

LEADERS FOR LEARNING MODULAR PROGRAMME: LEADER AS TEACHER

## “LEARNING TO DEEPEN SYSTEMIC THINKING”

Learning to See A Systemic World &  
Designing Systemic Solutions Towards It

As presented by Dr Peter Senge in his publication:  
*“The Fifth Discipline: The Art and Practice of Learning Organizations”*

### A 3-DAY WORKSHOP

Trainer : **Ms Sheila Damodaran**

Time : 9.00 am – 4.30 pm

A pair of hands, palms up, holding a small green plant with four leaves and a mound of dark soil. The hands are positioned at the bottom of the frame, supporting the plant. The background is plain white.

**PARTICIPANT'S HANDBOOK**  
**Module 2**

Courtesy of  
**LEARNING ORGANIZATION @ WORK**  
**CORE COMPETENCY WORKSHOP SERIES**



## INTRODUCTION

### **Systems Thinking – The Cornerstone Of The Learning Organization**

A great virtue of Peter Senge's work is the way in which he puts systems theory to work. The Fifth Discipline provides a good introduction to the basics and uses of such theory – and the way in which it can be brought together with other theoretical ideas in order to make sense of organizational questions and issues. Systemic thinking is the conceptual cornerstone ('The Fifth Discipline') of his approach. Systems theory's ability to comprehend and address the whole, and to examine the interrelationship between the parts provides, for Peter Senge, both the incentive and the means to integrate the five disciplines.

Here is not the place to go into a detailed exploration of Senge's presentation of systems theory (I have included some links to primers below). However, it is necessary to highlight one or two elements of his argument. First, while the basic tools of systems theory are fairly straightforward they can build into sophisticated models. Peter Senge argues that one of the key problems with much that is written about, and done in the name of management, is that rather simplistic frameworks are applied to what are complex systems. We tend to focus on the parts rather than seeing the whole, and to fail to see organization as a dynamic process. Thus, the argument runs, a better appreciation of systems will lead to more appropriate action.

#### **Peter Senge (1990: 92) concludes:**

The systems viewpoint is generally oriented toward the long-term view. That's why delays and feedback loops are so important. In the short term, you can often ignore them; they're inconsequential. They only come back to haunt you in the long term.

Peter Senge advocates the use of 'systems maps' – diagrams that show the key elements of systems and how they connect. However, people often have a problem 'seeing' systems, and it takes work to acquire the basic building blocks of systems theory, and to apply them to your organization. On the other hand, failure to understand system dynamics can lead us into 'cycles of blaming and self-defense: the enemy is always out there, and problems are always caused by someone else' (Senge 1990: 231).

**Dr. Peter M. Senge** is the founding chairperson of SoL (Society for Organizational Learning) and a senior lecturer at the Massachusetts Institute of Technology. Dr. Senge is the author of *The Fifth Discipline: the Art and Practice of the Learning Organization*. He has lectured extensively throughout the world, translating the abstract ideas of systems theory into tools for better understanding of economic and organizational change. He has worked with leaders in business, education, health care and government. *The Journal of Business Strategy* (September/October 1999) named Dr. Senge as one of the 24 people who had the greatest influence on business strategy over the last 100 years.

# “LEARNING TO DEEPEN SYSTEMIC THINKING”

## Learning to See the World Systemically and Designing Systemic Solutions more Systematically

### Program Description

This interactive workshop will provide theory and practice of systems thinking as it applies to sustainable solutions. The adoption of sustainable systems and organizational designs requires a basic understanding and skills in systems thinking.

We live in a world of events. Safety standards decline or emissions or discharges increase, we adopt new controls. Service declines, we launch a new training campaign. Without a sound understanding of the underlying causes of these events, each creates another event and an endless stream of cause-and-effect relationships unfolds. However, if we understand the systemic structure that shapes our organizations and communities, it becomes possible to see what creates the behaviors we observe. This awareness allows us to change the source of the problem rather than just dealing with symptoms. This is the focus of systems thinking.

The power of systems thinking comes from a focus on systemic structures, which is where the greatest leverage for problem solving and positive change lies. A systems approach can help shed light on current problems—especially those that seem to continually repeat—by helping managers and employees see them from a different perspective. Systems thinking offer a range of tools for gaining deeper insight into problems—from simple causal-loop diagrams and systems archetypes to more complex computer simulation models. These are powerful tools to graphically describe, and find, the greatest levers for changing the systemic structures that have been created around the linear take-make-waste production models and mechanical, patriarchal organizational designs that dominate most entities today.

### Anticipated Learning

The morning will provide an overview of the theory and basic tools of systems archetypes. The afternoon will focus on practical applications of the tools with a specific focus on designing systems interventions for issues relevant to each participant's current organization or a case study organization.

### Who Should Attend?

- Must have completed Module 1 of the programme
- If you want the members of your organization to recognize and associate cause-and-effect.
- If you want to build -- grow actually -- a Learning Organization.
- If you have attempted numerous change programs yet have seen little, if any, lasting results.
- If you feel overwhelmed and pressured by the pace and complexity of the work environment.
- If you would like to move further ahead rather than backwards as you try harder.
- If you would like to make improvements in your organization without the impracticality of "freezing" it in place.
- If you want to discover the order and calmness that can be found in "chaos."
- If seeing the "invisible" part of the system below the surface is important to your future.

## PRESENTERS' PROFILE

### Sheila Damodaran

INTERNATIONAL CONSULTANT: LEARNING ORGANIZATION AT WORK

Email: [sheilasingapore@gmail.com](mailto:sheilasingapore@gmail.com) / Website: <http://www.lopn.net>

(HP: 71383023 / DID: 3190236)

#### Myself

My interest and passion in this area grew while at the Singapore Police Force (SPF: 1989-2008). The journey began in 1996 when I first attended a five-day workshop by Dr Daniel Kim (Founder of Pegasus Communications) and Diane Cory (worked in AT&T) who both worked closely with the author of this work, Dr Peter Senge and Founder of the Society for Organizational Learning Global (SoL). Since then, in 2000, I attended their year-long post-graduate programme on 'Leaders for Learning' while at the same time working as their Teaching Assistant. This was offered through the Civil Service College in Singapore.

#### My Background

My repertoire has since grown to include (2000-current):

- ✚ Design and develop four-levels of modular 2-3 day workshop programmes.
- ✚ Assist teams from unit to country-wide levels, identify and work with systemic interventions on issues that have stayed resistant to change for their organization.
- ✚ Nurture a growing pool of aspirants wanting to deepen their own practices in this work in various parts of the world. This is done through the set up of networks of practitioners to meet and share their practices. The network is called Learning Organizations' Practitioners' Network (LOPN) at [www.lopn.net](http://www.lopn.net).
- ✚ Expand my experience on the use of these tools in organizations. My experience shows the potential is most greatly felt when the public-sector jointly leads this work across their sectors to include private and NGO sectors as well as eventually the citizens. This is the scope of the current project in Botswana.
- ✚ The experience has grown to include the region as well as other parts of the world from Africa to India, Vietnam, Cambodia, Indonesia, Singapore, Hong Kong, Taiwan and to the United States.
- ✚ Continue to deepen the work by staying connected with the work and developments of key developers of this work through Drs Peter Senge, Chris Argyris, Michael Goodman, Bob Putnam, Diana Smith, and Sandra Seagal.

It is these and other experiences that have truly humbled me on the use and worth of these tools. My wish is to continue uncovering systemic (hidden) structures that influence the stubborn experiences of our reality (issues ranging from HIV/AIDS epidemic, prostitution, corruption, food production, economic development and global warming) and pass on the skills to teams so they can use it to create results that matter to them. My hope is to take this work all the way to the United Nations.

#### About What I Do

- Leads core competency workshop series on Learning Organization based on the works of Peter Senge and Chris Argyris
- Leads sustainability projects using the tools of the five disciplines of Learning Organization on real-life issues in organizations
- Leads networks in Asia and Africa for practitioners of Learning Organization.



## WORKSHOP PROGRAMME FLOW

### MODULE 2 DEEPENING SYSTEMIC THINKING

	Day 1: 9 am - 4.30 pm	Day 2: 8.30 am - 4.30 pm	Day 3: 8.30 am - 4.30 pm
<b>AM1</b> 9 - 10.30 am	Welcome Review of <a href="#">key concepts</a> in Module 1 Understanding what causes exponential growth? Review: What is 2 to the power of 40? How high would the fold go? (Link <a href="#">1</a> , <a href="#">2</a> )	Q&A Identifying the trim-tab for urgent files Review of life examples of reinforcing and balancing loops and ways we treat the reality from the perspectives of DIL and the uncle	Q&A Identifying and working with trim-tabs for FtB and StB case studies
Break			
<b>AM2</b> 10.45 - 1.15 pm	Completion of the Dynamic Complexity <a href="#">Laws 3-10</a>	Introduce <a href="#">Fixes that Backfire (FtB) Archetype</a> Case Study: Goody Bags Qns: What causes the spirit of voluntarism? Learning: Understanding the <i>impact of causality on organizational performance / results.</i>	Continuing the build-up on the loop on <i>HIV prevalence</i> Qns: What is the casual link between punitive measures increasing and self-esteem declining?
Lunch			
<b>PM1</b> 2 - 3.30 pm	Cont'd Qns: Application of the laws on the case-study on urgent file. Identify the trim-tab How did the uncle <a href="#">solve</a> the problem?	Introduce <a href="#">Shifting the Burden (StB) Archetype</a> Learning: To deal with dependencies / addictions - <i>Crimes, Destitution</i> Case Study: The scanner story	Introduce <a href="#">Limits to Growth (LtG) Archetype</a> Case Study: Marketing and Servicing divisions Learning: Building the Key Success Loop / Shared Vision / Private Sector: How do you pay attention to <i>cycles of growth</i> ?
Break			
<b>PM2</b> 3.45 - 4.30 pm	Exercise on Archetypes: <a href="#">Budget Pressure</a> Learning: How were archetypes discovered? [They are not inventions]	Qns: You are Gary (govt)? How would you treat the structure of dependencies?	Introduce <a href="#">Success to the Successful Archetype</a> Qns: How do you solve the problem of <i>poverty</i> ?

#### Participant intersession readings and works:

- Reading: Review the [language of Systems Thinking](#)
- Reading: Preview the "[11 Laws of Complexity](#)"
- Reading: Review of the archetypes / onion
- Completing of the HIV Loop (what is causal link between punitive measures by 'parents' increasing and self-esteem of children declining?)

#### Topics carried forward to Module 2 & 3:

- Completing of the HIV Loop
- Introduce the StS, Esc, ToC and the Onion

## Reading Materials

*Systems Thinking Basics: From Concepts to Casual Loops*, Virginia Anderson and Lauren Johnson (Waltham, MA, Pegasus Communications, 1997)

*Designing a Systems Thinking Intervention*, Michael Goodman, Richard Karach et al. (Waltham, MA, Pegasus Communications, 1997)

*Introduction to Systems Thinking*, Daniel H. Kim (Waltham, MA, Pegasus Communications, 1999)

*Systems Thinking Tools – A User’s Reference Guide*, Daniel H. Kim (Waltham, MA, Pegasus Communications, 1994, 2000)

*Systems Thinking Archetypes I – Diagnosing Systemic Issues and Designing High-Leverage Interventions* (Waltham, MA, Pegasus Communications, 2000)

*Systems Thinking Archetypes II – Using Systems Archetypes to Take Effective Action* (Waltham, MA, Pegasus Communications, 2000)

*The “Thinking” in Systems Thinking – Seven Essential Skills* (Waltham, MA, Pegasus Communications, 2000)

*Leading Change Towards Sustainability: A Change Management Guide for Business, Government, and Civil Society* (Bob Doppelt, Greenleaf Publishing, UK 2003).

*Re-creating the Corporation: A Design of Organizations for the 21<sup>st</sup> Century*, Russell Ackoff (Oxford University Press, 1999)

*The Path of Least Resistance for Managers: Designing Organizations to Succeed*, Robert Fritz, (San Francisco, Berrett-Koehler Publishers, 1999).

# TOOLS OF THE LEARNING ORGANISATION!

## A ONE-PAGE SUMMARY OF THE FIFTH DISCIPLINE, THE ART AND PRACTICE OF THE LEARNING

Personal Mastery	Shared Vision	Mental Models	Team Learning	Systems Thinking
<b>PRACTICES AND PRINCIPLES:</b>				
<ul style="list-style-type: none"> <li>• CLARIFYING PERSONAL VISION</li> <li>• HOLDING CREATIVE TENSION (FOCUS ON RESULTS AND SEEK CURRENT REALITY)</li> <li>• MAKING CHOICES</li> </ul>	<ul style="list-style-type: none"> <li>• VISIONING PROCESS</li> <li>• ACKNOWLEDGING CURRENT REALITY</li> </ul>	<ul style="list-style-type: none"> <li>• DISTINGUISHING “DATA” FROM ABSTRACTION BASED ON DATA</li> <li>• TESTING ASSUMPTIONS</li> <li>• “LEFT-HAND COLUMN”</li> </ul>	<ul style="list-style-type: none"> <li>• SUSPENDING ASSUMPTIONS</li> <li>• ACTING AS COLLEAGUES</li> <li>• SURFACING OWN DEFENSIVENESS</li> <li>• “PRACTICING”</li> </ul>	<ul style="list-style-type: none"> <li>• SYSTEM ARCHETYPES</li> <li>• SIMULATION</li> </ul>
<b>PRACTICE TOOLS:</b>				
<ul style="list-style-type: none"> <li><input type="checkbox"/> Personal Mastery goes beyond proficiency</li> <li><input type="checkbox"/> Creative Tension Model</li> <li><input type="checkbox"/> Personal Vision</li> <li><input type="checkbox"/> Holding Creative Tension</li> <li><input type="checkbox"/> Structural Conflict</li> <li><input type="checkbox"/> Commitment to the Truth</li> <li><input type="checkbox"/> Using the subconscious</li> <li><input type="checkbox"/> Integrating Reason and Intuition</li> <li><input type="checkbox"/> Seeing our connectedness to the world</li> <li><input type="checkbox"/> Compassion</li> <li><input type="checkbox"/> Commitment to the Whole</li> <li><input type="checkbox"/> Centering long enough to focus on what we want</li> <li><input type="checkbox"/> Crafting the Purpose Statement – 1<sup>o</sup>Choice</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Encouraging Personal Vision</li> <li><input type="checkbox"/> From Personal to Shared Visions</li> <li><input type="checkbox"/> Spreading Visions                             <ul style="list-style-type: none"> <li><input type="checkbox"/> Enrolment</li> <li><input type="checkbox"/> Commitment</li> <li><input type="checkbox"/> Compliance</li> </ul> </li> <li><input type="checkbox"/> Guidelines for enrollment and commitment</li> <li><input type="checkbox"/> Anchoring Vision to Purpose and Values</li> <li><input type="checkbox"/> Positive versus Negative Vision</li> <li><input type="checkbox"/> Creative tension and commitment to the truth</li> <li><input type="checkbox"/> Why visions die prematurely</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Planning as learning</li> <li><input type="checkbox"/> Managing mental models at personal and interpersonal levels</li> <li><input type="checkbox"/> Reflection Skills                             <ul style="list-style-type: none"> <li><input type="checkbox"/> Leaps of Abstraction or Ladder of Inference</li> <li><input type="checkbox"/> Left Hand Column</li> </ul> </li> <li><input type="checkbox"/> Inquiry Skills                             <ul style="list-style-type: none"> <li><input type="checkbox"/> Balancing Inquiry and Advocacy</li> <li><input type="checkbox"/> Espoused Theory versus Theory-in-Use</li> <li><input type="checkbox"/> Double Loop Learning</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Dialogue and Discussion                             <ul style="list-style-type: none"> <li><input type="checkbox"/> Participants suspend their assumptions</li> <li><input type="checkbox"/> Seeing each other as colleagues</li> <li><input type="checkbox"/> There must be a facilitator who “holds” the context</li> </ul> </li> <li><input type="checkbox"/> Dealing with Current Reality: Conflict and defensive</li> <li><input type="checkbox"/> The Missing Link: Practice</li> <li><input type="checkbox"/> Learning how “to practice”</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 11 laws of complexity</li> <li><input type="checkbox"/> Seeing circles of causality</li> <li><input type="checkbox"/> Balancing Loop</li> <li><input type="checkbox"/> Reinforcing Loop</li> <li><input type="checkbox"/> Delays</li> <li><input type="checkbox"/> Archetypes                             <ul style="list-style-type: none"> <li><input type="checkbox"/> Accidental Adversaries</li> <li><input type="checkbox"/> Balancing Loop with Delays</li> <li><input type="checkbox"/> Drifting Goals</li> <li><input type="checkbox"/> Escalation</li> <li><input type="checkbox"/> Fixes that Backfire</li> <li><input type="checkbox"/> Growth and Underinvestment</li> <li><input type="checkbox"/> Limits to Success</li> <li><input type="checkbox"/> Shifting the Burden</li> <li><input type="checkbox"/> Success to the Successful</li> <li><input type="checkbox"/> Tragedy of the Commons</li> </ul> </li> <li><input type="checkbox"/> Behavior Time Graphs</li> <li><input type="checkbox"/> Leverages</li> </ul>
<b>THE ESSENCE OF THE DISCIPLINE:</b>				
<p>The essence of Personal Mastery is learning how to generate and sustain creative tension in our lives</p>	<p>Shared Vision is a force of “impressive power” that emerges when people share a desire to be connected in an important undertaking.</p>	<p>The essence of Mental Models is Learning to uncover deeply held internal images we have about how the world works, altering forever the way we think and create new ideas.</p>	<p>Team Learning is the process of aligning and developing the capacity of a team to create the results it truly desire.</p>	<p>The Art of seeing the forest and the trees! Seeing through complexity to the underlying structures generating change.</p>

*As presented by Dr Peter Senge in his signature book (compiled by Sheila)*

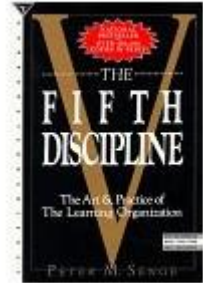
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## OVERVIEW AND CONTEXT SETTING

According to Peter Senge (1990: 3) learning organizations are:

...organizations where people continually expand their capacity to create the results they truly desire (or matters), where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together.



The basic rationale for such organizations is that in situations of rapid change only those that are flexible, adaptive and productive will excel. For this to happen, it is argued, organizations need to 'discover how to tap people's commitment and capacity to learn at all levels' (ibid.: 4).

