



Back to the Future: What Old Thinkers can teach us about making Innovation Succeed Today

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Dedication

In loving memory of my mentor and friend



Nigel Clements

Focus

Just 3 questions

1. What are our 21st Century Problems?
2. What are the lessons from history?
3. How can we apply those ideas today?

What are our 21st Century Problems?

What are our 21st Century Problems?

Some thoughts

- Precipitous >
- Lack of <
- Ignorance of \approx
- Denial of $p = x + z(x)$
- Insufficient analysis of Y^5

What are the lessons from history?

[some examples]

What are the lessons from history?

There are many – 3 examples of great teachers from the 50s (and beyond):

1. Deming – System of Profound Knowledge
2. Ackoff – Idealized Design
3. Ishiwaka – The 7 Tools

Who affects Performance most?


What if it is what, not who?

Teams and Systems Thinking

“94% of problems in business are systems driven and only 6% are people driven.”

– W. Edwards Deming

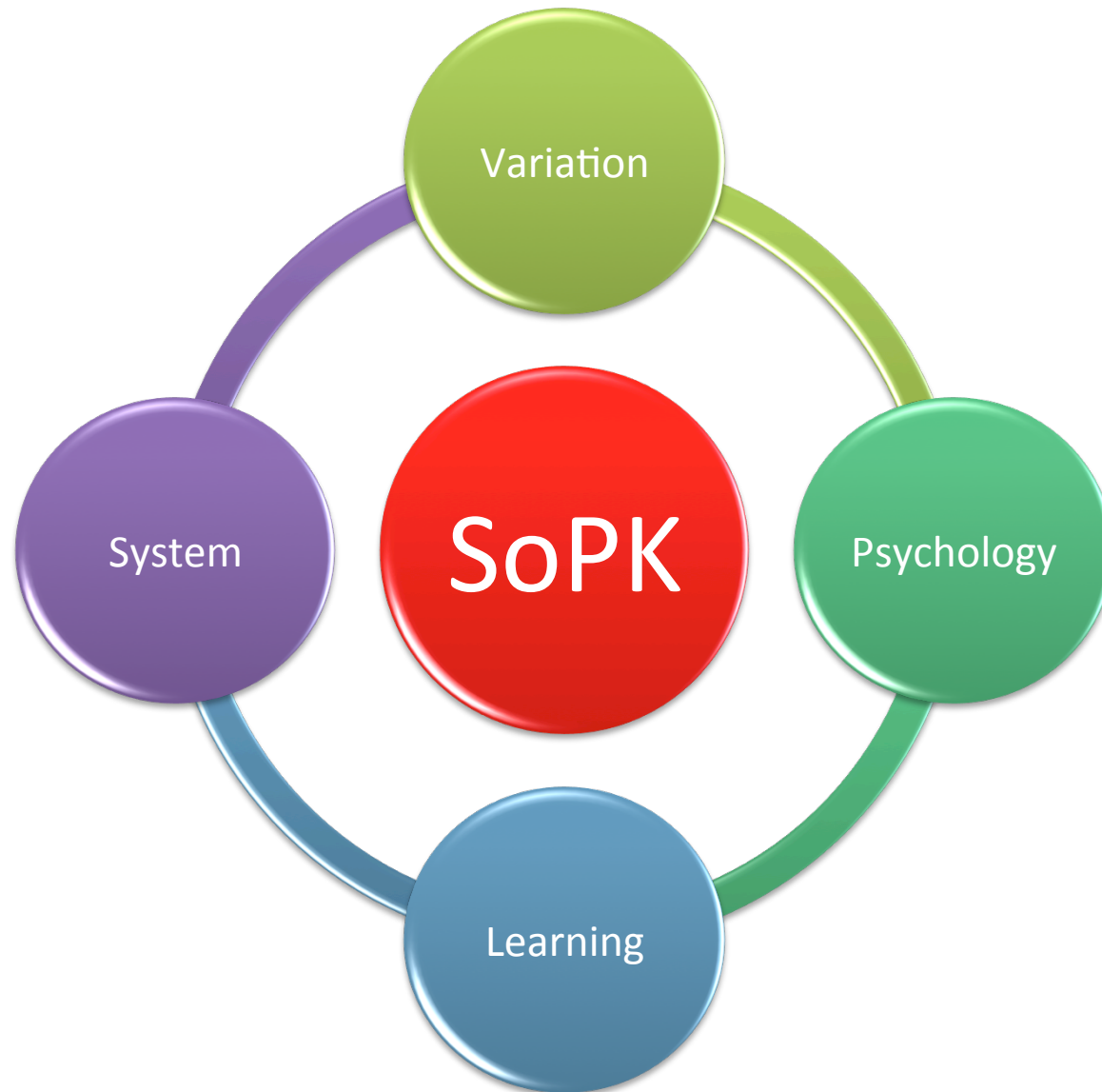
1900 – 1993



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Deming's System of Profound Knowledge

Bad name – fantastic concept



How can we Innovate best?

An “old thinker” leads the way



Russell Ackoff

Are you sitting comfortably?

Then I shall begin...

- Once upon a time – in 1951
- Bell Labs, New Jersey
- Peter Myers “said that no one would know the difference”
- He was a big man, extroverted, and voluble. He could not get near someone without punching, pinching, pushing, hugging, or pounding them on the back.
- He was obviously very upset. He was a pasty gray and bent over as he slowly shuffled down the aisle without a word to anyone. He mounted the platform, stood behind the podium, put his elbows on it, and held his head in his two hands, looking down.
- **“Gentlemen, the telephone system of the United States was destroyed last night.”**

Still Comfy?

Then I shall continue.

- “I’ve made a list of those contributions to the development of telephonic communications that I believe have earned us this reputation. Before I share my list with you, I’d like your opinions. What do you think are the most important contributions we have ever made to this development?”
 - The dial
 - introduced in the 1930s
 - Multiplexing
 - between the two world wars
 - The coaxial cable that connected the United States and Great Britain
 - 1882
- “Doesn’t it strike you as odd,” he said, “that the three most important contributions this laboratory has ever made to telephonic communications were made before any of you were born? **What have you been doing?**”

Not quite as Comfy?

Is this telephone story ringing true?

- “You have been improving the **parts of the system taken separately**, but you have not significantly improved the system as a whole”
