Problem Solving for IT Practitioners:
At the sharp end of IT

- **Problems and solutions**
- **Identifying and understanding problems**
- **Shifting own minds**
- **Applying systems thinking**
- **Finding and sharing patterns**
- **Breaking dogmas**
- **Measuring outcomes**
- **Developing strategies**
- **Conclusions**

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IntoSkills.com

Problem:

a difference between things as perceived and things as desired

Solution:

a process of learning new ways of achieving the desired outcomes in spite of the complexity, lack of consistency and completeness in the world and the self

Systematic exploration, reason and creativity are the tools of problem solvers in dealing with their challenges.
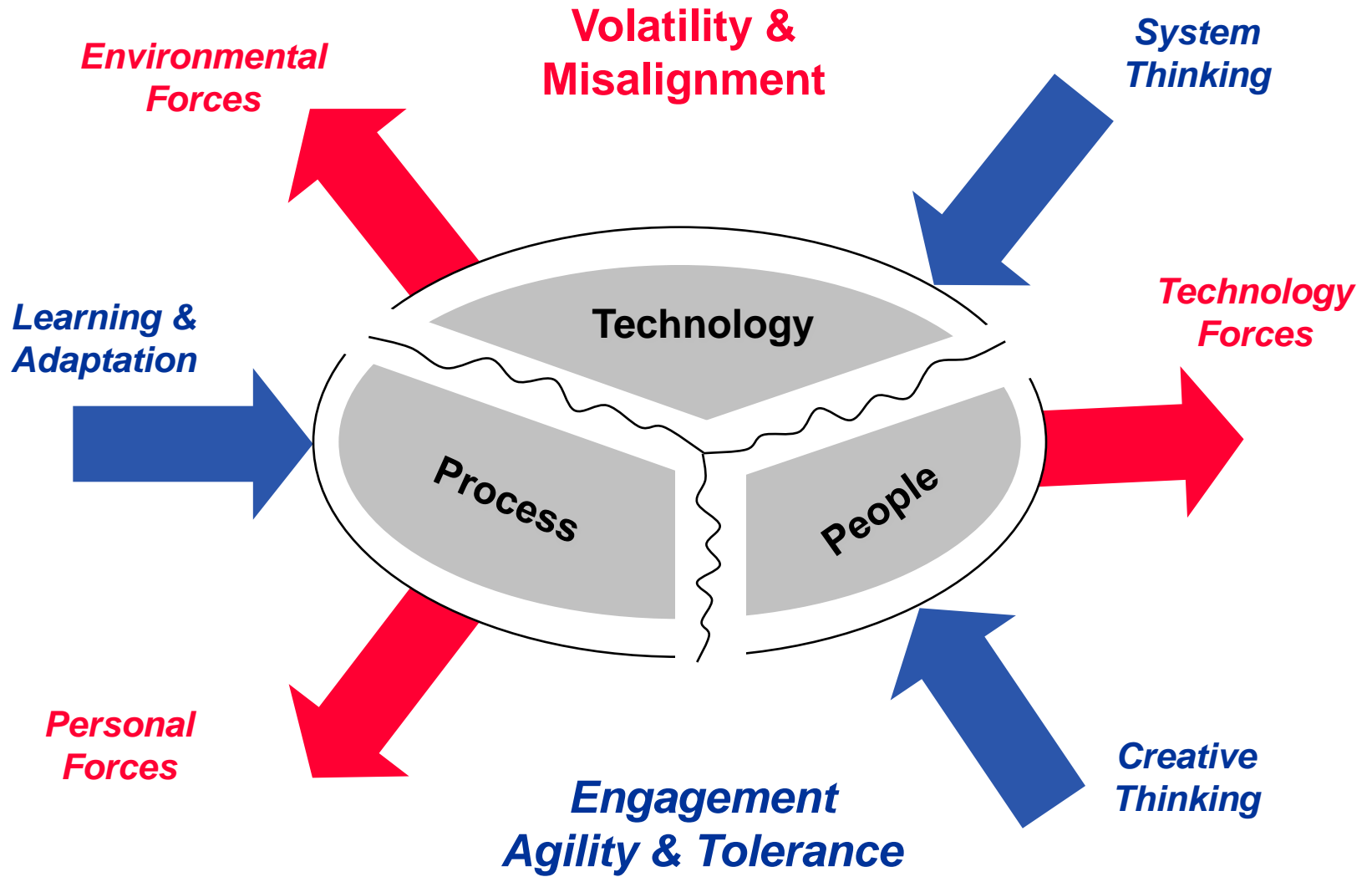
Are IT problems different?