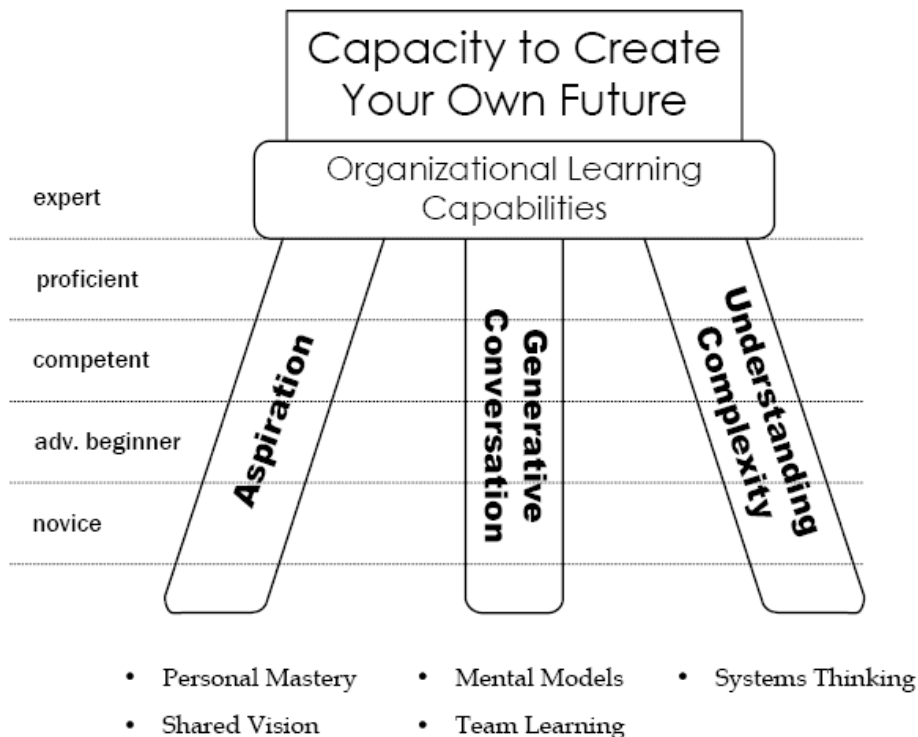
While all people have the capacity to learn, the structures in which they have to function are often not conducive to reflection and engagement. Furthermore, people may lack the tools and guiding ideas to make sense of the situations they face. Organizations that are continually expanding their capacity to create their future require a fundamental shift of mind among their members.

The dimension that distinguishes learning from more traditional organizations is the mastery of certain basic disciplines or 'component technologies'. The five that Peter Senge identifies are said to be converging to innovate learning organizations.

They are:

- Systems thinking
- Mental models
- Team learning
- Building shared vision
- Personal mastery

## THREE-LEGGED STOOL



**Aspirations:** The capacity of individuals, teams and eventually larger organizations to orient themselves toward what they truly care about and to change because they want to, not just because they need to (all of the learning disciplines, but particularly the practice of personal mastery and building shared vision, develop these capabilities).

**Generative Conversation:** The capacity to reflect on deep assumptions and patterns of behaviour, both individually and collectively. Developing capacities for real conversation is not easy. Most of what passes for conversation is more like a ping-pong game than true talking and thinking together. Each individual tosses his or her view at the other. Each then responds. "Learningful" conversations require individuals capable of their own thinking (these skills emerge especially strong in the disciplines of mental models and team learning)

**Understanding Complexity:** The capacity to see larger systems and forces at play and to construct public, testable way of expressing our views. What seemed so simple from my individual point of view looks much less so when I see it from others' point of view. And constructing coherent descriptions of the whole requires conceptualization skills not found in traditional organizations (systems thinking is vital for these skills especially with the reflectiveness and openness fostered by working with mental models.)

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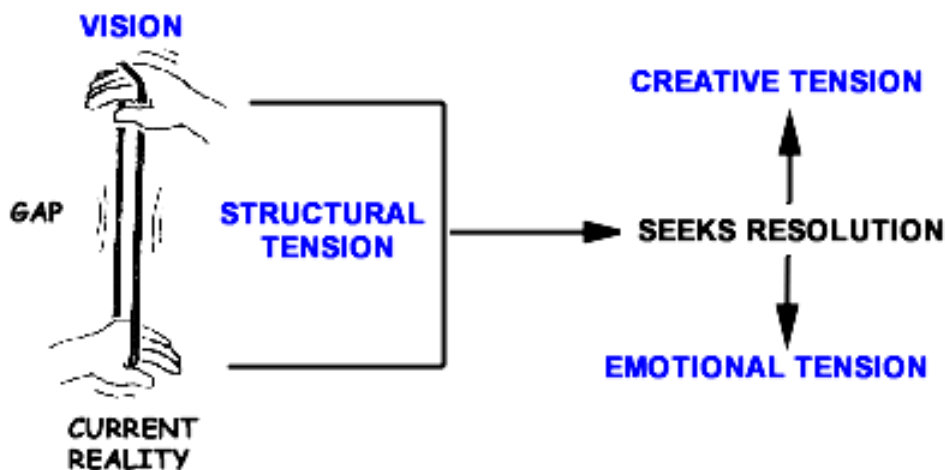
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## STRUCTURAL TENSION MODEL

The Structural Tension Model is deceptively simple. Its power and weakness lies in its simplicity. You only need to be clear of 2 things – vision and current reality today. When you have identified vision from current reality, you perceive the gap. **The gap produces the structural tension.**

However, if I have a vision but if it is not grounded in current reality (CR), the vision is not realistic. There is no tension within the organization, as it is not grounded in current reality. The other way it can happen is to be too grounded in Current reality. If one is too mired in CR, the vision does not appear real. You need both (vision and current reality) to create the tension.

This is the essence of the discipline of Personal Mastery.



The idea of Learning Organisation is one thing ... how teams might learn to become a good team together so that they are able to create the results that matter for them. To do that, the work of Learning Organisation offers to help the team clarify at three levels:

- Easily re-conceive a compelling reality they wish to create for the future and for themselves and the team. When they find a compelling vision, they can see clearly that they must change their life in order to reach that result and commit themselves to that result nonetheless
- Learn to use a powerful yet a simple set of tools of systems thinking to discover and articulate the complexities faced within and by organizations and learn to apply high leverage interventions to achieve fruitful change for the organization.
- Learn to engage in conversations that reduces defensiveness and degenerative quality and instead becomes skilled to move conversations to a place that facilitates the availability of valid information leading to free and informed choices and internal commitment to the choices they and the team makes.

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## BRIEF DESCRIPTION OF THE FIVE DISCIPLINES

[Page references refer to pages in 'The Fifth Discipline']

Each of the five disciplines represents a lifelong body of study and practice for individuals and teams in organizations.

### 1. Systems thinking

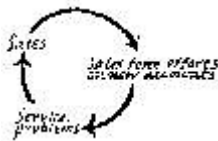
Systems thinking is a conceptual framework grounded in Systems Dynamics that has been developed over the past fifty years to discipline us in seeing and understanding patterns – looking beyond events, to deeper “structures” that control events, and discovering the leverage that lies hidden in these structures. The essence of the discipline lies in a shift of mind to (pg 68):

- See interrelationships rather than linear cause-effect chains, and
- See processes of change rather than snapshots

The practice of systems thinking starts with understanding two simple concepts:

- “Feedback” – that shows how actions can reinforce or counteract (balance) each other
- “Delays” – when things happen ... eventually

Since we are part of the system, it becomes twice as hard to see the whole pattern of change. Instead we tend to focus on snapshots of isolated parts of the system and wonder why our deepest problems never seem to get solved.



In this discipline, people learn to better understand interdependency and change, and thereby to deal more effectively with the forces that shape the consequences of our actions. Systems thinking is based upon a growing body of theory about the behavior of feedback and complexity—the innate tendencies of a system that lead to growth or stability over time. Tools and techniques such as systems archetypes and various types of learning labs and simulations help people see how to change systems more effectively, and how to act more in tune with the larger processes of the natural and economic world. The circle in this icon represents the fundamental building block of all systems: the circular “feedback loop” underlying all growing and limiting processes in nature.

### 2. Mental models

These are the deeply ingrained or held pictures (images, assumptions, generalizations – abstractions based on data) each of us holds in our mind that influences how we understand the world, our work, our families, and so on and how we take actions. Very often, we are not consciously aware of our mental models or the effects they have on our behaviour, particularly in limiting us to familiar ways of thinking. That is why, the discipline of managing mental models – surfacing, testing and improving our internal

pictures of how the world works – promises to be a major breakthrough for building learning organizations (pg 174). Together we explore the work by Chris Argyris which helps us throw light on why this happens and consciously leads us to a place where we may work with mental models more rigorously.

With that awareness, we begin to learn that the discipline of working with mental model starts with turning the mirror inward; learning to unearth our internal pictures (left hand column and ladder of inference) of the world, to bring them to the surface and hold them rigorously to scrutiny. It also includes the ability to carry on “learningful” conversations that balance inquiry and advocacy, where people expose their own thinking effectively and make that thinking open to the influence of others, engendering values of openness and love of truth in the process.

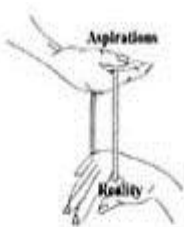


This discipline of reflection and inquiry skills is focused around developing awareness of the attitudes and perceptions that influence thought and interaction. By continually reflecting upon, talking about, and reconsidering these internal pictures of the world, people can gain more capability in governing their actions and decisions. The icon here portrays one of the more powerful principles of this discipline, the “ladder of inference” depicting how people leap instantly to counterproductive conclusions and assumptions.

### 3. Personal mastery

States Senge, “Personal mastery is the discipline of continually clarifying and deepening our personal vision, of focusing our energies, of developing patience, and of seeing reality objectively” (p. 141). People with a high level of personal mastery are able to consistently realize the results that matter most deeply to them – in effect, they approach their life as an artist would approach a work of art. They do that by becoming committed to their own lifelong learning. Surprisingly few adults work to rigorously develop their own personal mastery. When asked what they most want from their lives, most adults often talk first about what they’d like to get rid of: “I’d like my back problems to clear up” or they say, “I’d like my mother-in-law to move out”. The discipline of personal mastery, by contrast, starts with clarifying the things that really matter to us (of knowing ourselves and being able to hold the creative tension) and being generative in the service of our highest aspirations.

Few organizations encourage the growth of their people in this manner. This result in vast untapped resources: Senge offers that an organization’s commitment and capacity for learning can only be no greater than that of its members.



This discipline of aspiration involves formulating a coherent picture of the results people most desire to gain as individuals (their personal vision), alongside a realistic assessment of the current state of their lives today (their current reality). Learning to cultivate the tension between vision and reality (represented in this icon by the rubber band) can

expand people's capacity to make better choices, and to achieve more of the results that they have chosen.

#### **4. Building shared vision**

All too often, a company's shared vision has revolved around the charisma of a leader, or around a crisis that galvanizes everyone temporarily. A shared vision is a vision that many people are committed to, because it reflects their own personal vision (pg 206). Then, given a choice, most people opt for pursuing a lofty goal, not only in times of crisis but at all times. What has been lacking is a discipline for translating individual vision into shared vision – a set of principles (shared vision as “hologram” and guiding practices (visioning process/unearthing shared “pictures of the future” and acknowledging current reality) that foster enrolment rather than compliance. In mastering this discipline, leaders learn the counter-productiveness of trying to dictate a vision, no matter how heartfelt.



This collective discipline establishes a focus on mutual purpose. People learn to nourish a sense of commitment in a group or organization by developing shared images of the future they seek to create (symbolized by the eye), and the principles and guiding practices by which they hope to get there.

#### **5. Team learning**

Senge finds that “teams, not individuals, are the fundamental learning unit in modern organizations.” Because of the long-standing experience which many organizations have with group dynamics and team building, many teams believe that they have been practicing a version of this discipline for years. However unlike team building, team learning is not a discipline of improving team members' skills, not even communication skills (Senge, Fieldbook, 352).

For many years, we have used the concept of alignment as distinct from agreement, to capture the essence of team learning. Alignment means “functioning as a whole”. Building alignment (you never “get there”) is about enhancing the team's capacity to think and act in new synergistic ways, with full coordination and a sense of unity, because team members know each other's hearts and minds. As alignment develops, people don't have to overlook or hide their disagreements; indeed, they develop the capacity to use their disagreements to make their collective understanding richer.



This is a discipline of group interaction. Through techniques like dialogue and skillful discussion, teams transform their collective thinking, learning to mobilize their energies and ability greater than the sum of individual members' talents. The icon symbolizes the natural alignment of a learning-oriented team as the flight of a flock of birds.

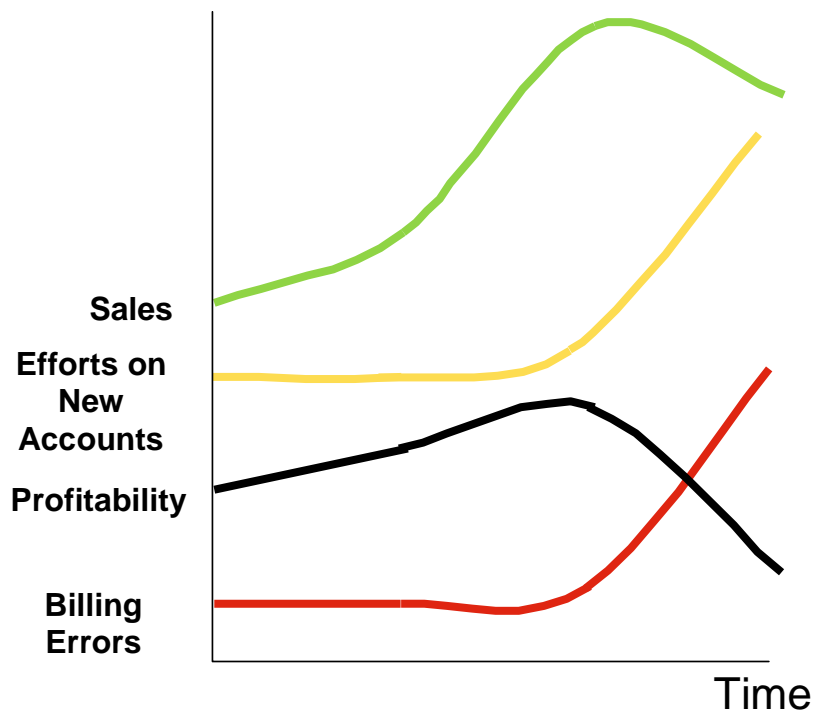
### **Changing How We Work Together**

Though we had been doing the work described in *The Fifth Discipline* for ten or fifteen years before the book was published, we hadn't used the word 'discipline.' It was only in the writing of the book that it finally hit me that what we were talking about was discipline, in the very same spirit in which the word has been used in the creative arts or in spiritual traditions for thousands of years. That people might have a potential or a talent, but they can't cultivate it without discipline."

-- Peter Senge in an interview with Margaret Wheatley entitled 'Changing How We Work Together' published in a recent edition of 'Shambhala Sun' magazine  
<http://www.shambhalasun.com/Archives/Features/2001/Jan01/senge.htm>

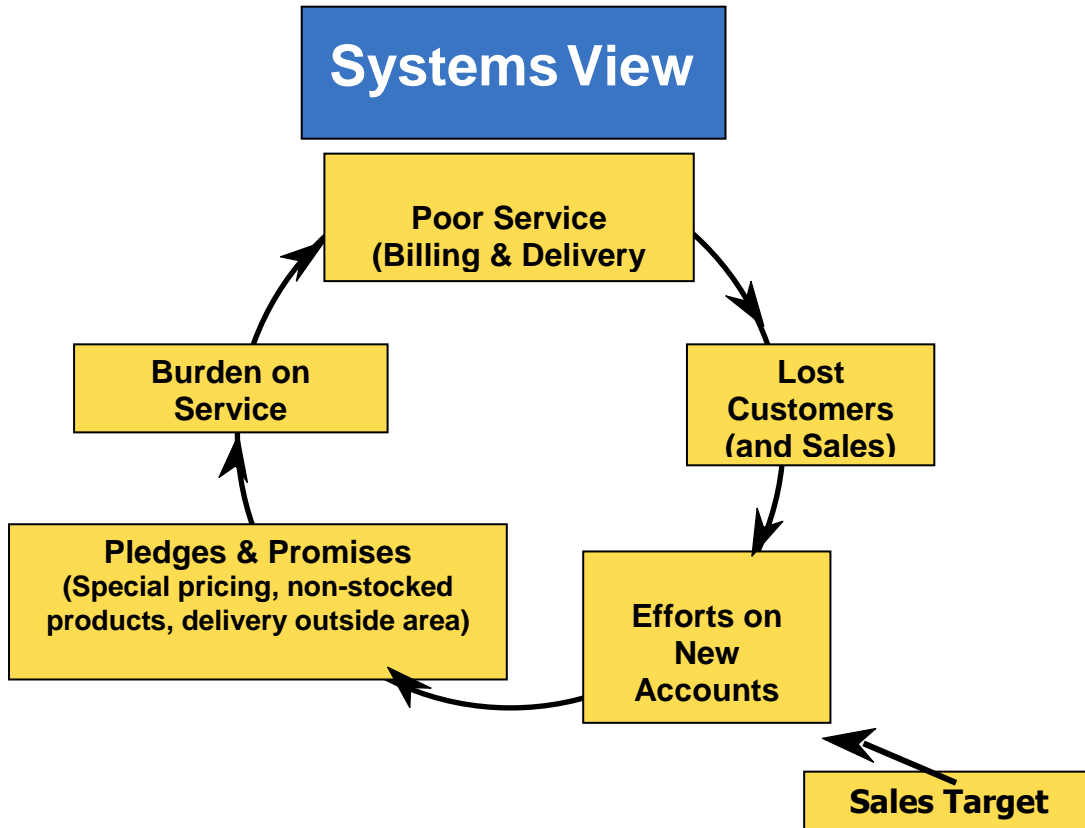
# *Understanding Complexity*

# Acme Company

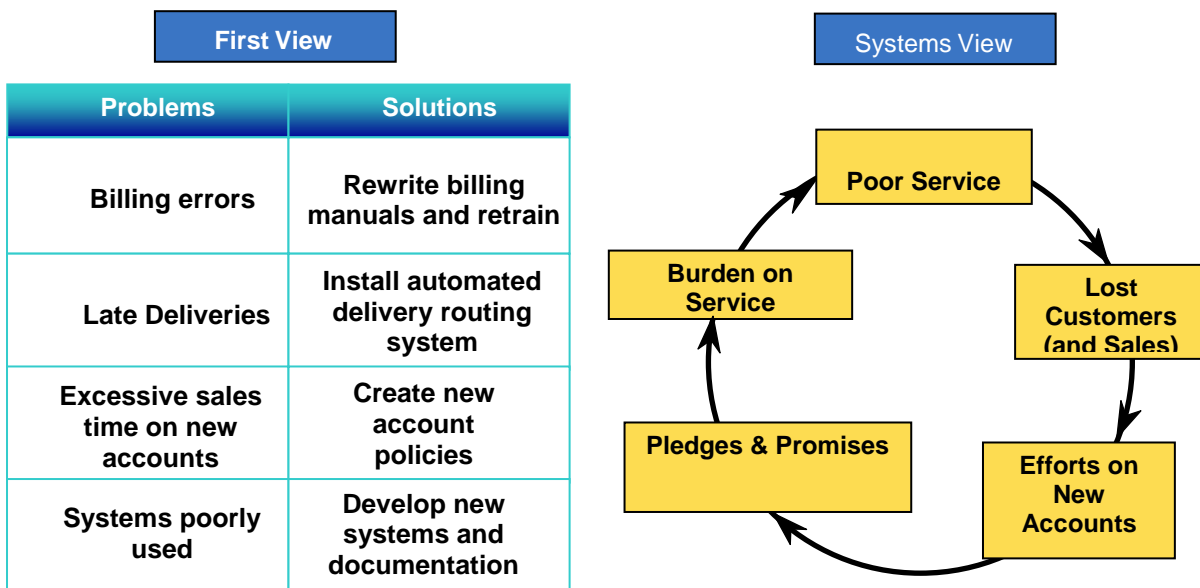


Problems	Solution
Billing	Rewrite billing manuals and
Late	Install automated delivery routing system
Excessive sales time on new	Create new account
Systems poorly	Develop new systems and documentation