- “The deficiency,” he said, “is not yours but mine. We’ve had the wrong research-and-development strategy. We’ve been focusing on improving parts of the system rather than focusing on the system as a whole. As a result, we have been improving the parts, but not the whole. We have got to restart by focusing on designing the whole and then designing parts that fit it rather than vice versa”
- “Therefore, gentlemen, we are going to begin by designing the system with which we would replace the existing system right now if we were free to replace it with whatever system we wanted, subject to only two not-very-restrictive constraints”

On the edge of your seat?

What are the two constraints?

- “First,” he continued, “let me explain why we will focus on **what we want right now**, not out five or ten years. Why? Because we know that where we say today we would like to be five years from now is not where we will want to be when we get there. Things will happen between now and then that will affect our goals and objectives. By focusing on what we want right now, we can eliminate that potential source of error.”
- “Second, why remove practically all constraints? Because **if we don’t know what we would do now if we could do whatever we wanted, how can we know what to do when we can’t do everything we want?** If we knew what we would do with virtually no constraints, we could modify it, if necessary, to become feasible and adapt it to changing internal and external conditions as time goes on.”

Curious to know how it works?

This is what they did

- The vice president then said, “This group is too large to operate as a single group. Therefore, I am going to divide you into six **subgroups** of about six each, each with responsibility for a subsystem. Each group will select a representative to meet with other representatives **at least once a week to discuss interactions**. Let me explain.
- “Each group will be able to design whatever it wants as long as it does not affect any other group’s design. If what a group wants to do does affect one or more other groups’ designs, it must get their **agreement before** it can be included in their design. I can tell you in advance,” he said, “that the groups will do little that does not affect other groups. At the end of the year,” he said, “I want to see **one completely integrated system design**, not six subsystem designs. I don’t even want to know what the individual teams came up with. Is that clear?” he asked.
- He created a “long lines” (inter-city communication) team, a “short lines” (within city communication) team, a switching stations team, two other teams, and finally the telephone set team, on which I found myself with my friend Peter Meyers.

