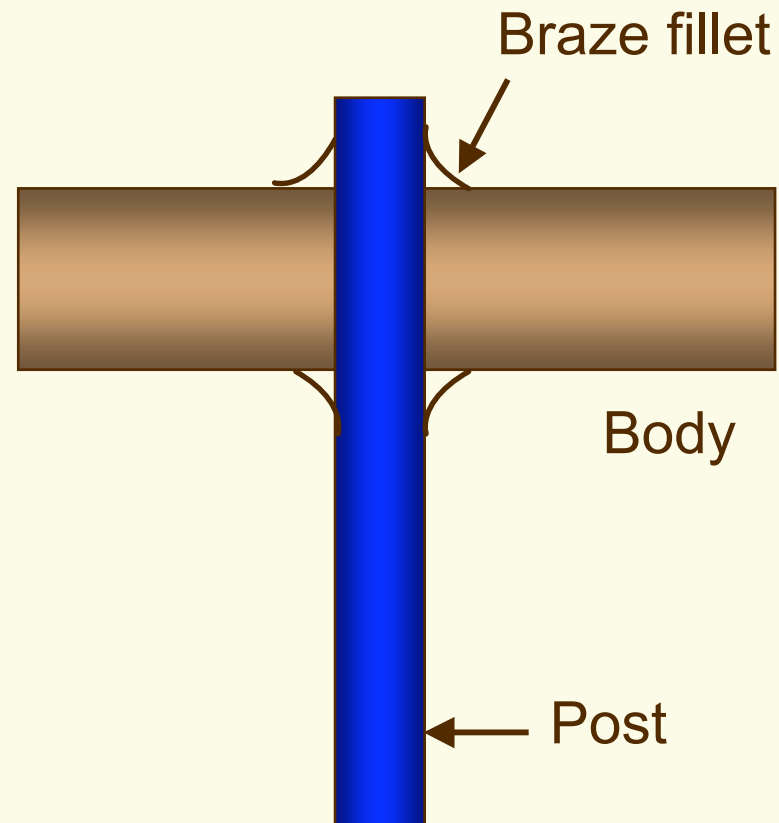


# Better Value - Component Brazing

Major component Braze Joints

628 Posts /Joints

1256 Braze Fillets



# Better Value - Brazing

## Two line thinking:

- ✓ All within spec the same
- ✓ Maximum Material Condition best
  - Can be reworked

## Results:

- ✓ Two braze cycles
- ✓ \$30,000

## One line thinking:

- ✓ Target is best
- ✓ Loss increases as part moves away from target
- ✓ Design within capability of process

## Results:

- ✓ One braze cycle
- ✓ \$9,000

# Courage To Imagine...

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*“The courage to imagine the otherwise is our greatest resource, adding color and suspense to our life.”*

Daniel Boorstin

# Imagine the possibilities...

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- ✓ if we could develop a deeper appreciation of “*working together*”, “*learning together*” and “*thinking together*”
- ✓ if we could ponder the opportunities for investment
- ✓ if we could act on these opportunities

# Imagine the possibilities...

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✓ and the markets we could create

Working Together

Investing Together

Designing Together

Building Together

Learning Together

**Thinking Together**

Leading Together