# ACME



## How do the two views differ?



## ACME Case (private sector)

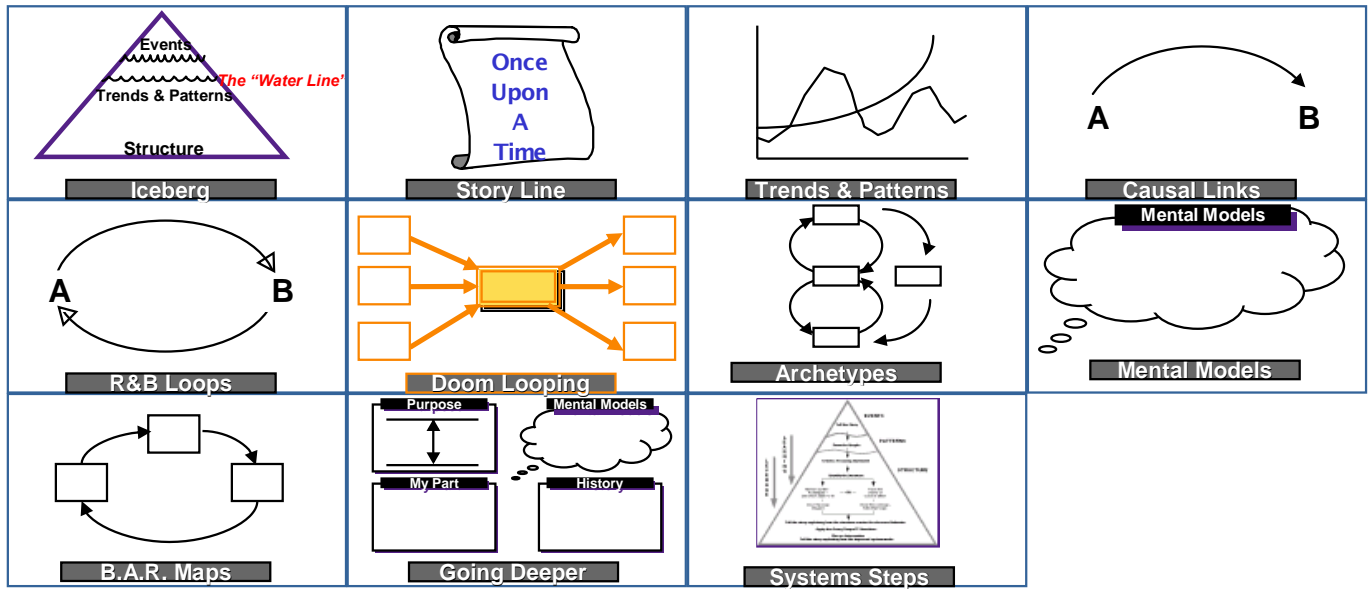
What are the differences in the views?

First View	Systems Thinking View

## Question

What prevents us from applying the systems view to our problems?

# Systems Tools



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## WHAT IS SYSTEMS THINKING?

### **Systems Thinking – The definition ...**

Systems thinking is a conceptual framework grounded in Systems Dynamics that has been developed over the past fifty years to discipline us in seeing and understanding patterns – looking beyond events, to deeper “structures” that control events, and discovering the leverage that lies hidden in these structures. The essence of the discipline lies in a shift of mind to (pg 68):

- See interrelationships rather than view changes in fragments and therefore, linear cause-effect chains, and
- See processes of change over time, rather than snapshots.

The practice of systems thinking starts with understanding two simple concepts:

- “Feedback” – that shows how actions can reinforce or counteract (balance) each other or circular causality (rather than linear causality)
- “Delays” – when things happen ... eventually

Since we are part of the system, it becomes twice as hard to see the whole pattern of change. Instead we tend to focus on snapshots of isolated parts of the system and wonder why our deepest problems never seem to get solved.

### **Systems Thinking ...**

- √ Helps us recognise hidden and unintended consequences
- √ Enables us to think deeper and wider about complex systems
- √ Allows us to change our behaviour
- √ Expands the choices available to us and focus on higher leverage changes

### **Systems Thinking ... the objectives:**

- To use Systems Thinking language to help us understand more deeply how organisations and complex systems really operate
- To use and understand the tools, processes and principles enabling us to focus on the relationships among the parts, not just the parts.

**SEEING COMPLEXITY MEANS BEING ABLE TO "SEE" ...**



See <b>interrelationships</b> rather than view changes in fragments and therefore, linear cause-effect chains, and	See <b>processes of change</b> over time, rather than see change as snapshots.
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**INTRODUCING THE "BUILDING BLOCKS OF SYSTEMS THINKING"**

AND SO ... WE CREATE COMPLEXITY WHEN WE IGNORE "SEEING"



<b>"FEEDBACK"</b> Circular / dynamic causality, and	<b>"DELAYS"</b> When things happen ... eventually
--	--

There are two kinds of feedback:

Seeks Growth <b>REINFORCING LOOP</b> Purpose: To seek organic & sustained growth of the system Virtuous cycles that generate growth Vicious treadmills that create disaster	Seeks Stability <b>BALANCING LOOP</b> Purpose: To maintain a condition or state Corrective mechanisms that sustains us Primary source of resistance
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# **THE 11 LAWS OF THE FIFTH DISCIPLINE / COMPLEXITY**

Answers the question: How do I know if I am bumping into complexity or what can I do to prevent creating complexity!

## **1. TODAY'S PROBLEMS COME FROM YESTERDAY'S SOLUTION**

Solutions that merely shift problems from part of a system to another often go undetected because, often those who "solved" the first problem are different from those who influence the new problem.

## **2. THE HARDER YOU PUSH, THE HARDER THE SYSTEM PUSHES BACK**

Pushing harder, whether through an increasingly aggressive intervention or through increasingly stressful withholding of natural instincts, is exhausting. Yet, as individuals and organizations, we not only get drawn into compensating feedback, we often glorify the suffering that ensues. When our initial efforts fail to produce improvements, we "push harder", to the creed that hard work will overcome all obstacles, all the while blinding ourselves to how we are contributing to the obstacles ourselves.

## **3. BEHAVIOUR GROWS BETTER BEFORE IT GROWS WORSE**

Low-leverage intervention would be much less alluring if it were not for the fact that many actually work, in the short term. A typical solution feels wonderful, when it first cures the symptoms. In complex human systems, there are always many ways to make things look better in the short run. Only eventually does the compensating feedback come back to haunt you. The key word is "eventually". It may be two, three or four years before the problem returns, or some new, worse problem arrives. By that time, given how rapidly most people move from job to job, someone new is sitting in the chair.

## **4. THE EASY WAY OUT USUALLY LEADS BACK IN**

We all find comfort applying familiar solutions to problems, sticking to what we know best. Pushing harder and harder on familiar solutions, while fundamental problems persist or worsen, is a reliable indicator of non-systemic thinking.

## **5. THE CURE CAN BE WORSE THAN THE DISEASE**

Sometimes the easy or familiar solution is not only ineffective: sometimes it is addictive and dangerous (FtB, StB).

## **6. FASTER IS SLOWER**

For most business people the best rate of growth is fast, faster, fastest. Yet, virtually, all natural systems, from ecosystems to animals to organizations, have intrinsically optimal rates of growth. The optimal rate is far less than the fastest possible growth. When growth becomes excessive, the system itself will seek to compensate by slowing down; perhaps putting the organization's survival at risk in the process. When managers first start to thwart many of their own favourite interventions, they can be discouraged and disheartened. For the real implications of the systems perspective are not inaction but a new type of action rooted in

a new of thinking – systems thinking is both more challenging and more promising than our normal ways of dealing with problems.

## **7. CAUSE AND EFFECT ARE NOT CLOSELY RELATED IN TIME AND SPACE**

When we play as children, problems are never far away from their solutions – as long, at least, as we confine our play to one group of toys. Years later as managers, we tend to believe the world works in the same way. There is a fundamental mismatch between the nature of reality in complex systems and our predominant ways of thinking about that reality. The first step in correcting that mismatch is to let go of the notion that cause and effect are close in time and space.

## **8. SMALL CHANGES CAN PRODUCE BIG RESULTS – BUT THE AREAS OF HIGHEST LEVERAGE ARE OFTEN THE LEAST OBVIOUS**

Systems thinking shows that a change, small, well-focused (trim-tab) actions are in the right place, they produce significant, enduring improvements. Tackling a difficult problem is often a matter of seeing where the high-leverage lies. However, the high-leverage changes in human systems are non-obvious until we understand the forces at play in those systems. There are no rules of finding these high-leverage changes, but there are ways of thinking that make it more likely. Learning to see underlying “structures” rather than “events” is a starting point. Each of the “system archetypes” develop suggests areas of high- and low-leverage change. Thinking in terms of change rather than snapshots is another.

## **9. YOU CAN HAVE YOUR CAKE AND EAT IT TOO – BUT NOT AT ONCE**

Sometimes the knottiest dilemmas, when seen from the systems point of view, aren't dilemmas at all. They are artifacts of “snapshot” rather than “process” thinking, and appear in a whole new light once you think consciously over time.

## **10. DIVIDING AN ELEPHANT IN HALF BUT DOES NOT PRODUCE TWO SMALL ELEPHANTS**

Living systems have integrity. Their character depends on the whole. The same is true for organizations; to understand the most challenging managerial issues requires seeing the whole system that generates the issue.

## **11. THERE IS NO BLAME**

Systems thinking shows us that there is no outside; that you and the cause of your problems are part of a single system. The cure lies in your relationship with your “enemy”.

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## THE LANGUAGE OF SYSTEMS THINKING

(Fieldbook, 113)

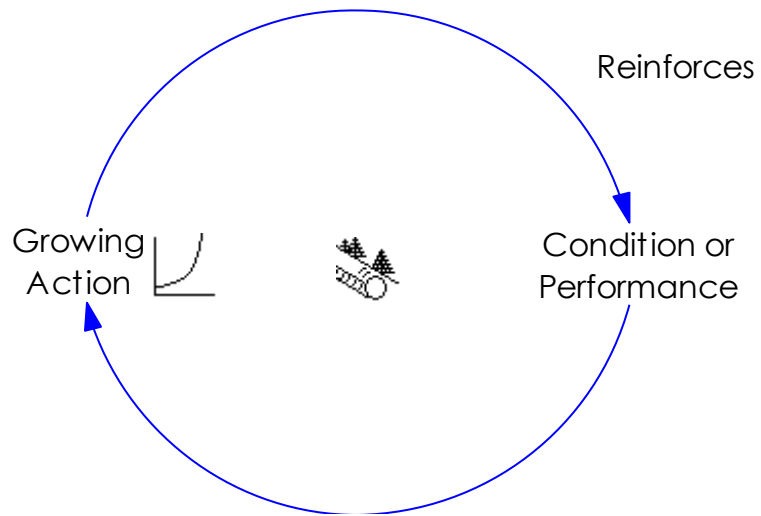
In systems thinking, every picture tells a story. From any element in a situation (or a variable), you can trace arrows ("links") that represent influence on another element. These, in turn, reveal cycles that repeat themselves, time after time, making situations better or worse. But links never exist in isolation. They always comprise a circle of causality; a feedback "loop", in which every element is both a "cause" and "effect" – influenced by some, and influencing others, so that every one of its effects, sooner or later, comes back to roost.

Note that linear languages, like English (subject, verb, object), permit us to talk about the loop only one step at a time, as if we were following a train in a toy railroad around a track. In reality, all of these events occur at once. Seeing their simultaneity helps us recognise systems behaviour and develop a sense of timing.

There are basically, two building blocks of all systems representations: reinforcing and balancing loops.

Reinforcing Loop	Balancing Loop
<ul style="list-style-type: none"><li>▪ These loops generate exponential growth and collapse, in which the growth and collapse continues at an ever-increasing rate.</li><li>▪ Don't underestimate the explosive power of these processes; in their presence linear thinking can always get us into trouble.</li><li>▪ When someone remarks that, "The sky's the limit," or "We're on a roll," or "This is our ticket to heaven," or "We are spiralling into oblivion," you know you are caught in a reinforcing loop.</li></ul>	<ul style="list-style-type: none"><li>▪ Balancing processes generate the forces of resistance, which eventually limit growth.</li><li>▪ But they are also the mechanisms, found in nature and all systems, that fix problems, maintain stability and achieve equilibrium. They ensure that every system never strays far from its "natural" operating range.</li><li>▪ Balancing loops are often found in situations which seems to be self-correcting and self-regulating, whether the participants like it or not.</li><li>▪ If people talk about "being on a roller-coaster", or "being flung up and down like a yo-yo" then they are being caught in one kind of balancing structure.</li><li>▪ If caught in another type, they might say, "We are running into walls," or "we can't break through the barrier," or "No matter what we try, we can't change the system."</li><li>▪ Balancing loops are always bound to a target – a constraint or goal which is often implicitly set up the forces of the system. Until you recognise the gap, and identify the goal or constraint which drives it, you won't understand the behaviour of the balancing loop.</li></ul>

**REINFORCING LOOP:**

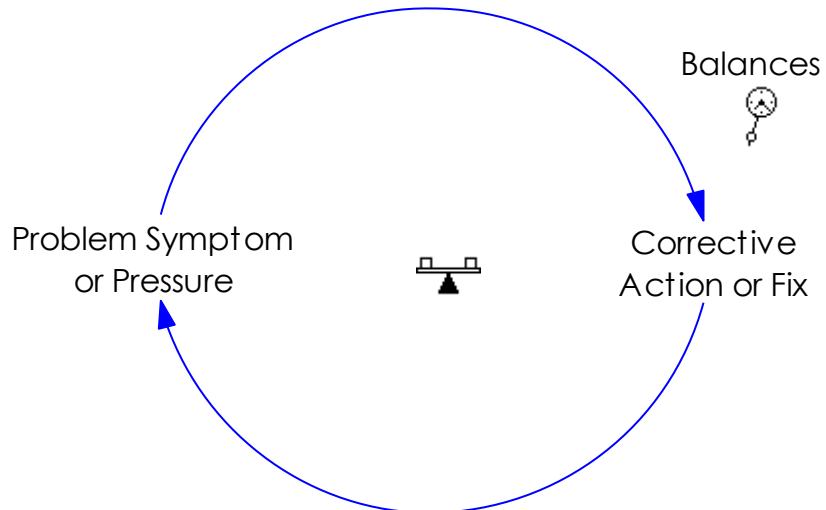


NOTES:

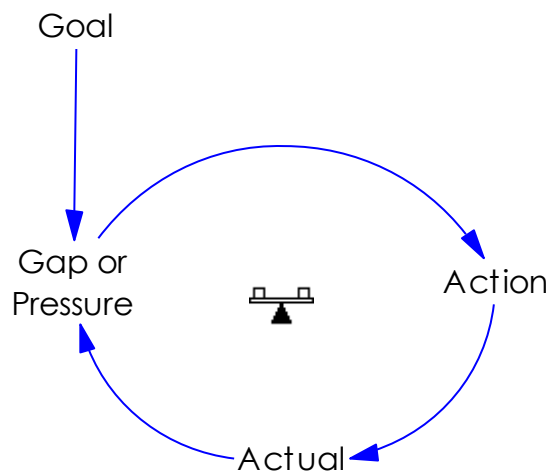
Example 1:

My example:

**BALANCING LOOP:**



Underneath a balancing loop is a goal-seeking system:



NOTES: Facing problem symptoms or pressures, we are forced to act. Our corrective actions are intended to alleviate the symptom and reduce the pressure

Example 1:

My example:

**SOME THINGS ON THE SIDE ... BUT ARE REALLY IMPORTANT ....**

<b>VARIABLE</b>	<b>VARIABLE NAMES</b>
<ul style="list-style-type: none"> <li>• Is an element in a situation which may act or be acted upon</li> <li>• Is not an event</li> <li>• Is something you can discuss as "the level of ..."</li> <li>• Its value can vary up or down over time</li> <li>• Key test – it's a variable if you can make a time plot of it</li> </ul>	<ul style="list-style-type: none"> <li>• Short</li> <li>• Neutral</li> <li>• Should be nouns or noun phrases</li> <li>• NOT action words (don't use increasing, decreasing, higher, etc.)</li> <li>• Fit into a phrase starting with "the level of ...", "the quantity of ..."</li> </ul>
<b>COMPONENTS OF A LOOP DIAGRAM</b>	<b>DELAYS</b>
<ul style="list-style-type: none"> <li>• Links (arrows)</li> <li>• S's and O's</li> <li>• S = same direction</li> <li>• O = opposite direction</li> <li>• If odd number of O links = B loop</li> <li>• Otherwise must be a R loop</li> </ul>	<p>Delays can have enormous influence in a system, frequently accentuating the impact of other forces. This happens because delays are subtle.</p> <p>Sources of delays:</p> <ul style="list-style-type: none"> <li>• Time to recognise (measure / assess) the current state or status</li> <li>• Time to decide what actions to take</li> <li>• Time spent implementing actions or making corrections</li> <li>• Time required for the actions to alter / impact the current state / status</li> </ul> <p>In reinforcing loops, delays can shake our confidence, because growth does not come as quickly as expected.</p> <p>In balancing loops, when unacknowledged delays occur, people tend to react impatiently, usually redoubling their efforts to get what they want, creating unnecessarily violent oscillations.</p>

**Practicing**  
***Systemic Thinking***

## LEARNING TO PRACTICE DIAGRAMMING

### Case Notes:

The General Manager of a planning / manufacturing division periodically finds herself facing budget crises as revenues and costs get out of line. She is told that her facility must run "lean and mean". Facing this cost-cutting pressure, she decides to reduce her headcount. She gives permission for some employees to leave one's duties or job for a period of time and lets go of others to hit her budget target in the next quarter.