And they all lived Happily Ever After....

[have we learnt?]

- *Every call I receive is intended for me — no wrong numbers.*
- *I want to know who is calling before I answer the phone so I need not answer it if I don't want to speak to the caller.*
- *A phone I can use with no hands.*
- *A phone that comes with me wherever I am, not one I have to go to in a fixed location.*

- We continued to add to this list for several weeks, ending with just more than ninety properties we wanted a phone to have. These properties became very complicated near the end. For example, we wanted to be able to talk simultaneously to groups in multiple locations, see all of them, and be able to transmit documents or charts instantaneously.

Footnote

For those who want the full story

- They went on, “We went back and built a push-button telephone and tested it on a very large number of people. It turns out to take about twelve seconds less to put in seven digits by pushing buttons than turning a dial, and additional time is saved by not occupying a line until after the number is put in and the receiver is picked up. The combined saving in time is worth millions to AT&T,” they said, “so we have started a project to develop that telephone. We have given it a code name that is being kept secret for now.” They looked around the room to be sure no one was listening and then told us, “Touch tone.”
- Before the year was over, the groups had established the technological feasibility of each of our many design features. The group of design teams continued to work after I was no longer a participant, and they anticipated every change in the telephone system, except two, that has appeared since then. Among these are **touch-tone phones, consumer ownership of phones, call waiting, call forwarding, voice mail, caller ID, conference calls, speaker phones, speed dialing of numbers in memory, and mobile phones**. They did not anticipate photography by the phone or an Internet connection.

Idealized Design

In a nutshell

***Idealized design** is a way of thinking about change that is deceptively simple to state: In solving problems of virtually any kind, the way to get the best outcome is to imagine what the ideal solution would be and then work backward to where you are today.*

*This ensures that you do not erect **imaginary obstacles** before you even know what the ideal is.*

Remember

2 rules

1. What we want right now
2. Practically no constraints

What tools can we use every day?