- **Using IT as the means of creating advantage in the competitive business world**
- **Being systematic in dealing with complexity and the unknown**
- **Fending off threats and taking advantage of opportunities when needed**

In search of solutions…

- **Fencing / IT metaphors**
  - **Weapon vs. technology**
  - **Fencer vs. business**
  - **Protective clothing vs. security**
  - **Fencing rules vs. laws**
  - **Fencing strip vs. market**
  - **Bout vs. market competition**

Volatility & Misalignment

Environmental Forces

System Thinking

Learning & Adaptation

Technology

Technology Forces

Process

People

Personal Forces

Creative Thinking

Engagement Agility & Tolerance

Why are we having problems?

- ### *Environment*
  - *What is a target and why*
- ### *Objectives*
  - *Where is the target and when*
- ### *Tools / Weapon*
  - *What weapon (or its part) is best to hit the target with*
- ### *Interfaces*
  - *How to grip a weapon*
- ### *Control / Decision*
  - *When to hit the target*
- ### *Method / Process*
  - *How to hit the target*
- ### *Practice / Training*
  - *How to improve*

IT or Weapon?

- ### Business / Technology alignment, where is it?
  - Hand to grip
  - Arm to weapon
  - Brain to target

- ### Identification of problems
  - I cannot hit the target

- ### Understanding problems
  - Targets constantly shift
  - Targets hit back

- ### Problem formulation
 - How to hit and not to be hit

Laws of the Fifth Discipline:

- **Faster is often slower**
- **Opponents are reactive**
- **Cure worse than disease?**
- **Easy is hard**
- **Small action $\rightarrow$ huge result**
- **Cause-effect is not instant**

Strategies:

- **Develop learning capabilities**
- **Foster aspiration**
- **Think reflectively**
- **Understand complexity**

Often we are the prisoners of our own thinking which prevents us from finding good solutions to problems.

THE FIFTH DISCIPLINE

The Art & Practice of The Learning Organization
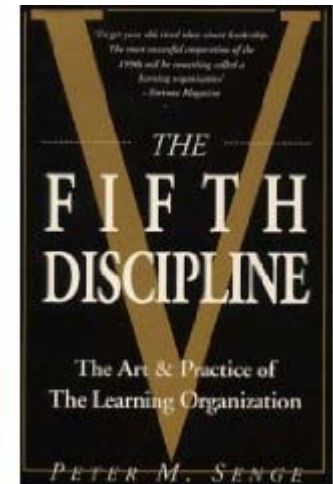
PETER M. SENGE

Peter M. Senge: shift your mind and put your ideas into practice

The complexity of the problems you are dealing with often prevents applications of straightforward solutions.

Systems Thinking:

- Map a problem domain
- Identify the problem elements and their relationships
- Experiment with the problem components and see how the problem responds to your interference
- Build your solution in small increments

Use feedback to gain control:

- ✓ Know your opponent
- ✓ Provoke reaction
- ✓ Identify strengths and weaknesses
- ✓ Adapt to your opponent
- ✓ Use deception

- *The very nature of problems is that they create barriers to our desired situation.*

- *To solve the problem, we first must understand and overcome the forces that created these barriers. We need to recognize and deal with these forces in both the environment and in ourselves.*