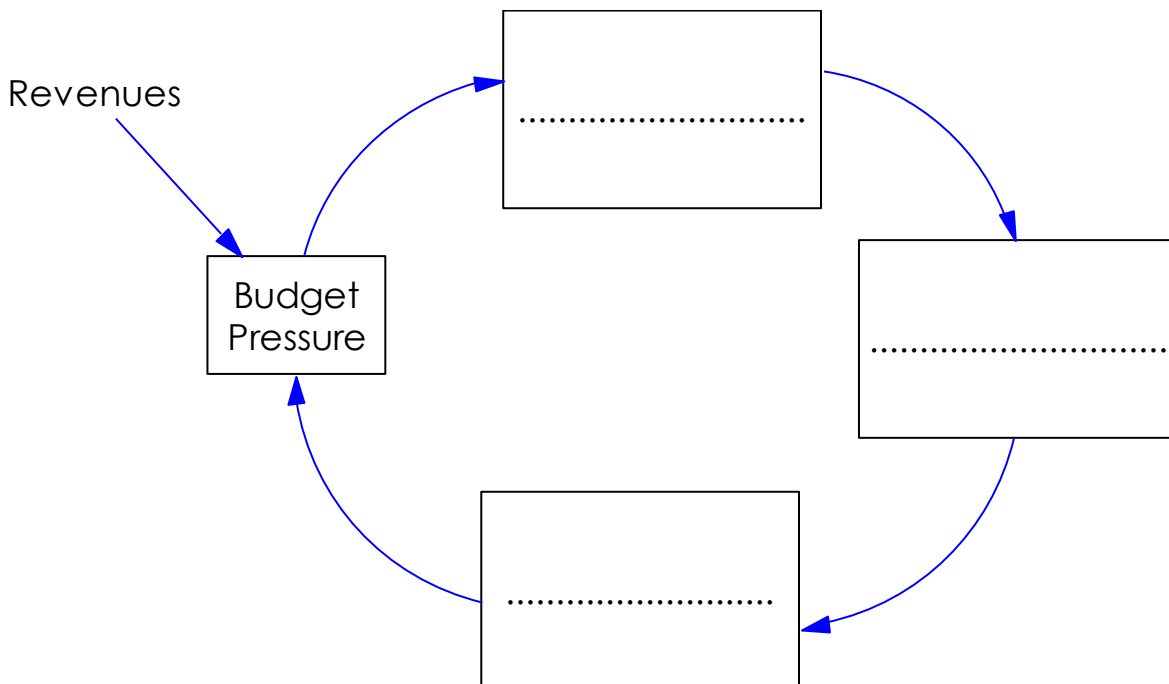
### Key Variables:

Budget Pressure  
Cost-cutting pressure  
Costs  
Headcount

### Instructions:

1. Put variable names on self-stick notes
2. Arrange them on the worksheet to complete a diagram of this system
3. Add S's and O's. Is the loop reinforcing or balancing
4. For now, consider only the short-run effects of the manager's actions

### Worksheet:



**Purpose:**

Practice expanding a balancing loop

**Case Notes:**

New information: To reduce costs further, she also decides to reduce preventive maintenance and cut back on marketing activities.

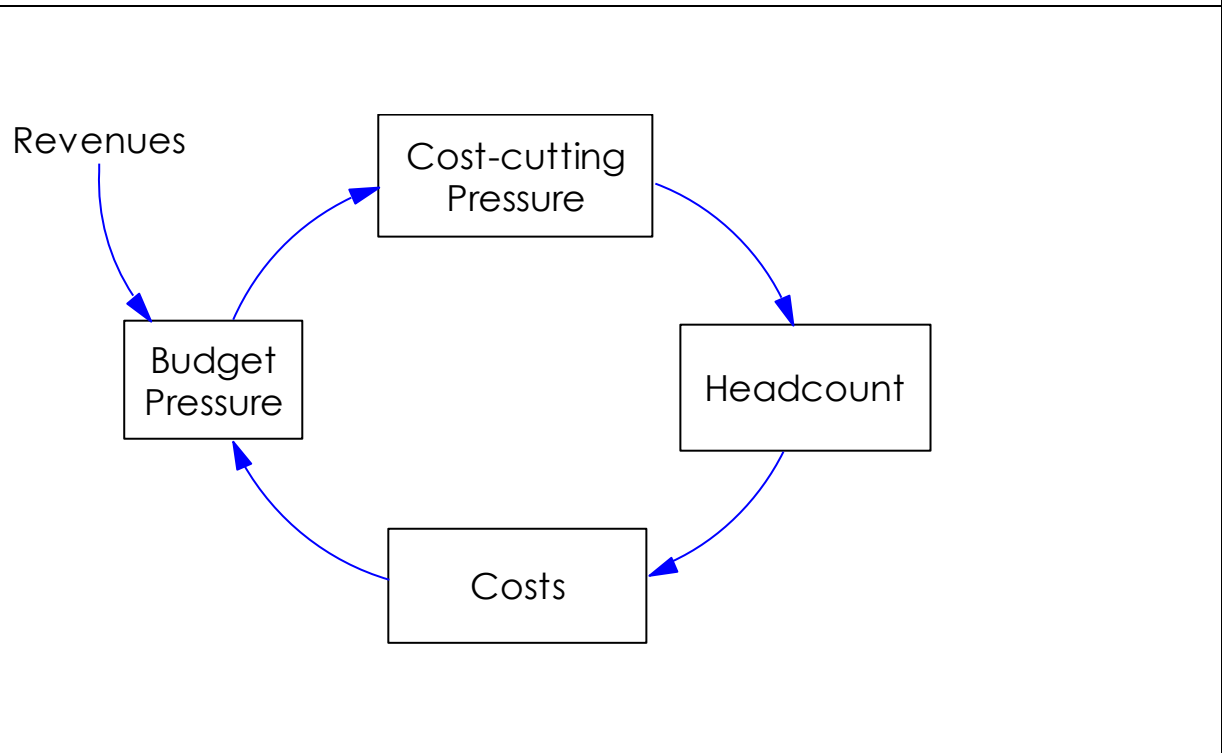
**Key Variables:**

Budget Pressure  
Cost-cutting pressure  
Costs  
Headcount  
*Preventive maintenance*  
*Marketing Activities*

**Instructions:**

1. Add to your diagram on this page to include the manager's additional action
2. HINT: Consider multiple loops, not just one loop
3. Add S's and O's. Label ALL the loops in the system as R or B
4. For now, consider only the short-term effects of the manager's actions

**Worksheet:**



**Purpose:**

To examine and diagram the longer term consequences of solutions to the budget crisis.

**Case Notes:**

-

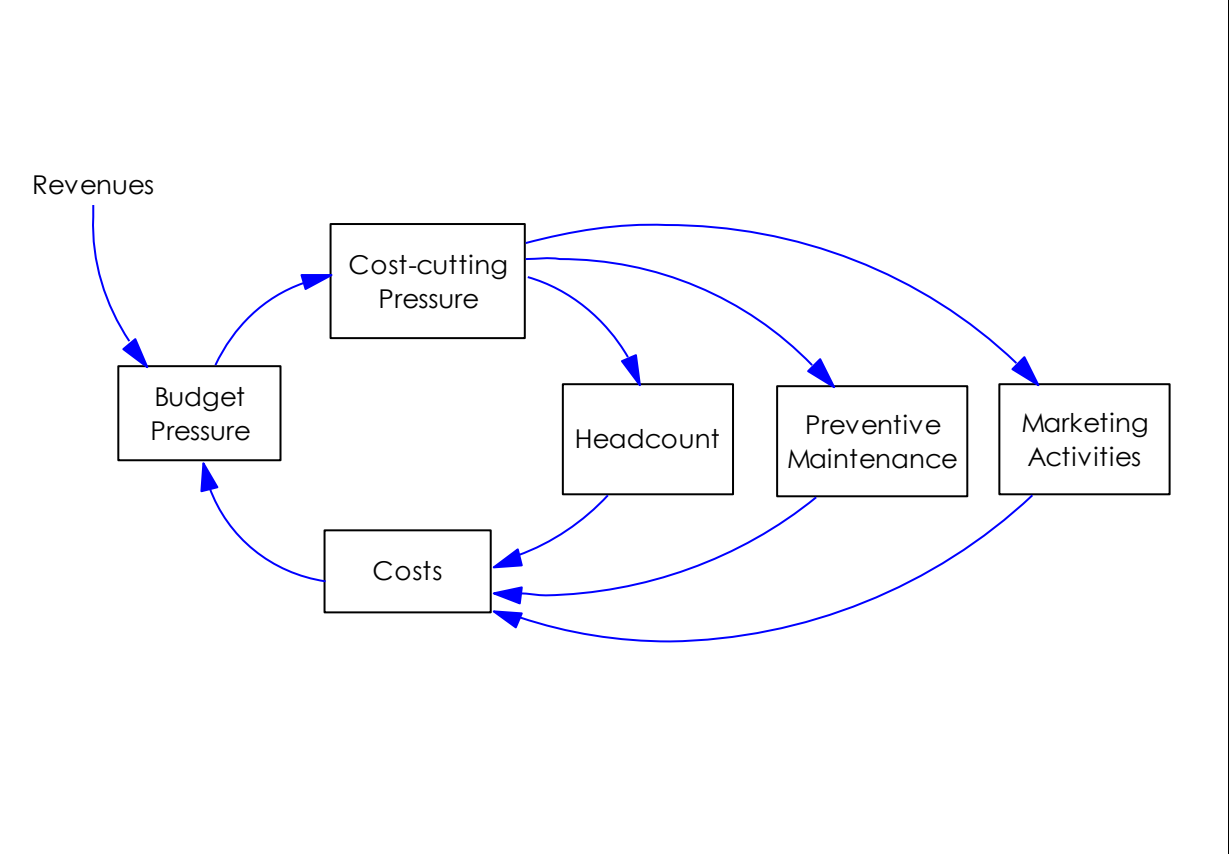
**Key Variables:**

-

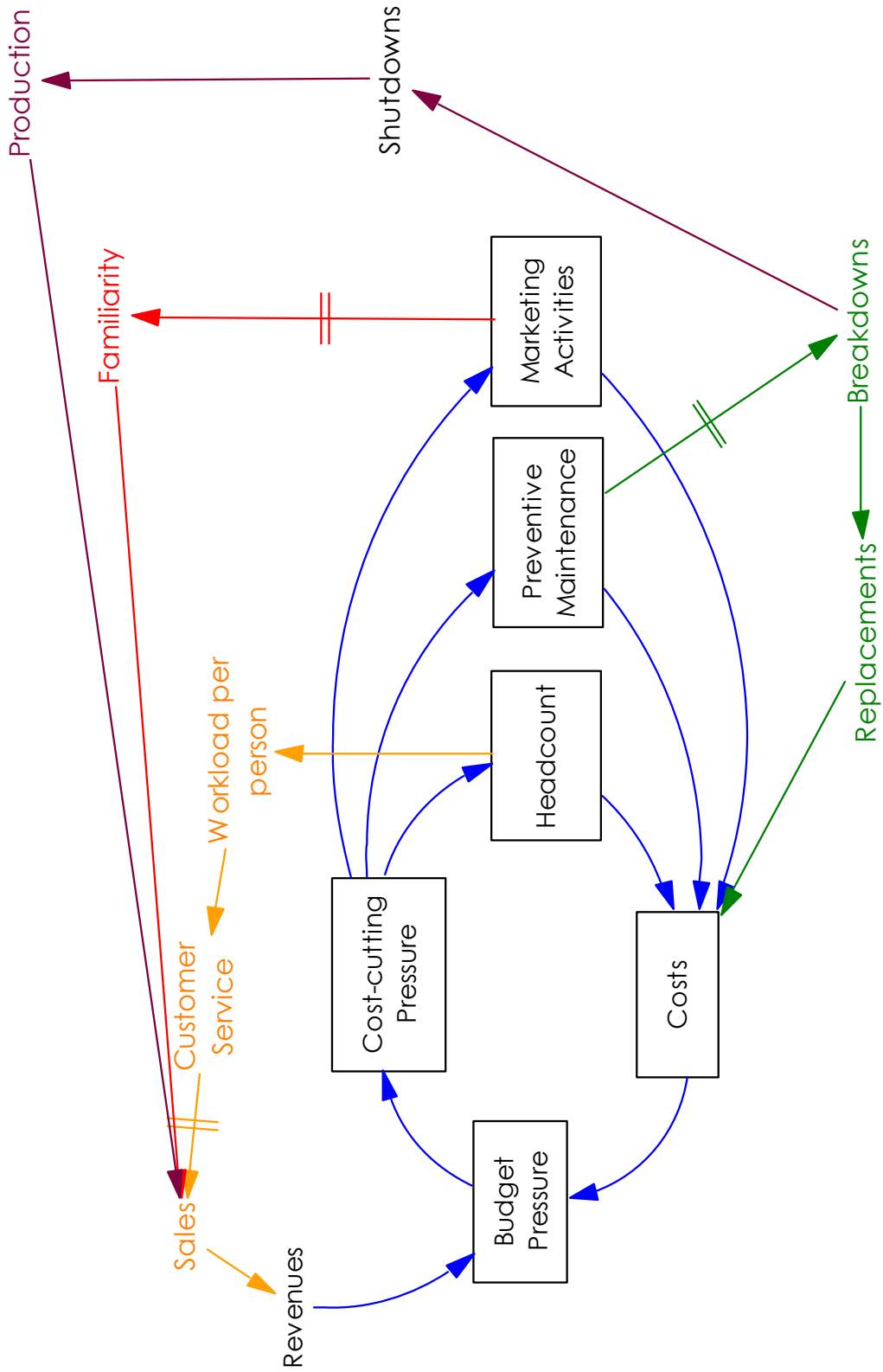
**Instructions:**

1. Review your own extended diagram of the case or use the diagram on this page
2. Look at the manager's solutions to her budget problems. Are there longer-term consequences of those actions that significantly affect costs or revenues?
3. Represent any longer-term consequences on your previous budget loop diagram.
4. Add S's and O's (label all loops as R or B). Note any significant delays.

**Worksheet:**



# Case Study: LongerTerm



## WHAT ARE SYSTEM ARCHETYPES?

- Commonly occurring combinations of two or more reinforcing and balancing loops
- Each one has a characteristic theme, behaviour patterns, structure, mental models and interventions
- System archetypes are also known as 'classic system stories' and 'templates'
- Enable us to 'see' structures when hearing one of these classic stories
- Facilitate rapid joint understanding by diagramming the system

<b>Name of Archetype</b>	<b>The Pattern That It Reveals</b>
• Vicious / virtuous cycle	Amplification and reinforcement
• Balancing Process	Correction: We try to reduce the gap
• Fixes that Backfire	Unintended Consequence
• Shifting the Burden	Unintended Dependency
• Limits to Success	Unanticipated Constraints
• Success to the successful	Winner takes all: Your success produces my failure
• Escalation	One-upmanship, Unintended Proliferation: the harder you push, the harder the competitor pushes back
• Tragedy of the Commons	Optimizing each part destroys the whole: Everyone takes advantage of a resource that doesn't belong to anybody
• Growth and Underinvestment	Self-imposed Limits
• Drifting Goals	Inadvertent Poor Performance, actual and desired performance levels gradually falling
• Accidental Adversaries	Partners who become enemies: Two parties want to cooperate, but each sees the other undermining their success

# ***Systems Thinking Archetypes***

- Descriptions
- Interventions
- Mental Models
- What if it worked well

Prepared in Aug 2004

## WHAT IS THIS?

A fairly comprehensive one-stop reference – everything we want to know and have about Systems Thinking Archetypes – so you never have to have more than one book or article or template with you again to get your way around this work. Especially a good handy reference when working on the Vision Deployment Matrix and helps you see through the most complex of situations with a breeze. A worthy handbook for every Learning Organisation practitioner!

## WHY THIS?

Systems Thinking is a powerful approach for addressing tough problems (i.e. whatever we try to do, the problem does not go away!) in the workplace and in issues facing society. It is especially so when its concepts and tools are used by the group to understand collectively (and discover answers within the group) why these problems continue to persist and to see insightfully how these problems may go away forever!

## CONTENT PAGE:

Systemic Archetypes (Start of List) _____	<b>32</b>
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Drawings of the Archetypes .....	<b>56</b>

**STEPS IN SYSTEMS THINKING AND DESIGNING SYSTEMIC INTERVENTIONS IN SIMPLY TEN  
(JUST KIDDING!) FOUR STEPS:**

**Step 1: Starting Question – Tell a story**

- Start with a core group discussing the issues. What does each of you notice? What are the events surrounding the issue you are looking at (clue: start by looking at problems that 'whatever we tried to do, the problem does not seem to go away'). Refer to the table here for more.
- Describe as much of the story that you can see from your perspective. If you think there are more stakeholders involved, talk to them and include as much as of their stories as well (even though it sounds different). This is the key to successful intervention! **[REFER TO COLUMN B]**

**Step 2: Draw Graphs - What kinds of patterns do you notice?**

- How have these events or stories behaved over time? Has it been decreasing? Increasing over time? Or has it no perceived pattern? **[REFER TO COLUMN C]**
- Sometimes the patterns are not discernable (even after being mapped for six years or more). That is understandable (since we may be having several archetypes playing up together). Stay long enough with this step to realise the level of the complexity.

**Step 3: Identify the structures - What archetypes might be at play?**

- Refer to the archetypes? Which ones do you think is playing up in your story? Remember the stories we shared at the workshop? Which ones come closest? If you see three, do not stop there, keep going there may be up to five or six at play. **[REFER TO COLUMN D]**
- List and show their linkages. What's right at the core?
- When you have identified the archetypes, check against the corresponding mental models (refer to the following table)? Do they match with the problem you are working on? **[REFER TO COLUMN E]**

**Step 4: Applying the Going Deeper Questions, list out the interventions and develop your transition plan!**

- Refer to the interventions for the archetypes you have chosen. Select those you think would apply for your problem. **[REFER TO COLUMN F]**
- Discuss with your colleagues and counterparts in the organisations. Can they agree? What would they change to make it agreeable for all?