Japanese thinkers have been thinking about this for over 60 years



Dr Kaoru Ishikawa

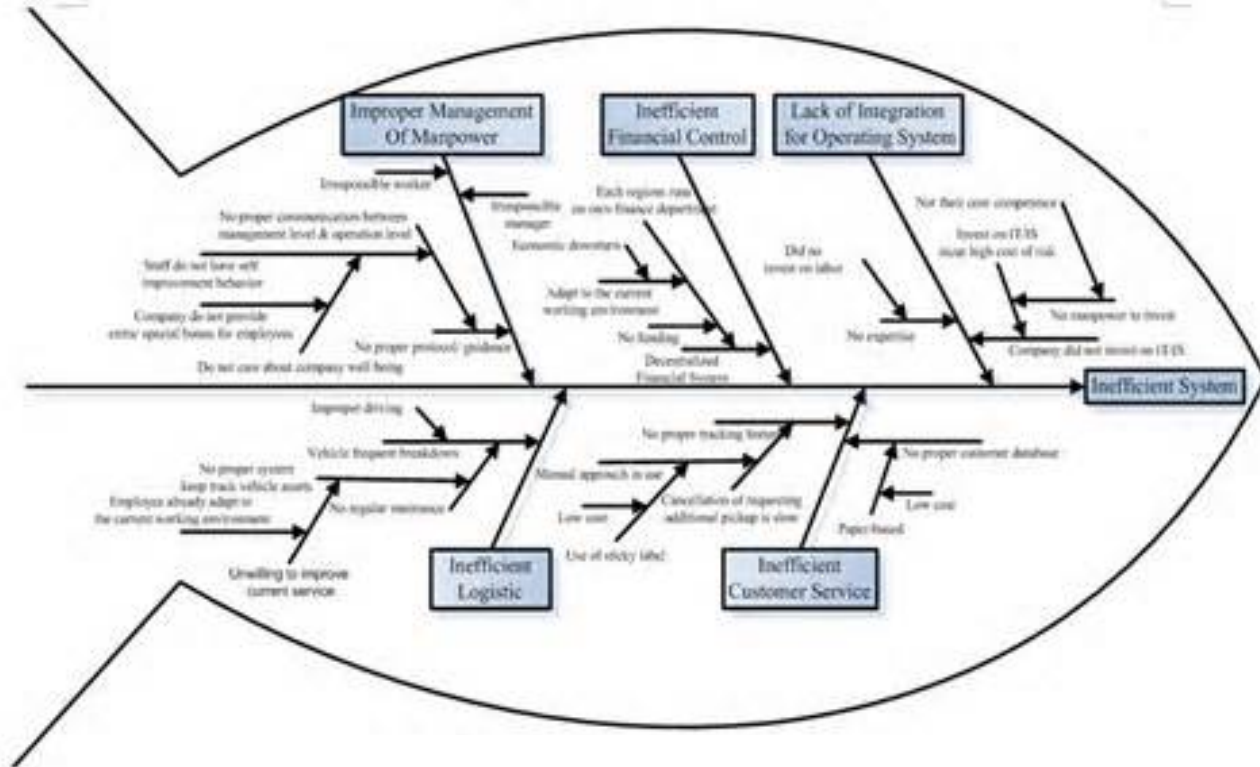
Ishikawa's List of 7 Tools

“Everyone should know these”

- 1. Pareto analysis:** which are the 20% that cause the 80%
- 2. Cause and effect diagrams:** what are the root causes?
- 3. Stratification:** how is the data aggregated?
- 4. Check sheets:** how often does this happen?
- 5. Histograms:** what do overall patterns look like?
- 6. Scatter charts:** what are the potential relationships between factors?
- 7. Process control charts:** what is special, common – and what can we do about it?

Something Fishy

Cause and effect analysis (also useful for design)



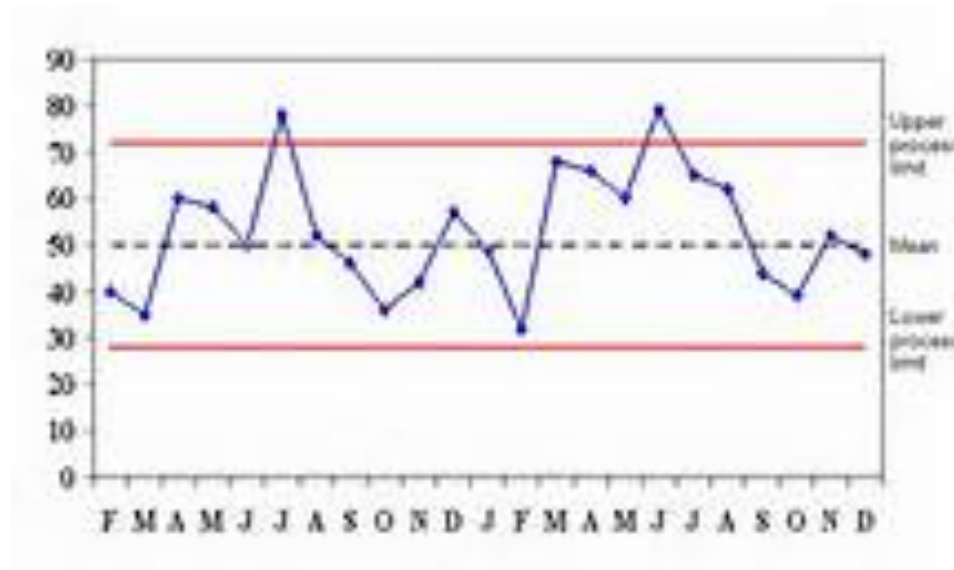
Watch out for Bears!

What is special and common cause variation?