- *Once understood, the problem-force-solution-implication patterns can then be formulated.*

- **Mistakes and failure?**
  - **To err is human**
  - **Deal with forces**
  - **Find solutions**
  - **Understand pros and cons**
  - **Form patterns**
  - **Improve**

Share experiences with your team

- **Focus on recurring problems that require common solutions**

- **Share problem-solving knowledge**

- **Work as a team to improve solutions.**

- **Evaluate and validate patterns:**
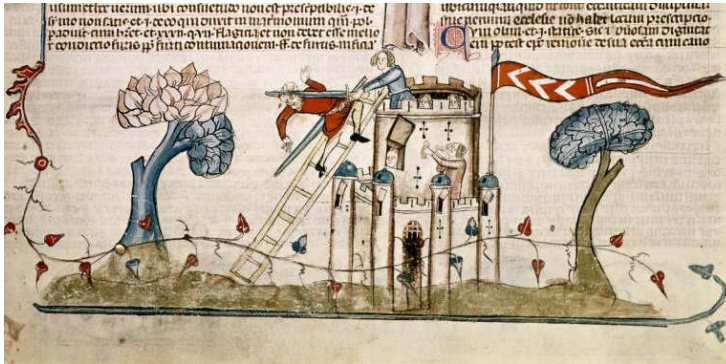   - Sharing experience and knowledge via patterns

The Timeless Way of Building

Christopher Alexander
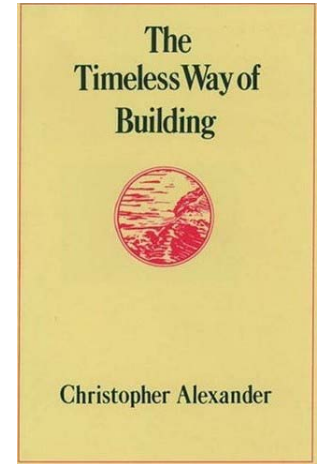
Pattern
- Name
- Problem statement
- Context in which a problem occurs
- Forces that prevent problem solving
- Solution
- Resulting context
- Pros
- Cons

Pattern Mining
- The process of eliciting practitioners' experience in a shareable format and evaluating the results

- *Often problems deviate from accepted norms.*

- *Sometimes problems seem impossible to solve.*

- *Persistent application of standard solutions in spite of failure is a sign of dogmatic behaviour.*

- *You need to be opportunistic and break established dogmas.*

- **Be creative:**
  - **Recognise the barriers**
  - **Expect the unexpected**
  - **Question the routine**
  - **Think ahead**
  - **Have a second intention**
 - **Vary your behavior**
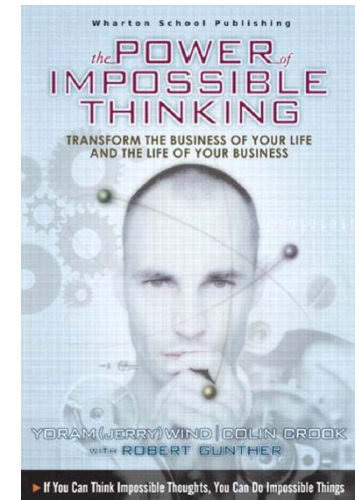
- **How do you know you've found a good solution?**
  - Evaluating outcomes
  - Exploring possibilities
  - Planning improvement
  - Practicing skills

- **Measuring outcomes?**
  - Scoring and ranking
  - Scoring apparatus
  - Refereeing
  - Training and improvement
  - Risk taking and management

- *Having a tested problem-solving solution is only the beginning.*

- *Problems constantly evolve and new solutions must be continually re-aligned with the shifting situation.*

- *Measuring outcomes, exploring and risk taking, and planned change over a life-time of a problem are necessary for gradual improvement.*