**LEARNING SYSTEMS ARCHETYPES (IN ORDER OF PRESENTATION AT WORKSHOP)**

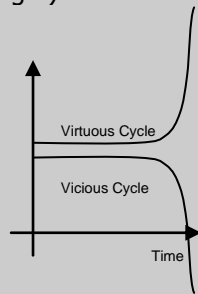
COLUMN A	COLUMN B	COLUMN C	COLUMN D	COLUMN E	COLUMN F	COLUMN G
Classic Systems Archetypes	EVENT (commonly used phrases)	PATTERN OVER TIME (what we experience as a movie)	DESCRIPTION OF THE ARCHETYPE (the storyline <sup>1</sup> )	MENTAL MODELS (our world views)	STRATEGIC INTERVENTION	Description using feedback and delays

**DESIGNING FUTURES (FR)**

1. Reinforcing Loop	Virtuous and Vicious Cycles	<p>“Mother-in-law and daughter-in-law” story: <b>MIL vs DIL story "Healing Poison"</b></p> <ul style="list-style-type: none"> <li>MIL and DIL do not get along and DIL decides to “finish off” her MIL</li> <li>DIL seeks help from an uncle who prescribes a slow acting poison that will take effect in 6 months, instructs DIL to serve it in hot milk to MIL every night with a smile</li> <li>MIL takes to the 'hot milk with smile' treatment from DIL, starts cooking hot dinners that are served upon DIL's arrival home from work</li> <li>MIL and DIL relationship improves to incorporate shopping and mahjong outings</li> </ul>	As A grows it causes B to grow, which in turn causes A to grow even further	“It feels like it is growing (for better or for worse)”	<p><b>TO DESIGN SYSTEMS SEEKING GROWTH</b></p> <p>You can detect this kind of loop at work simply by sensing exponential growth or collapse (such as rapid spread of an exciting new idea, or a company that suddenly goes out of business)</p> <p><i>Intervention in the case of vicious cycle:</i></p> <ul style="list-style-type: none"> <li>Reverse the behaviour of the variable (at any one end of the loop – it does not matter which end).</li> </ul>	-
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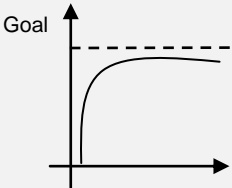
<sup>1</sup> A and B refers to variables in the story – things that are changing in levels of output quantity (becoming more or less) or behaviour (better or worse)

COLUMN A	COLUMN B	COLUMN C	COLUMN D	COLUMN E	COLUMN F	COLUMN G
Classic Systems Archetypes	EVENT (commonly used phrases)	PATTERN OVER TIME (what we experience as a movie)	DESCRIPTION OF THE ARCHETYPE (the storyline <sup>1</sup> )	MENTAL MODELS (our world views)	STRATEGIC INTERVENTION	Description using feedback and delays
		<ul style="list-style-type: none"> <li>After 5 months, DIL suddenly realises she does not want MIL to die. Uncle informs her the 'poison' was vitamin C and it was the change in behaviour from DIL (smile) that reversed the vicious cycle and replaced it with a virtuous one (see Fig 1)</li> </ul>				

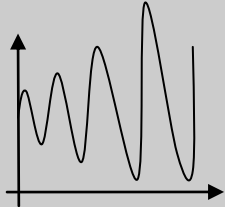


COLUMN A	COLUMN B	COLUMN C	COLUMN D	COLUMN E	COLUMN F	COLUMN G
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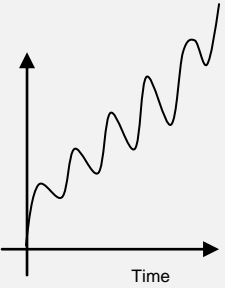
### ASSESSING CURRENT REALITY (CR)

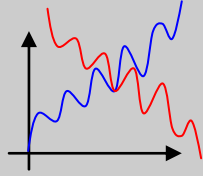
2. Balancing Loop	Feel for every step I take there is a counter-balancing effect	<p>"Air-con / Iron" story: Iron heats up to a certain threshold and a thermostat is activated to deliver corrective action to bring the temperature back to set level</p> <p>(see Fig 2)</p> 	<p>As A grows it causes B to grow. But an increase in B causes A to decline. Or. There is a gap between the actual and the goal. As a result, we take corrective actions until the actual becomes the goal after which it does not grow any further</p>	<p>"It feels it is growing with a view to seek out a goal and then it stabilises"</p>	<p><b>TO DESIGN SYSTEMS SEEKING STABILITY</b></p> <p>Whereas snowballing effect of reinforcing loops destabilises system (that is, puts them out of equilibrium), balancing loops are generally stabilizing or goal-seeking. They resist change in one direction by producing change in the opposite direction, which negates the previous effects.</p> <p><u>Intervention to overcome inertia:</u></p> <ul style="list-style-type: none"> <li>To become aware the role (especially intrinsic) goals can have an impact on the direction corrective actions may go.</li> <li>Learn to uncover and suspend the intrinsic goals as a way to loosen its grip on the one's action.</li> </ul>	-
3. Delays	When things happen ...	To illustrate natural <b>delays</b> in dynamic complexity:	-		Learning to spot and working smart with delays	

COLUMN A	COLUMN B	COLUMN C	COLUMN D	COLUMN E	COLUMN F	COLUMN G
Classic Systems Archetypes	EVENT (commonly used phrases)	PATTERN OVER TIME (what we experience as a movie)	DESCRIPTION OF THE ARCHETYPE (the storyline <sup>1</sup> )	MENTAL MODELS (our world views)	STRATEGIC INTERVENTION	Description using feedback and delays
	eventually	<ul style="list-style-type: none"> <li>• A caterpillar usually takes several hours to emerge from a cocoon because it forces itself through a little hole punctured in one end of the cocoon</li> <li>• This process forces fluid from its body into its wings, completing the metamorphosis process</li> <li>• A boy witnesses this painstaking process and decides to help the caterpillar by cutting open the cocoon, thinking this will speed up the process and ease the struggle of the caterpillar</li> <li>• Although the caterpillar dropped out of its cocoon quickly, it died in its lava state and never became a butterfly because the boy short-circuited the natural delay phase in the metamorphosis process</li> </ul>				

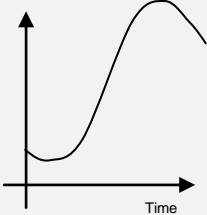
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4. Balancing Loops with Delay	Why are things moving so quickly (slowly). We need to react now otherwise we would be left behind? Why are things moving so slowly – we need to push the system to go faster! Why aren't things growing as fast as it did?	Overreacting to perceived increased demand and fearing sluggish supply (see Fig 4)  	Not realising that our own action(s) are undermining our ability to (re)act.	Perhaps the "system" did not hear me ... let me try (once) again! Perhaps they may hear me this time!	<b>LEARNING HOW NOT TO OVERREACT</b>  <u>Intervention:</u> <ul style="list-style-type: none"> <li>First keep in mind the orders one has placed but which, because of the delay, has not arrived. "Take two aspirins and wait" rule. [this comes from understanding the delay embedded in the response</li> <li>Second, don't panic. When the supplier can't get the order you want as quickly as normal, the worst thing you can do is order more. It takes discipline to contain the overwhelming urge to order more when backlogs are building and your customers are screaming. But, without that discipline, you and everyone else will suffer.</li> </ul> <u>What it looks like if the system was working well:</u>	1 outer Balancing Loop 1 inner Reinforcing Loop 1 Delay

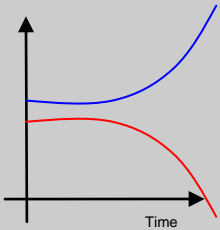
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5. Fixes That Fail	<p>The problem keeps coming back, worsening each time.</p> <p>The way I fixed it makes the problem worse!</p> <p>THE STORY OF UNINTENDED CONSEQUENCES</p>	<p>"Goody Bag" story</p> <ul style="list-style-type: none"> <li>Residential Committee chairman wants to recruit volunteers via block parties</li> <li>At the block party, residents get to meet an MP, a celebrity and go home with a goodie bag</li> <li>The volunteer sign up rate is only moderate so the RC chairman organizes a few more block parties, all giving away goodie bags</li> <li>One day he invites a resident for a block party and is immediately asked if goodie bags will be given away</li> <li>He realises that residents are coming for the goodie bags and not because of a genuine interest to volunteer - the goodie bag was a 'fix that failed'</li> </ul> <p>(see Fig 6)</p>	<p>All the quick fixes we have tried have worked at first but the problems keeps getting worse.</p> <p>As problems grow, fixes grow, hopefully to cause the problem to go away. However the same fix that allowed the problem to go away in the short-run, after a delay, creates (an) unintended consequences that makes my problem worse in the long run.</p>	<p>"Time is money, and neither time nor money should be wasted. Therefore, the first answer must be the right one."</p>	<p><b>PROBLEM-SOLVING</b></p> <p>Almost any decision carries long-term and short-term consequences and the two are often diametrically opposed. This archetype can help us get off the problem-making treadmill by identifying fixes that may be doing more harm than good.</p> <p><i><b>Intervention:</b></i></p> <ul style="list-style-type: none"> <li>Breaking this cycle usually requires acknowledging that the fix is merely alleviating a symptom and making a commitment to solve the real problem now.</li> <li>A two-pronged attack of applying the fix and planning out the fundamental solution will help ensure that you don't get caught in a perpetual cycle of solving yesterday's solutions: <ul style="list-style-type: none"> <li><b>Prong #1:</b> Identify problem symptom. Map current</li> </ul> </li> </ul>	<p>1 inner Balancing Loop</p> <p>1 outer Reinforcing Loop</p> <p>Delay</p>

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					<p>interventions and how they were expected to rectify the problem. Map unintended consequences of the interventions</p> <ul style="list-style-type: none"> <li>○ Prong #2: Identify fundamental causes of the problem. Find connections between fixes and the fundamental causes. Are they linked? Proceed to identify high-leverage interventions. Map potential side-effects for each intervention in order to be prepared for them (or to avoid them altogether)</li> </ul> <p><u>What it looks like if the system was working well:</u></p> <ul style="list-style-type: none"> <li>▪ “We consider possible alternative and their side-effects before acting.”</li> <li>▪ We identify possible side effects of short-term fixes.</li> </ul>	

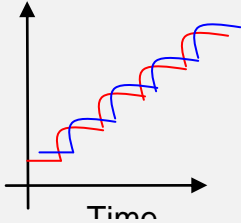
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6. Shifting the Burden	<p>We needed a solution yesterday.</p> <p>It is getting harder to get to the fundamental solutions.</p> <p>THE STORY OF UNANTICIPATED DEPENDENCY</p>	<p>“Toothache / Scanner” story</p> <ul style="list-style-type: none"> <li>Company buys a new scanner that only one Gary knows how to operate</li> <li>One member of staff needs photos scanned in for a presentation - she takes Gary for tea and asks him to help scan the photos</li> <li>After he obliges, more staff approach him to help scan in their photos</li> <li>One day, Gary decides to leave the company</li> <li>His colleagues throw a farewell party for him but are still unable to scan photos after he leaves</li> </ul> <p>(see Fig 8)</p> 	<p>We know the fundamental solution, but are unwilling or unable to take it, so we implement the symptomatic solution and deal with the side effects.</p> <p>There are two ways to solve the problem. The first. In most cases problems do not present themselves. Instead they present as symptoms (e.g. pain for a bad tooth). As such, we often end up treating the symptoms of the problem (symptomatic solution). There is another way to</p>	<p>“We know what we need to do, but it’s difficult to deal with, so let’s put on a bandage instead.”</p>	<p><b>BREAKING ORGANISATIONAL GRIDLOCK</b></p> <p>The archetype provides a starting point for breaking gridlock by identifying chains of problem symptoms and solutions that form walls between functions, departments or divisions.</p> <p><u>Intervention:</u></p> <ul style="list-style-type: none"> <li>Problem symptoms are usually easier to recognise than the other elements of the structure.</li> <li>If the side-effect has become the problem, you may be dealing with an “Addiction” structure. Map all the “quick fixes” that appear to be keeping the problems under control or undermining the viability of the fundamental solution. Identify impact on others. What are the impacts of those “solutions” on other players in the company.</li> <li>Identify fundamental</li> </ul>	<p>2 Balancing Loops 1 outer Reinforcing Loop Delay</p>

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			<p>solve the problem and that is addressing the root cause of the problem. However often it may take time to reach the solution (see a dentist) or for the solution to take effect (improve dental hygiene), we resort to reverting to the symptomatic solutions (learning to pop the 'Panadol' faster ... and faster). Before we know it we are addicted to it, often spawning more problems down the road (creating "Turtles all the way")</p>		<p>solutions. Whether a solution is fundamental or symptomatic often depends on one's perspective. Explore the problem from differing perspectives in order to come to a more comprehensive understanding of what the fundamental solution may be.</p> <p><u>What it looks like if the system was working well:</u></p> <ul style="list-style-type: none"> <li>▪ "We take responsibility and spend the time and effort required to be effective even if it's difficult.</li> <li>▪ We are willing and able to invest the time and effort required to implement the fundamental solution.</li> </ul>	

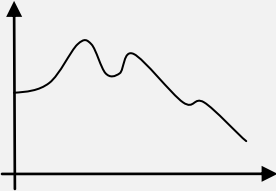
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7. Limits to Success or Growth	<p>Whatever we tried to do, we are not getting the successes we used to get. Somebody is not doing their job well. It feels like a pressure-cooker here.</p> <p>The same things that got us success in the past is not helping us to get as much success as before and seem to be making things worse!</p> <p>THE STORY OF UNANTICIPATED CONSTRAINTS</p>	<p>"Marketing and Service Department" / "Volunteers and Regulars" story</p> <ul style="list-style-type: none"> <li>Sales manager implements successful sales tactics to increase sale of computers</li> <li>However, as sales increase, the technicians are unable to handle the increase in computers sent for servicing and repairs</li> <li>The poor after sales service affects the company's reputation and sales drop</li> </ul> <p>(see Fig 7)</p> 	<p>Success or growth is levelling off or declining.</p> <p>The more effort we put in, the greater the result we get. Therefore we put in more efforts that got us the results. However, the same effort we put in creates a limit somewhere else in the system. Overtime this creates a limiting action that opposes the growth of the result and continues to erode the results by which time the limit (and the organisation) disappears by itself.</p>	<p>"We'll get bigger and better by continuing to do more of what we are doing now."</p>	<p><b>PLANNING</b> If we don't plan for limits we are planning for failure. By mapping out the growth engines and potential danger points in advance, we can anticipate future problems and eliminate them</p> <p><i>Intervention:</i></p> <ul style="list-style-type: none"> <li>The archetype is most helpful when it is used ahead of any problems, to see how the cumulative effects of continued success might lead to future problems</li> <li>Use the archetypes to explore questions such as "What kinds of pressures are building up in the organisation as a result of growth?"</li> <li>Look for ways to relieve pressures or remove limits before success blows over – may need to consider slowing down the growth to have resources long enough to overcome the</li> </ul>	<p>1 Reinforcing Loop 1 Balancing Loop</p>

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					limits  <i>What it looks like if the system was working well:</i> <ul style="list-style-type: none"> <li>“We can overcome limits by planning for them.”</li> <li>We identify, evaluate and plan for limits</li> </ul>	
8. Success to the Successful	<p>We keep getting sidelined!</p> <p>Why are some parts of the system becoming more successful while some other parts of the system are getting even more unsuccessful?</p> <p>When the success of the other person can help bring success for me.</p> <p>It is because the</p>	<p>“The supervisor and the new employee on MC” story (see Fig 3)</p> 	<p>Decisions are being made in allocating resources, so that one party is getting attention and resources at the expense of another party.</p> <p>Again this type of archetype tends to trigger when we bring two more persons together. It attempts to explain that sometimes the differences in success by different</p>	<p>“Because that person (or department) is more successful, they must be good and others are not.”</p>	<p><b>AVOIDING COMPETENCY TRAPS</b></p> <p>The archetype suggests that success or failure may be due more to initial conditions than intrinsic merits.</p> <p><i>Intervention:</i></p> <ul style="list-style-type: none"> <li>Look for reasons why the system was set up to create just “one winner” – investigate historical origins of competencies or identify potential competency traps, map internal view of “organisational” or “Market” success. What are the operating assumptions regarding the success.</li> </ul>	2 Reinforcing Loops

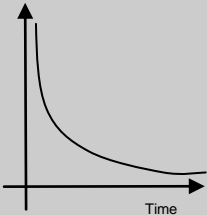
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	starting point is not the same!		individuals or units is not as much as inherent but rather the differences in one's starting position. Rather than continue to perpetuate the cycle and fester more 'un-success' (as a result of the sense of feeling as victims of the system) down the road, this archetype invites us to relook at the way we look at or define success or allocate resources.		<ul style="list-style-type: none"> <li>▪ Obtain external views of success. Ask "outsiders" for alternative strategies.</li> <li>▪ Assess effects on the innovative spirit. Is the current system excluding or limiting the spirit of success. Continually scan for gaps and areas of improvement.</li> <li>▪ Find ways to make teams collaborators rather than competitors</li> <li>▪ Identify goals or objectives that define success at a level higher than the individual players A and B</li> </ul> <p><i><u>What it looks like if the system was working well:</u></i></p> <ul style="list-style-type: none"> <li>▪ "We can create win-win situations for everyone, including the organisation as a whole"</li> <li>▪ Decisions are being made in allocating resources to give appropriate attention to all parties.</li> </ul>	

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9. Escalation	<p>There is no end in sight!</p> <p>When I define my success as where my position is relative to the other!</p>	<p>The "Joo Chiat" neighbours, TROY, Wars, ongoing war against terrorism</p> <ul style="list-style-type: none"> <li>• A dirties B's car and B feels threatened</li> <li>• B shines spotlight into A's bedroom to extract revenge for his inconvenience</li> <li>• A retaliates with stronger tactics to reclaim a stronger position over B</li> <li>• This degenerates into an unending cycle of tit-for-tat</li> </ul> <p>(see Fig 14)</p> 	<p>Each party sees the other's actions as a threat and responds in a way that threatens the other.</p> <p>This archetype sometimes trigger when we have two or more persons coming together. Each sees one's "survival" as depending on one's position (or success) relative to the other. Anytime this position is "upset" I can choose to take one of two actions; to take flight (which often may not be viable) or to fight (which is the (more "manly") thing to do otherwise we risk "losing face").</p>	<p>"We are under attack or being threatened and we need to take action to defend ourselves."</p>	<p><b>MANAGING COMPETITION</b></p> <p>One of the reasons we get caught in escalation dynamics may stem from our view of competition.</p> <p><u>Intervention:</u></p> <ul style="list-style-type: none"> <li>▪ To break an escalation structure ask the following questions: <ul style="list-style-type: none"> <li>○ What is the relative measure (price, quality, etc.) that pits one party against the other, and can you change it?</li> <li>○ What are the significant delays in the system that may distort the true nature of the threat? Quantify them.</li> <li>○ What are the deep-rooted assumptions that lie beneath the actions taken in response to the threat?</li> </ul> </li> <li>▪ Name the key players caught in the dynamic</li> <li>▪ Map what is being threatened. Are your (organisation's) actions</li> </ul>	2 Balancing Loops

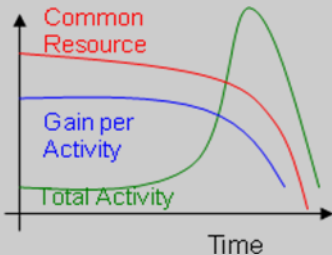
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			<p>Therefore we might choose to take actions, that would allow us to create results that bring each of our positions to even or better the other. Follow the arrows and you would see an infinity sign appear. This archetype never quite ends (perpetuates even after the originators have gone) and has a tendency to "suck in" everyone and/or everything around them.</p>		<p>addressing the real threat or simply serving preserving values that may no longer be relevant?</p> <ul style="list-style-type: none"> <li>▪ Identify a larger goal encompassing both parties' goals.</li> <li>▪ Avoid future "Escalation" traps by creating a system of collaborative competition. <ul style="list-style-type: none"> <li>▪ Avoid starting an escalation archetype – once we start we never end;</li> <li>▪ Be aggressively peaceful</li> </ul> </li> </ul> <p><i><u>What it looks like if the system was working well:</u></i></p> <ul style="list-style-type: none"> <li>▪ "There is always a way for us to work this out together"</li> <li>▪ We work together and communicate openly for our collective success.</li> </ul>	