Control Chart

A simple tool for helping to spot special and common cause variation

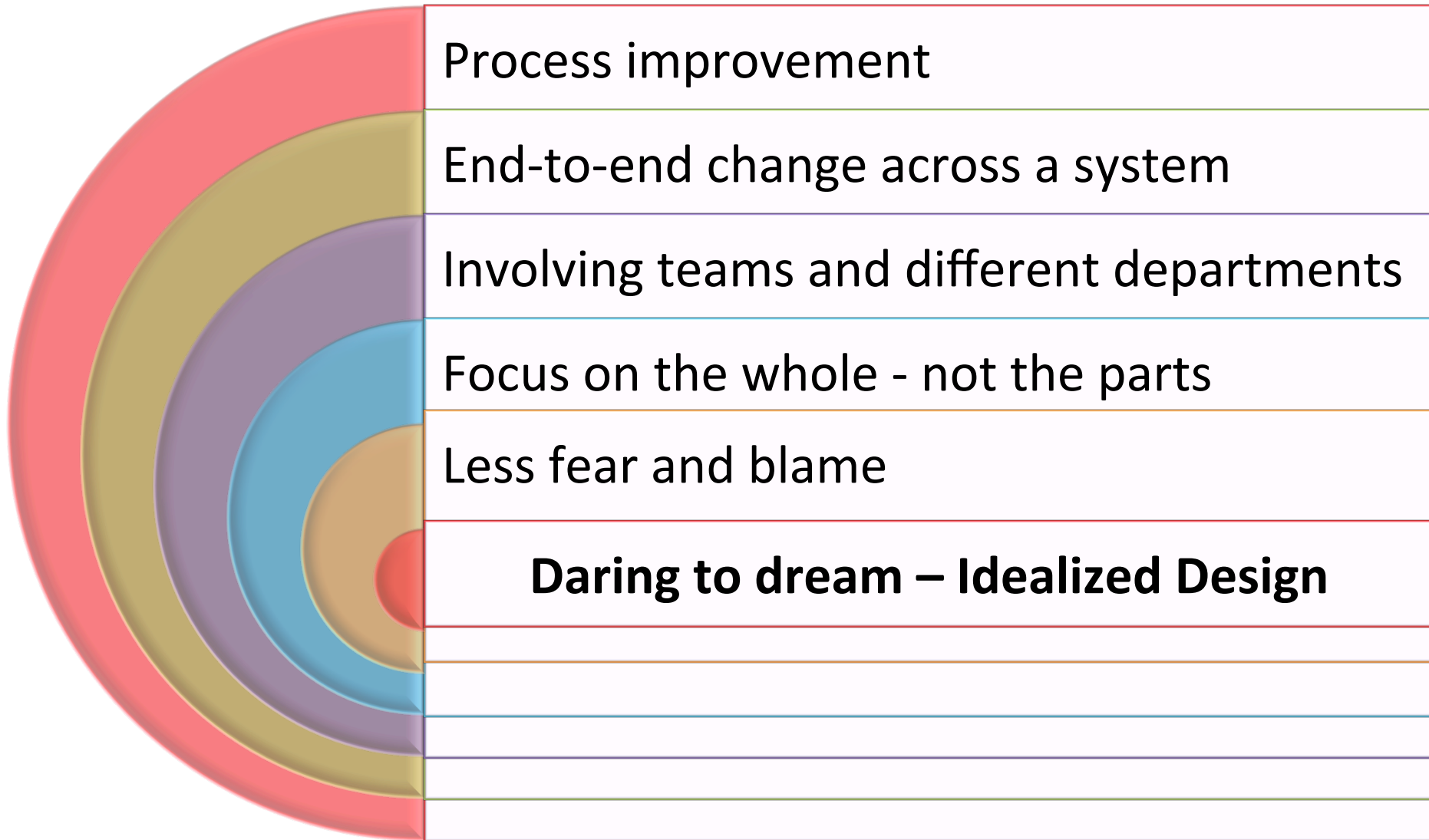


How can we apply those ideas today?

[some thoughts]

What our role be if it was working from a Quality perspective?

Some thoughts to take away



How can we apply those ideas today?

3 suggestions

- **Expand** the boundaries of our thinking/behaving about our 'team' and role
- Understand **variation** and use the quality tools where appropriate
- Dare to **dream** – and use idealized design and divergent thinking

Conclusion

“there is nothing new under the sun, great leaps can be made by revisiting older ideas with fresh eyes”



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