- *We discussed how to be explorative, at times precise and systematic, at times creative and opportunistic, working alone and in team, all with an objective to deal with a problem.*
- *Life however never consists of a single isolated problem. Problems are intertwined, owned by multiple stakeholders, and perceived from many vantage points.*
- *We have learnt to win a bout, winning a battle or a war requires new skills - strategy!*
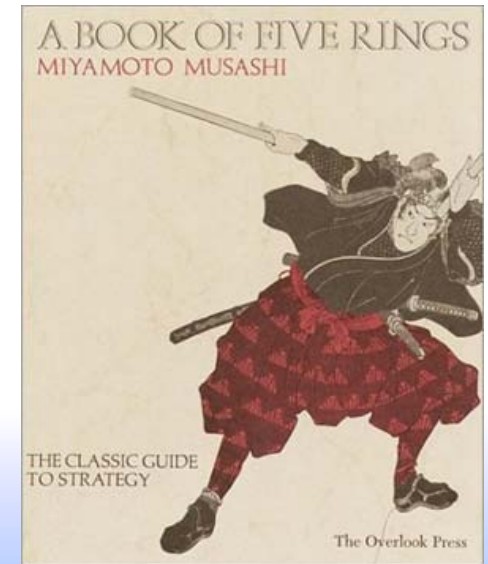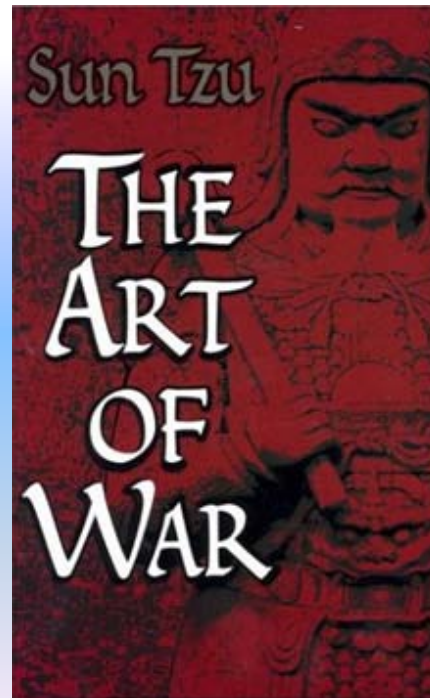
Strategy vs. problem solving

- **Strategy development and implementation.**

- **Problem solving in a confounding context:**
  - **Dealing with multiple problems**
  - **Dealing with multiple stakeholders**
  - **Dealing with conflicting objectives and constraints**
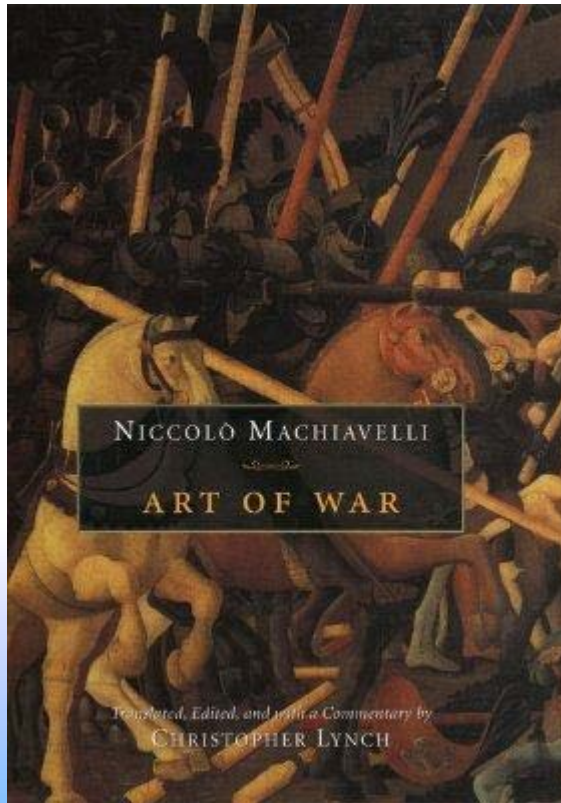
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Thank you!

Questions?