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10. Growth and Under-investment	<p>It is not growing according to demand!</p> <p>What would it take to convince the organisation to invest! I am at a dead end.</p>	<p>Decrease in demand used as a reason not to invest in capacity rather than as a result of policies or delays in the system that limits performance (demand). (see Fig 9)</p> 	We neglect or are unable to invest in the capacity to succeed.	“We don’t need to invest in capacity; we can get through the present crunch by applying greater effort. We can invest down the line.”	<p><b>CAPITAL PLANNING</b></p> <p>If demand outstrips capacity, performance can suffer and in turn, hurt demand. If this dynamic is not recognised, the decrease in demand can then be used as a reason not to invest in the needed capacity. This archetype can be used to ensure that investment decisions are viewed from a fresh perspective, rather than relying on past decisions.</p> <p><u>Intervention:</u></p> <ul style="list-style-type: none"> <li>▪ Dig into the assumptions that drive capacity investment decisions. Avoid self-fulfilling prophecies. Challenge the assumptions that drive capacity investment decisions: <ul style="list-style-type: none"> <li>○ If past performance dominates as a consideration, try to balance that perspective with a fresh look at demand and the factors that</li> </ul> </li> </ul>	<p>1 Reinforcing Loops</p> <p>2 Balancing Loops</p> <p>2 Delays</p>

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					<p>drive its growth. Fix investment decisions on external signals, not on standards derived from past performance</p> <ul style="list-style-type: none"> <li>○ If there is a potential for growth, build capacity in anticipation of future demand</li> <li>▪ Identify interlocked behaviour between capacity investment and performance measures</li> <li>▪ Identify delays between performance falls and when additional capacity comes on-line (particularly the perceptual delays regarding the need to invest. Quantify and minimise acquisition delays</li> <li>▪ Identify related capacity shortfalls. Are other parts of the system too sluggish to benefit from added capacity?</li> <li>▪ Search for diverse investment inputs. Seek new perspectives on products, services and</li> </ul>	

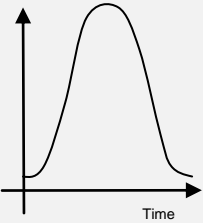
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					customer requirements  <i>What it looks like if the system was working well:</i> <ul style="list-style-type: none"> <li>“Investing in the future is the key to success”</li> <li>We take actions to invest in future capacity</li> </ul>	
11. Drifting Goals	We have no time for visions – we need to get on with the current reality – lower the vision!  Why are the goals drifting? Why do the goals not stay where it was set?	“The story of NASA” (see Fig 10)  	We have lowered our standards to close the gap between the actual and desired performance.  We notice there is a gap between the goal and the actual. There are two ways we might take to close the gap. One is we truly care for the goal and therefore we take corrective actions to bring our actual state closer to the	“Our current level of activity is acceptable, even though it is below standard.”	<b>STAYING FOCUSED ON VISION</b> Various pressures can often take our attention away from what we are trying to achieve. Used as a diagnostic tool, it can target drifting performance areas and help organisations obtain their visions.  <i>Intervention:</i> <ul style="list-style-type: none"> <li>Look for drifting performance figures. This is a sign that the archetype was at work and that real corrective actions are not being taken</li> <li>Look for goals that conflict with the stated goal</li> <li>Identify what are the ways</li> </ul>	2 Balancing Loops 1 Delay

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			<p>goal. The other way is to allow pressures to lower the goal to take effect and over time we do not think there is any difference between the goal (since the goal itself may have eroded, over time) and the actual. As such no further action takes place.</p>		<p>we are taking (standard procedures) to close the gap. Are these inadvertently contributing to the goal slippage</p> <ul style="list-style-type: none"> <li>▪ Examine the past history of the goal. Have these been lowered over time?</li> <li>▪ Anchor the goal to an external reference</li> <li>▪ Clarify a compelling vision that will involve everyone</li> <li>▪ Create a clear transition plan. Establish what it will take to achieve the vision and establish a realistic timeline.</li> </ul> <p><i><u>What it looks like if the system was working well:</u></i></p> <ul style="list-style-type: none"> <li>▪ "We know where we are going and what it will take to get there."</li> <li>▪ We monitor, evaluate and adjust performance standards in order to achieve our goals.</li> </ul>	

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12. Tragedy of the Commons	How come I am getting less now?  How come I feel I am losing control fast?	<p>"Diminishing benefits (blue line) from overfishing (red line) leading to decline of total activity (green line)" / "overuse of expressways" story (see Fig 13)</p> 	Everyone is using a common resource that nobody owns. Overall usage goes up, but returns to the individuals go down. Eventually, the resources may be destroyed.	"The resources belong to me." Or "This resource is so vast that it'll never run out/collapse"	<p><b>RESOURCE ALLOCATION</b></p> <p>The complex interaction of individual actions produces an undesirable collective result, such as the depletion of a common resource. The archetype can be used to help connect the long-term effects of individual actions to the collective outcome, and to develop measures for managing the common resource more effectively</p> <p><i>Intervention:</i></p> <ul style="list-style-type: none"> <li>Effective solutions for this archetype scenario never lie at the individual level. Also this archetype is the result of several other archetypes gone unnoticed or unattended to.</li> <li>Ask questions such as: <ul style="list-style-type: none"> <li>"What are the incentives for individuals to persist in their actions?" Identify the "commons" that is being shared?</li> <li>Determine incentives</li> </ul> </li> </ul>	2 Reinforcing Loops 2 Balancing Loops 1 Delay

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					<p>that are driving individuals use the resource. Determine time frame for reaping benefits</p> <ul style="list-style-type: none"> <li>○ Also determine the time frame for experiencing cumulative effects of the collective action. "Can the long-term collective loss be made more real and immediate to the individual actions?" Then find ways to reconcile long-term cumulative consequences. Make the long-term effects more present. How can the long-term loss or degradation of the commons be more real and present to the individual user? A governing body that is chartered with the sustainability of the resource can help.</li> </ul>	

COLUMN A	COLUMN B	COLUMN C	COLUMN D	COLUMN E	COLUMN F	COLUMN G
Classic Systems Archetypes	EVENT (commonly used phrases)	PATTERN OVER TIME (what we experience as a movie)	DESCRIPTION OF THE ARCHETYPE (the storyline <sup>1</sup> )	MENTAL MODELS (our world views)	STRATEGIC INTERVENTION	Description using feedback and delays
					<ul style="list-style-type: none"> <li>Re-evaluate the nature of the commons. Are there other resources or alternatives that can be used to remove the constraint upon the commons?</li> <li>Limit access to resources. Determine a central focal point – a shared vision, a measurement system, or final arbiter – that allocates the resource based on the needs of the whole system.</li> </ul> <p><i>What it looks like if the system was working well:</i></p> <ul style="list-style-type: none"> <li>"This common resource belongs to everyone."</li> <li>Everyone collectively agrees on overall use of a common resource.</li> </ul>	
13. Accidental Adversaries	What just happened?	"Best of friends are now the worst of enemies" stories (see Fig 5)	Each part is doing something unintentionally that is undermining the other party's	"We must please everybody all of the time"	<p><b>UNDERSTANDING WHY RELATIONSHIPS SOUR</b></p> <p>In any relationship each party has its own purpose. Some of the things you do contribute to achieving my objectives and</p>	<p>1 outer and 1 inner Reinforcing loop. each interlocking the other.</p> <p>2 Balancing loops</p>

COLUMN A	COLUMN B	COLUMN C	COLUMN D	COLUMN E	COLUMN F	COLUMN G
Classic Systems Archetypes	EVENT (commonly used phrases)	PATTERN OVER TIME (what we experience as a movie)	DESCRIPTION OF THE ARCHETYPE (the storyline <sup>1</sup> )	MENTAL MODELS (our world views)	STRATEGIC INTERVENTION	Description using feedback and delays
			<p>success.</p> <p>Again this another type of archetype that tends to trigger when we bring two more persons together.</p> <p>During the good times, the partners act in ways that contribute to each other's well-being. However, when faced with challenges to its success, A takes actions that serve its own interests but also have negative effects on its partner. B responds by taking actions that protect its own interests at A's expense. Both sides become locked in a vicious</p>		<p>others get in my way. Often the "getting in the way" occurs when you inadvertently make my life more difficult while pursuing your own goals. In response, I might take action to ensure my continued success. These "safeguards" end up making your life more difficult. You then act to protect your interests, unintentionally obstructing me in turn. I find evidence to blame you for the problems in our relationship, thus absolving myself of responsibility and limiting the possibility I will help solve the problems. You in turn become defensive, finding ways to blame me. I then classify you as "bad" or "untrustworthy"; you classify me as well. We eventually become enemies.</p> <p><u>Intervention:</u></p> <ul style="list-style-type: none"> <li>▪ Strengthen the healthy relationship loop <ul style="list-style-type: none"> <li>○ Avoid acting solely in self-serving ways</li> </ul> </li> </ul>	<p>Possibly up to four delay points</p>

COLUMN A	COLUMN B	COLUMN C	COLUMN D	COLUMN E	COLUMN F	COLUMN G
Classic Systems Archetypes	EVENT (commonly used phrases)	PATTERN OVER TIME (what we experience as a movie)	DESCRIPTION OF THE ARCHETYPE (the storyline <sup>1</sup> )	MENTAL MODELS (our world views)	STRATEGIC INTERVENTION	Description using feedback and delays
			reinforcing dynamic that puts them against each other.		<ul style="list-style-type: none"> <li>○ Recognise that your partner will do things for him- or herself from time to time, and learn to observe the consequences without assuming bad intent</li> <li>○ Form relationships with like-minded people</li> <li>○ Get insight into the systemic structure!</li> <li>○ Use dialogue to focus on team-centred behaviour</li> <li>▪ Weaken the dysfunctional relationship loop <ul style="list-style-type: none"> <li>○ Avoid the temptation to blame the other person when something goes wrong – seek to clarify the real reasons for his or her actions</li> <li>○ Find ways to handle stress and frustration</li> <li>○ Avoid attempting to sort through “who started it”</li> <li>○ Communicate effectively when you are dissatisfied with</li> </ul> </li> </ul>	

COLUMN A	COLUMN B	COLUMN C	COLUMN D	COLUMN E	COLUMN F	COLUMN G
Classic Systems Archetypes	EVENT (commonly used phrases)	PATTERN OVER TIME (what we experience as a movie)	DESCRIPTION OF THE ARCHETYPE (the storyline <sup>1</sup> )	MENTAL MODELS (our world views)	STRATEGIC INTERVENTION	Description using feedback and delays
					<p>your partner's performance</p> <ul style="list-style-type: none"> <li>○ Schedule meetings to talk openly.</li> </ul> <p><i>What it looks like if the system was working well:</i></p> <ul style="list-style-type: none"> <li>▪ "We can work this out, so that everybody wins."</li> <li>▪ All parties pay attention to their own behaviours</li> </ul>	

[End of notes)

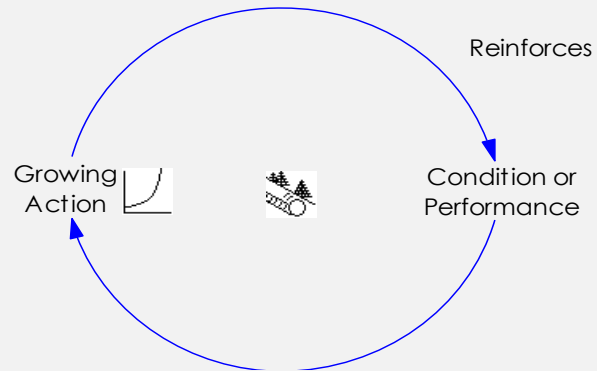
## DRAWING OF THE ARCHETYPES

CONNECTIONS BETWEEN THE ARCHETYPES: HERE'S ONE WAY – CAN YOU FIGURE YOUR OWN SET OF ARCHETYPES?

### I AM MOST CONCERNED ABOUT GROWTH ...

#### REINFORCING LOOP (vicious or virtual spirals)

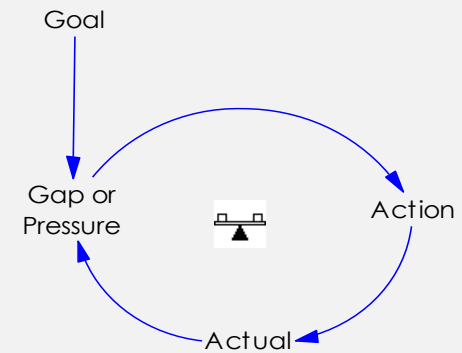
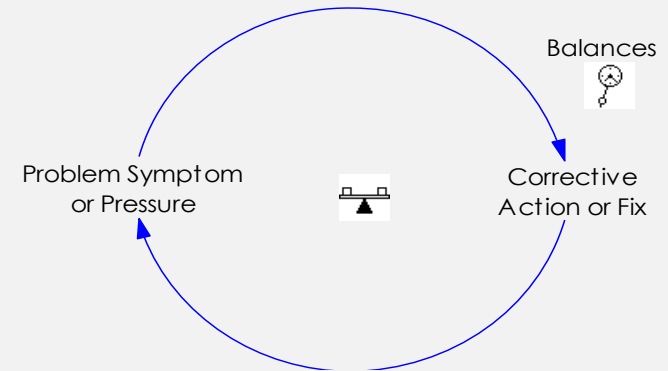
Figure 1:



### I AM MOST CONCERNED ABOUT FIXING PROBLEMS ....

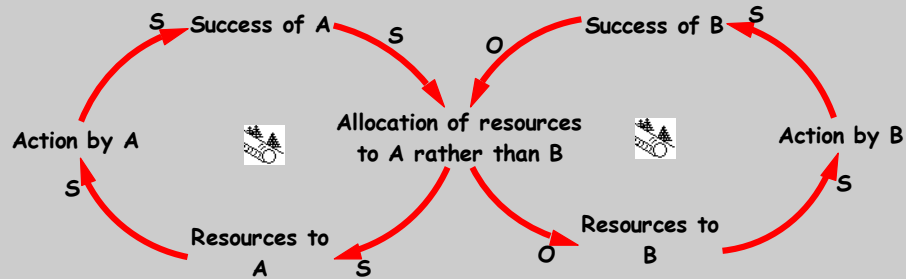
#### BALANCING LOOP

Figure 2:



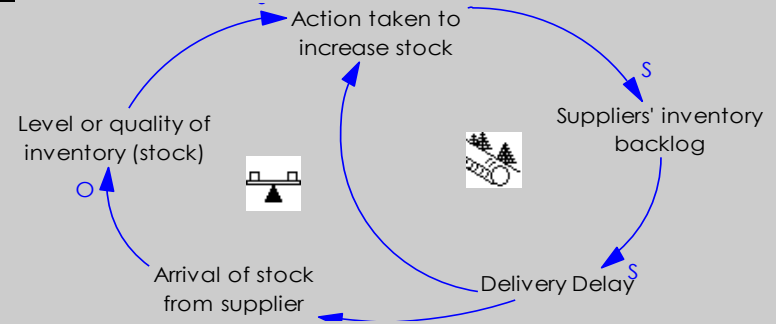
**I AM MOST CONCERNED ABOUT GROWTH ...**

But my growth seems to lead to your decline: **Success to the Successful**  
 Figure 3:

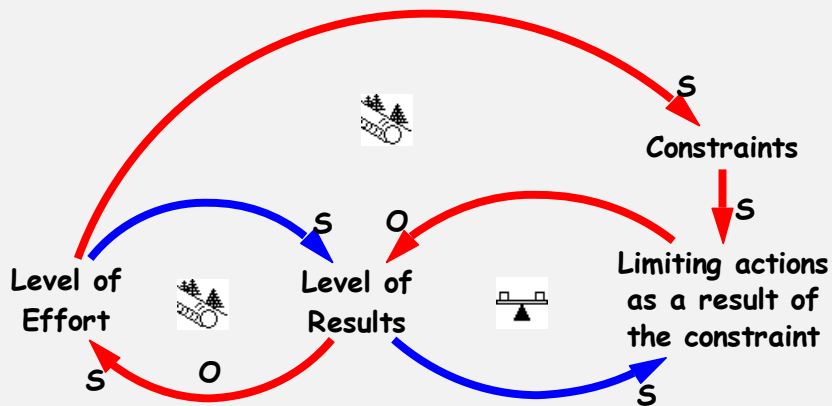


**I AM MOST CONCERNED ABOUT FIXING PROBLEMS ....**

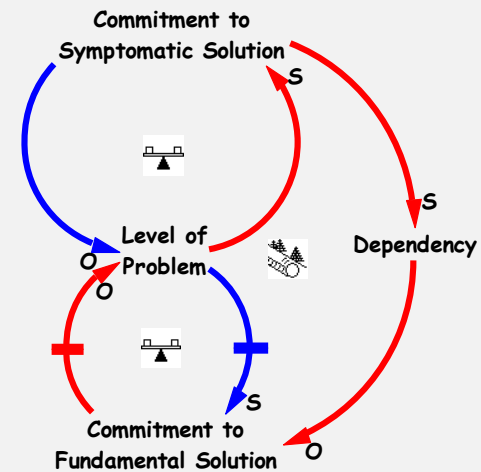
I could not wait much longer so I keep fixing the problem even before I can see the result **Balancing Loop with Delay**  
 Figure 4:



But nothing grows forever: **Limits to Growth**  
 Figure 7:



.... Because I am not getting at the real underlying cause: **Shifting the Burden**  
 Figure 8:



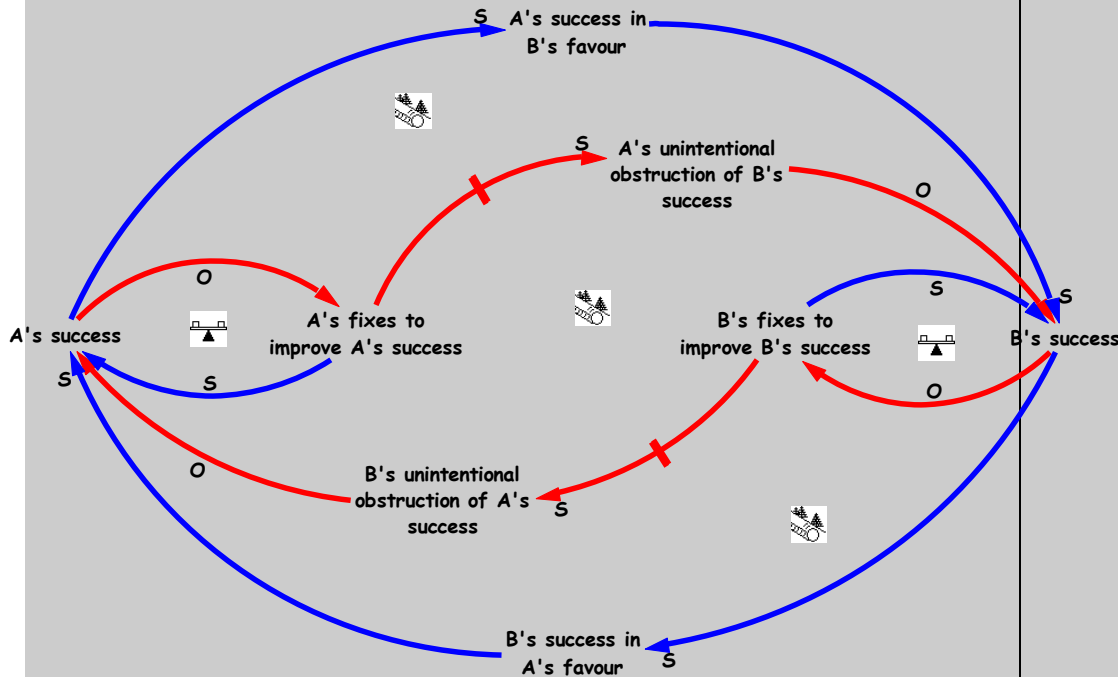
I form a partnership for growth, but end feeling betrayed: **Accidental**

But my fix comes back to haunt me: **Fixes that Fail**

**I AM MOST CONCERNED ABOUT GROWTH ...**

**Adversaries**

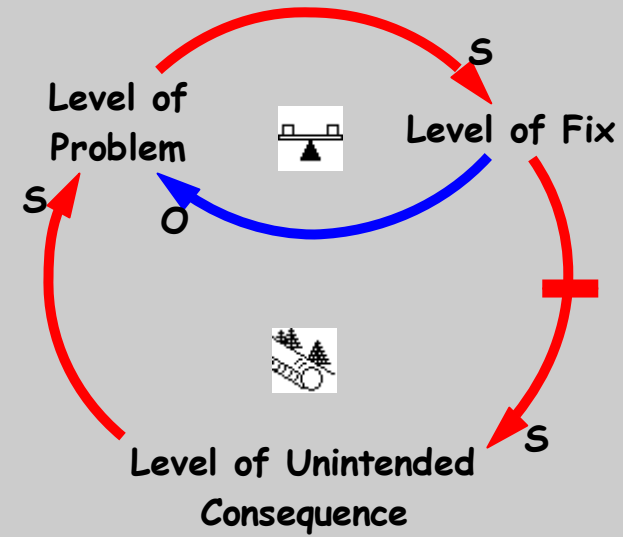
Figure 5:



My capacity is my limit: therefore my capacity isn't large enough: **Growth and**

**I AM MOST CONCERNED ABOUT FIXING PROBLEMS ....**

Figure 6:

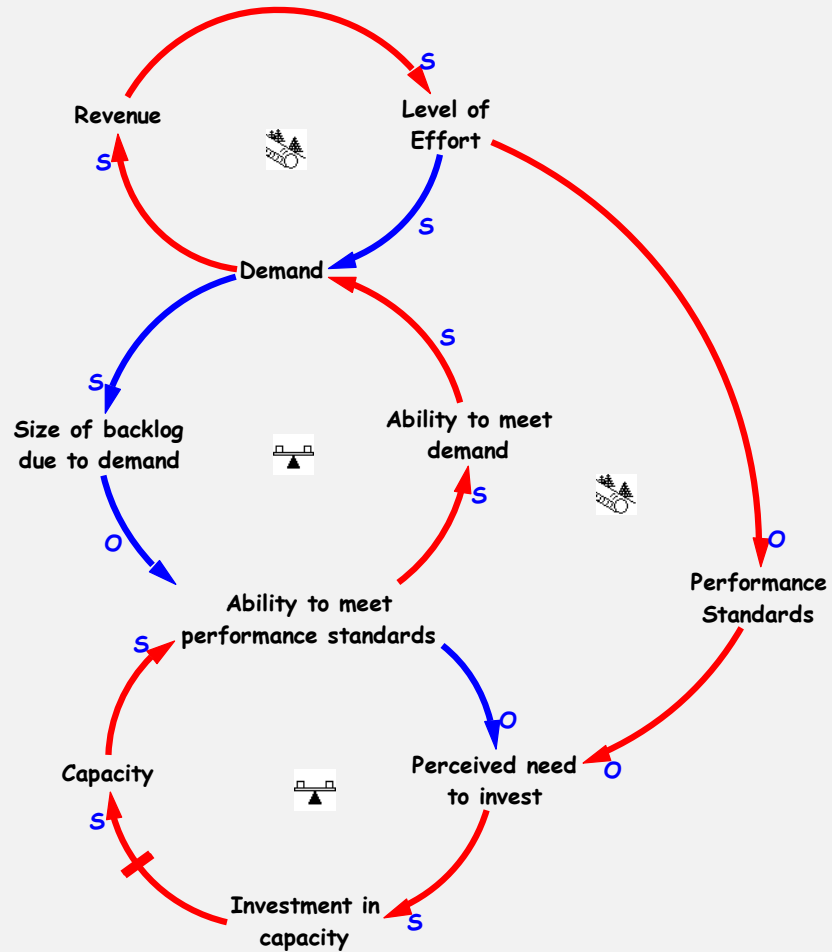


Or While waiting for my fix to take hold, to relive the tension, I become satisfied

**I AM MOST CONCERNED ABOUT GROWTH ...**

**Underinvestment (Fixed Standards)**

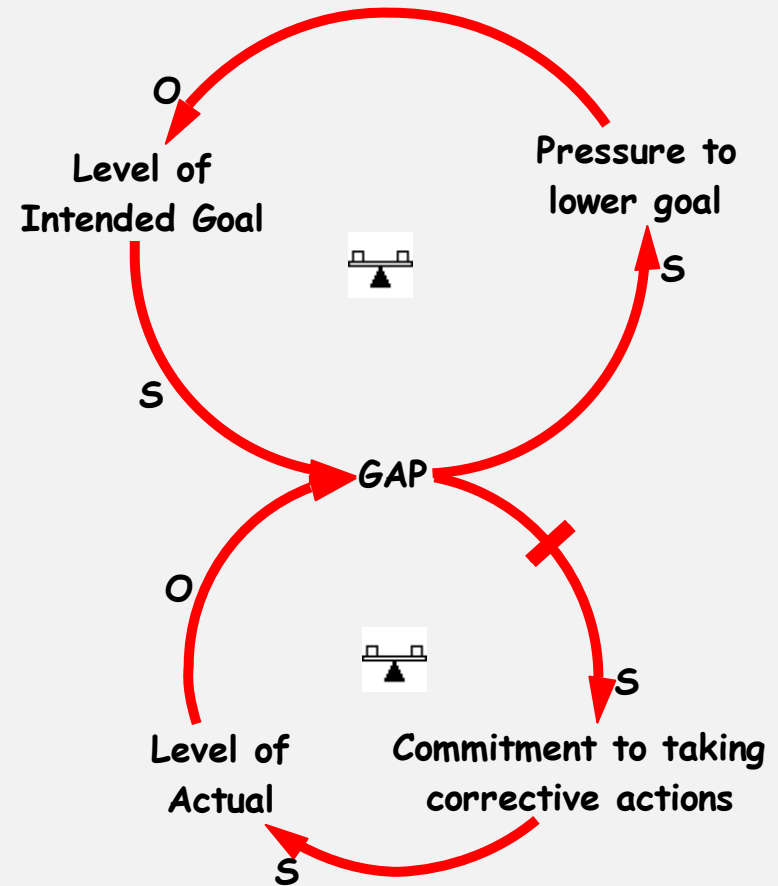
Figure 9:



**I AM MOST CONCERNED ABOUT FIXING PROBLEMS ....**

with less: **Eroding / Drifting Goals**

Figure 10:



**I AM MOST CONCERNED ABOUT GROWTH ...**

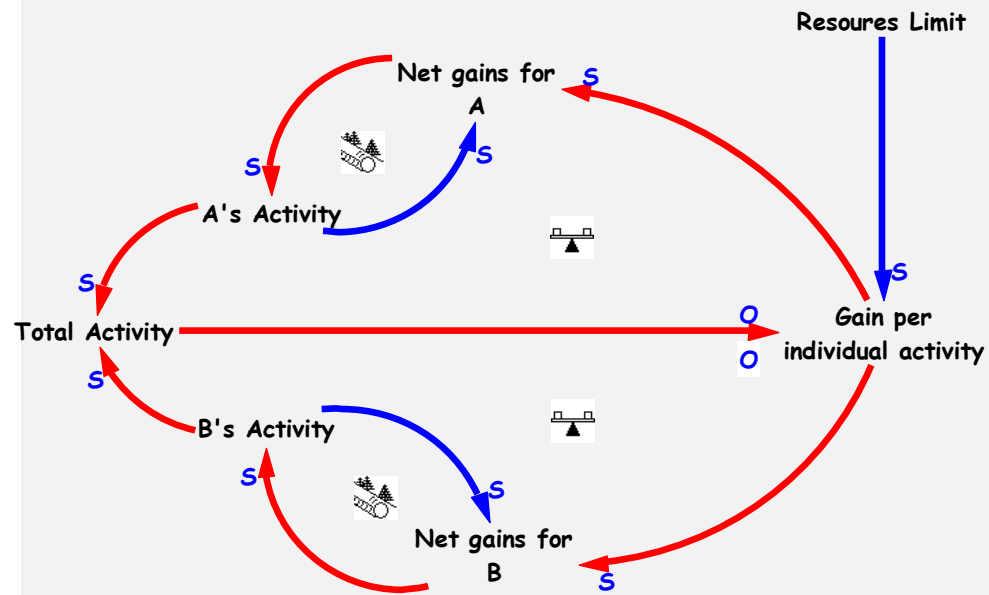
I have more than one limit, and can't address all of them equally .... :

**Attractiveness Principle**

Figure 11: (pending)

... so if we're all up against the same limit: **Tragedy of the Commons**

Figure 13:



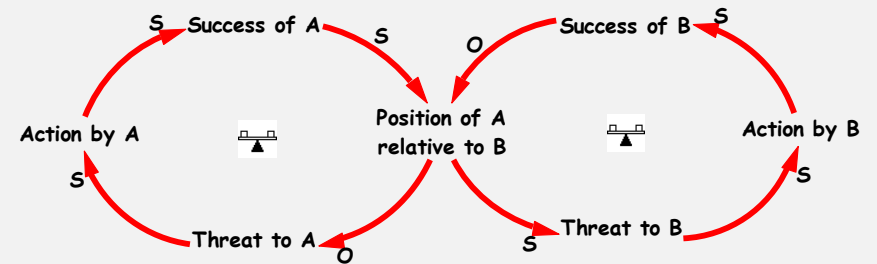
**I AM MOST CONCERNED ABOUT FIXING PROBLEMS ....**

... but there is a temptation to let standards slop instead: **Growth and Underinvestment (Drifting Standards)**

Figure 12: (see Figure 10 above)

However my fix is your nightmare: **Escalation**

Figure 14:



**My Notes:**

## APPLYING AN ARCHETYPE

(Fieldbook, pg 121)

- Applying the archetypes prompts us to fill in gaps in our thinking and telling more complete stories. By showing feedback (reinforcing and balancing) relationships, the templates visually portray the interconnected nature of our world.
- Archetypes are a natural vehicle for clarifying and testing mental models about the system.
- They are powerful tools for coping with astonishing number of details that frequently overwhelm beginning systems thinkers.
- As you work with archetypes, and they become second nature, they will become part of your diagnostic repertoire and be able to talk about systemic issues at a surprisingly sophisticated level.

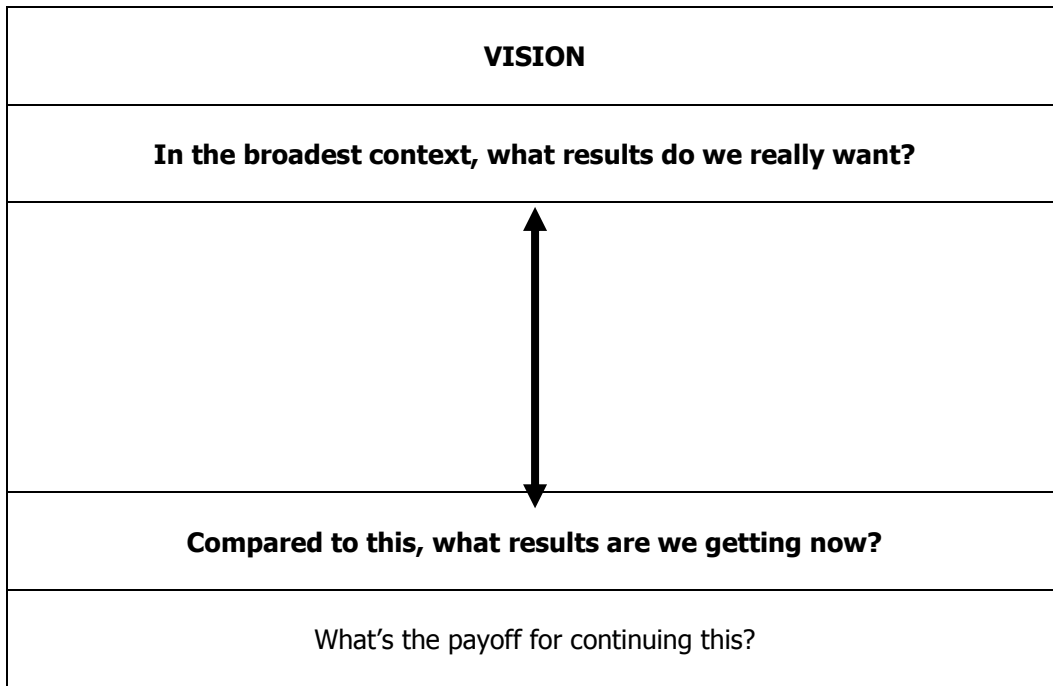
Steps:

- Choosing an archetype. You start by making guesses. You may have to trust your intuition at first. Some people worry that they will apply the “wrong” archetype, misdiagnose the problem and make things worse. In practice, this doesn’t happen, because by definition, people initially pick archetypes that hold interest for them. The fact that they are interested in one particular systems story is a clue that it probably applies, at least enough to start there.
- Keep alert for the archetype stories which seem to run analogously to your own story. Generalizing your story – omit details to simplify it and looking at it from a more distant perspective – can help you place it.
- One good clue is finding a pattern of performance that seems to sum up the behaviour of the archetype
- Add your elements to the story. Start with the core loop that seems to drive the behaviour of the system. This loop often closely matches the pattern of behaviour over time, and often depict what people in the system are paying the most attention to.
- Work around the structure. About each element, ask: What’s causing changes in this element? What influences it to vary? Or if you get stuck, try working forward: What is the effect when this variable changes? What other elements must change? If you still get stuck, go back to the story. Are there key elements which you have left out? Where do they link to the archetypes?
- It’s particularly valuable to include any elements which are at least partly under your influence: if you can change the relationship of your organisation with the customers, seeing that element as part of a vicious cycle may lead to insights about how you can influence the whole system.
- When you have applied an archetype, check the patterns of behaviour you would expect to see. Does it match the patterns you have seen in your own history?

## ENRICHING ARCHETYPES TO GENERATE CHANGE (GOING DEEPER)

(Fieldbook, 164)

- This is often the point where people start to see things coming together.
- Once you have settled upon a promising archetype, it still remains to convert your understanding to strategy. Where do you intervene? How do you redesign or reengineer the system? How do you move from your diagnosis to a prescription? Moreover, if you can implement your strategy so that your understanding (and ability to understand) continues to increase, then you don't have to worry about getting it right at the start.
- **Looking for mental models:** An archetype is nothing more than a mental model made visible. The team starts to recognise how both viewpoints are true; they each see different aspects of the same interrelationships.
- Adding thought bubbles: Look at the arrows between elements in your system diagram. Many arrows represent choices people are making. Add a "thought bubble", like a bubble in a cartoon, to indicate the thinking which leads to this choice instead of others. Questions to help bring out mental models:
  - Assume for a moment that *all* the people involved are acting reasonably and responsibly, from their point of view. What might have they been thinking that made these actions seem reasonable and responsible to them?
  - What might the diagram look like from the manager's point of view? From the customers? From the commander?
  - What mental models do you carry that might affect how you see this diagram?
  - What mental models prevent you from breaking out of this structure?
- **System redesign:** You know you have found a high-leverage intervention when you can see long-term pattern of behaviour shift qualitatively in a system – stagnation gives way to growth, or oscillations dampen dramatically. This kind of breakthrough happens most readily when you can make alterations in the structure you have mapped out. You either:
  - Add a loop = designing and implementing new process, monitoring information in a new way or establishing new policies
  - Breaking a link = eliminating or weakening undesirable consequences of your actions or ceasing strategies which are counterproductive in the long run
- **Prototyping your implementation:** Before committing yourself to any large-scale actions, run several small relatively self-contained experiments. With a bit of ingenuity, or chances are your archetype structure already contains clues to appropriate early indicators of success. If you are willing to take action and reflect on your actions, you will be able to act consistently and make genuine improvements.

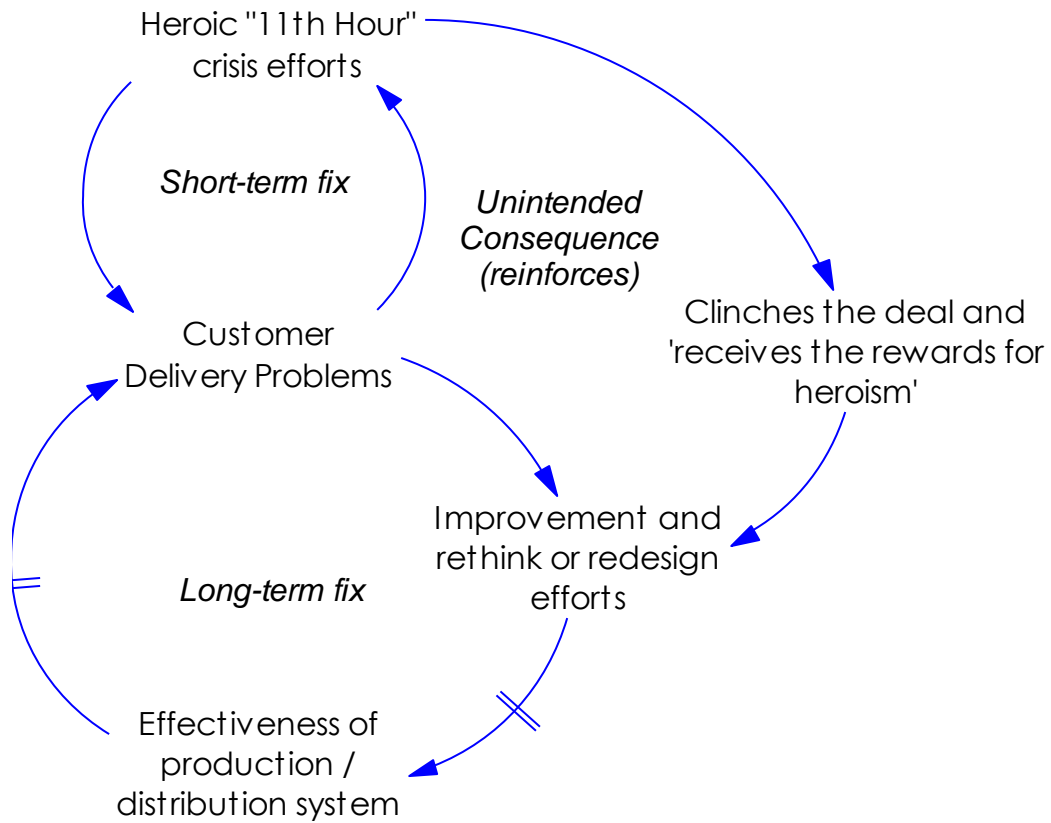


### **MENTAL MODELS**

**Assume that everyone in the system acting reasonably and responsibly from either point of view**

- What thinking leads to the choices being made?
- What beliefs?
- What assumptions?
- What rationale?
- What thinking lets the system persist as it is?
- Where is there leverage?

## Shifting the Burden The Pepsi Story

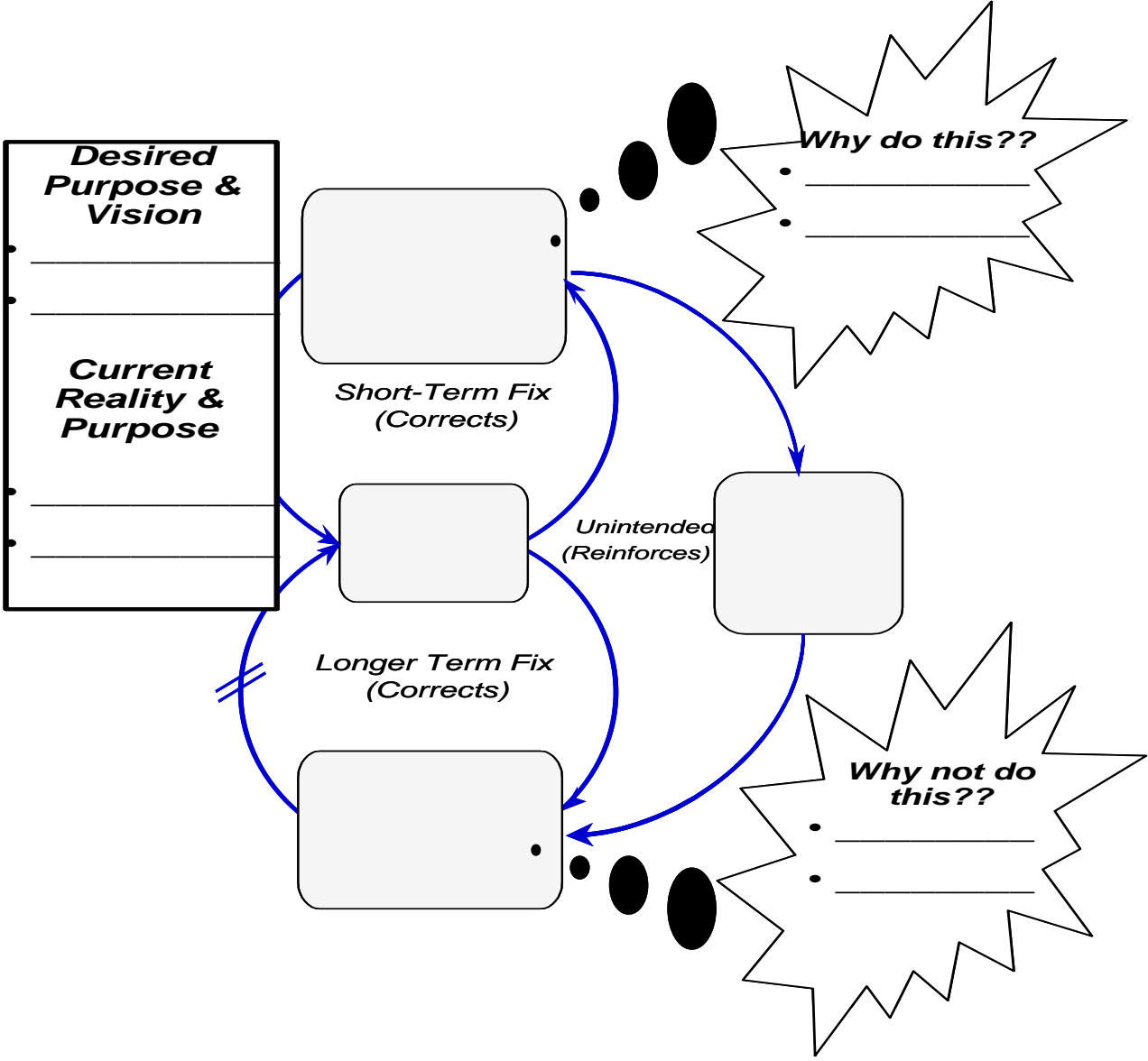


<b>VISION</b>
<b>What we really want is for all this to run smoothly, delighting customers and easier on the people?</b>
<div style="display: flex; align-items: center; justify-content: center;"> <div style="border-left: 1px solid black; border-right: 1px solid black; height: 100px; margin: 0 10px;"></div> <div style="font-size: 2em; margin: 0 10px;">↑ ↓</div> <div style="border-left: 1px solid black; border-right: 1px solid black; height: 100px; margin: 0 10px;"></div> </div>
<b>Today we are consumed in firefighting and crisis management. Customers are angry. It's not fun! But, it justifies our existence</b>

### MENTAL MODELS

- Success requires hustle! Commitment! Whatever it takes to get us out of tight spots!
- Don't both me unless it's important! I'm working on real crises!

**Shifting the Burden  
Template**



# A KEY TO UNLOCKING COMPLEXITY

A theory as developed by Sheila Damodaran

A Clue to Solve Systemic Issues Systematically&#8220;By seeing wholes, we learn to foster health  
; --- Peter Senge

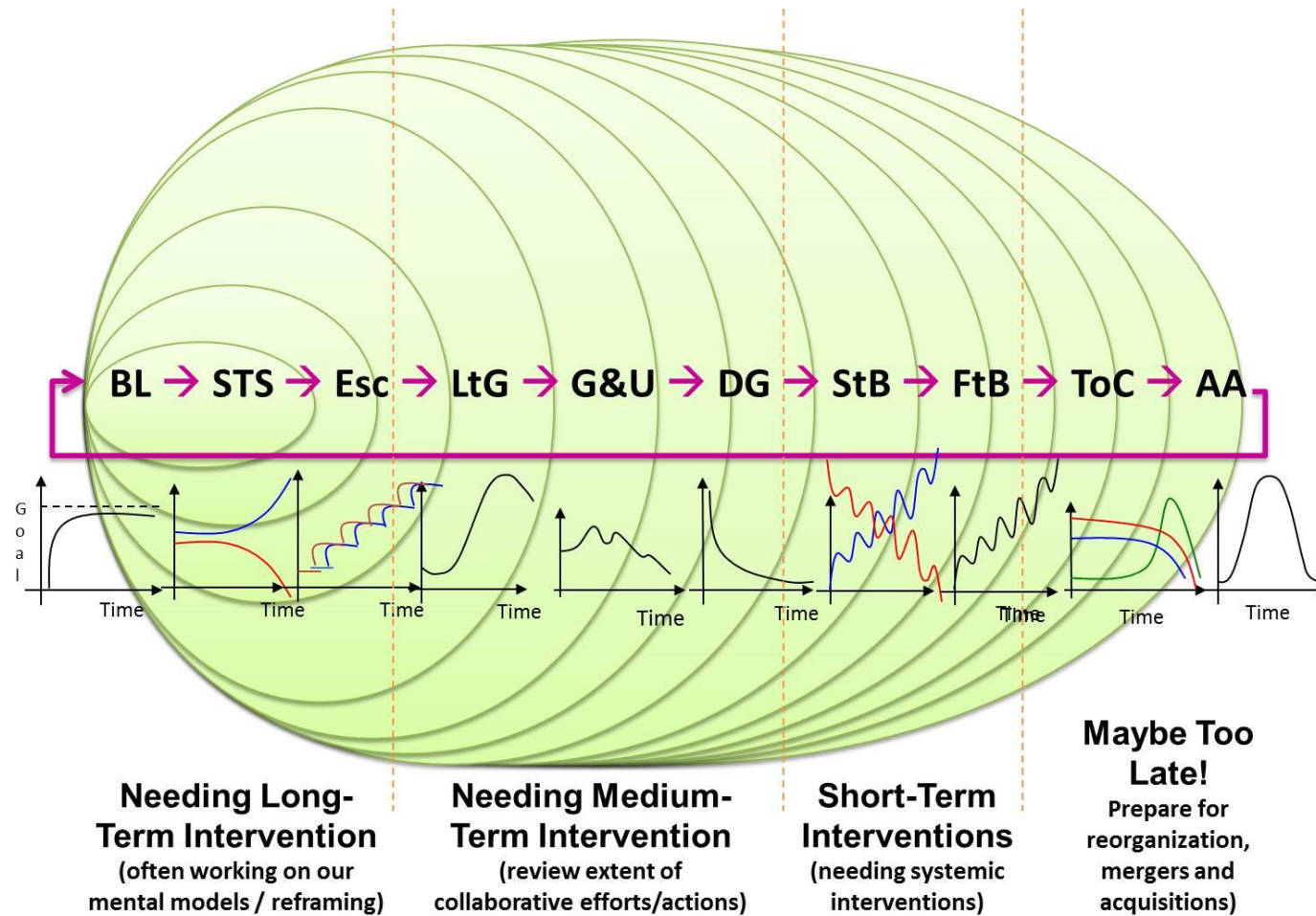


Figure 1: The Onion [More in Level 4 Workshop]

## WHY DOES THIS HAPPEN? (MENTAL MODELS):

DEEP-SEATED PERSPECTIVE	THE FLIP-SIDE	WHERE DID IT COME FROM?	HOW IT LOOKS LIKE IN REAL LIFE	WHAT THE CONVERSATIONS WOULD LOOK LIKE	THE WAY FORWARD?
<p>"Unless something moves I would not react"</p>	<p>The system designs itself to keep moving, so that no one would 'stop' Is afraid to stop or to step-back to reflect because one is afraid one might not be able to start again.</p>	<p>Military Training – "shoot on sight!"</p>	<ul style="list-style-type: none"> <li>✚ Use of KPIs in organizations</li> <li>✚ The need for managers within the system to ensure the team is on its toes</li> <li>✚ Use of competition within the system as a way to 'move things' – set up the team to compete with each other</li> <li>✚ Deference to authority – works for the boss and his/her approval – ignoring the team (or giving face-value to team-work)</li> <li>✚ Stops looking at the system</li> <li>✚ Resistant to change and then becoming overzealous to change</li> <li>✚ Unless the boss says so, I was not going to do it.</li> </ul>	<p>'What gets measured gets done!' Examples of setting up competition (unintentionally); "Good File notes vs Excellent File notes" Receiving criticisms I need to lobby my position and command the resources I need</p>	<ul style="list-style-type: none"> <li>✚ "See the mental-model"</li> <li>✚ Recognize the <b>Escalation and Drifting Goals archetypes</b> at play and having conversations to understand the short, medium and long-term consequences of the structure</li> </ul>
<p>"Unless I tell him how bad he (or she) has been, he is not man (or woman or adult enough) to change / improve!"</p>	<p>Sense that failure and rejection is high The feeling that we are not good enough Things are never going to get better It feels we are always running away from things we do not like or that it feels like an endless pit from</p>	<p>The act of giving rewards Stories of Santa Claus ("he knows if you are naughty or nice") at Christmas or that 'Ang Pows' are given out once a year! And the need for one to earn for it before one gets it Parent-child structure within</p>	<ul style="list-style-type: none"> <li>✚ School ranking and grading systems</li> <li>✚ Staff Appraisal Forms</li> <li>✚ Performance Management Systems</li> <li>✚ The need to have a 'leader or manager' before any job or task gets done (along with job scope definitions, job roles, action plans, incentive and disincentive plans, etc.)</li> <li>✚ Deference to persons in authority by virtue of position or status (education, wealth, influence,</li> </ul>	<p>"There is only one right view and that is mine" (the thoughts we don't say aloud) "What's in it for me?" "I like to see you a little bit more ruder" "Leaders need to walk the talk" "We need leaders who are role-models" "The good guys into one box and the bad guys into the other and we</p>	<ul style="list-style-type: none"> <li>✚ "See the mental-model"</li> <li>✚ Recognize that <b>Balancing Loops and Success to the Successful archetypes</b> are at play and having conversations to understand the short, medium and long-term consequences of the structure on the organization. What is</li> </ul>

DEEP-SEATED PERSPECTIVE	THE FLIP-SIDE	WHERE DID IT COME FROM?	HOW IT LOOKS LIKE IN REAL LIFE	WHAT THE CONVERSATIONS WOULD LOOK LIKE	THE WAY FORWARD?
	<p>which we are trying to climb out We begin to set rules (or regard others) as a way to show we are one up on the other, before someone can say we are 'one-down'.</p>	<p>families Belief in conditioning behaviour through rewards and punishment (military) Belief in correcting behaviour by instilling discipline (military) Parent-Child structure in familial relations</p>	<p>etc.)</p> <ul style="list-style-type: none"> <li>✚ The need for managers that are 'superheroes' or charismatic or the tough taskmaster. A 'soft' leader (or is not rude enough) is perceived as unsuited for the position</li> <li>✚ The perception of the need for rewards and punishment systems (motivators) to get the job done</li> <li>✚ The perception of the need to seek 'feedback' or calibrations so as 'to report' how well one has done!</li> <li>✚ Avoiding conflicts</li> <li>✚ Standardization</li> <li>✚ Not waver from the words of the contract or the law (or the due process)</li> <li>✚ Needing to be one of the 'same' kind (same school, squad, city, country)</li> <li>✚ People keep work to themselves – to keep the control and fear of losing they power to someone else</li> </ul>	<p>need to turn the bad guys into the good ones' "I need to seek thrills" in order to feel excited, otherwise my self-esteem continue to remain low "It is ok to work hard (and destroy the earth in the process) as long as my family and I wins or does not lose" "Management has the final say (but secretly I do not think they would do anything about it (and I lose my way)." "Managers should set the direction (and it should be my way)" "No one is indispensable"</p>	<p>the price we are paying? ✚ Creating an experience of working as part of a great team without the involvement of the leader or manager. And learning to figure things (the way to go forward, the project outcomes) out themselves and without the appointment of a leader / facilitator or resources to make that happen for them.</p>

Thoughts of Sheila (Work-in-Progress)  
January 1, 2006

## KEY SUCCESS LOOP OF MINISTRY OF LOCAL GOVERNMENT, BOTSWANA DEPARTMENT OF SOCIAL SERVICES: DESTITUTION (NEGATIVE STORY)

[Best printed on A3 sheets – more here: <http://uk.groups.yahoo.com/group/BotswanaLO/message/47>]



## PRACTICE 1: CASE STUDIES ... A PRACTICE AT IDENTIFYING ARCHETYPES

### WHAT ARCHETYPE IS IT ANYWAY?

Storyline (or POT)	What I think the archetype might be	Where do you intervene?
<p>1. "We need men on the ground. So let's see if we can find ways to cut the time they take to learn things in the classroom ... besides they really learn more on the job. That way, we do not keep them too long in the classroom and that way deploy them on the ground quickly." However, after some time .... "I / he made a mistake and when my supervisor learns about it ... he chides us (after all is a young punk!) and that does really feel good at all ... maybe I have made a mistake of wanting to do this profession ..." .... A few days later when the supervisor calls for duty ... "I tell him that I am busy ... that I have a wedding to attend." .... Except after some time ... "I do not feel confident doing the job. I better quit!"</p>		
<p>2. The intakes are declining. So maybe, students are not finding the subjects we offer as interesting. So let's introduce a new subject or module ... and hopefully with publicity the intake increases. Actually the intakes do increase ... at first. So the next time intakes decline, we should just do more of the same ... introduce new programmes, novelty. However, over time, intake declines ... again. The lecturers on the other hand (this is a separate dialogue) ... our workload is increasing ... we need to learn new subjects and it takes time. Meanwhile, the time left to build up rapport with the students is declining ... Oh I wish, the students would stop complaining ... can't they see how much work I put in ... into this ... my health and my personal time is affected ...</p>		
<p>3. The more we allocate resources to school promotions, the easier it is to recruit students. That's the way to go!</p>		
<p>4. "This file is urgent! Minister wants to see a reply at the end of the day. Get on to it quickly!" So I set aside what I am doing and focus on the 'urgent file'. Except, when I come back to it a few days later, my deadline to complete the file I was first working on is</p>		

Storyline (or POT)	What I think the archetype might be	Where do you intervene?
<p>drawing nearer. I scramble to finish the work as best as I can but some stones are left unturned. But I have little choice and hope for the best. A few weeks later ... I receive a memo on that file ... "treat this file as urgent. The complainant is unhappy about the outcome and has written to the Minister demanding an explanation!"</p>		
<p>5. We need to be the best in order to recruit students ... so ... have the lecturers go for retraining ... "Be Jack of all trades and ... try to be the master of two." That is much easier than trying to become the best there is in the field!</p>		
<p>6. Students are not interested in learning! We need to close the gap ... what might we do to force them to learn? ... I wonder ...</p>		
<p>7. AIDs in the country has been going up! 40% are infected and about ½ mil have died from the disease in the past ten years. On the other hand, the country faces rising famine and droughts! What should we handle first?</p>		
<p>8. Prostitution is going up and the girls are getting younger. Our men 'do not know how to behave' and the media is also to blame for luring the men with advertisements using young girls!</p>		
<p>9. We are required to complete 100 hours of training each year, and given we do not have sufficient training funds or persons with the requisite skills to conduct the training for us, we end up taking courses that are not relevant for us!</p>		
<p>10. We are required to update our training records as proof of training hours completed each year. An officer is assigned to follow-up with officers who fail to do so. Sometimes the officer is left entirely responsible for updating the records.</p>		

## **PRACTICE 2: SYSTEMS THINKING ON YOUR OWN CASE**

### **GOING DEEPER TO UNDERSTAND COMPLEXITIES THAT ARE IN THE WAY OF THE TEAM'S ASPIRATIONS**

[Attribution to Michael Goodman for the design of the process]

#### **Step 1:** Issue Selection Criteria:

- √ Important to you personally
- √ You have direct data/knowledge about the issue(s) or problem(s)
- √ Chronic, long-standing – there is a history
- √ Resistant to change – there were attempts to address / fix it
- √ Issue has a system-wide impact
- √ You have some influence or control over – even if only in how you respond
- √ You believe there is more to learn and understand – there is a bigger story here

#### **Step 2:** Creating a focusing question:

Begin with “why” or “how come” and not “how to”

E.g. How come despite our best efforts we have been unsuccessful in introducing creating generative conversations in our organizations?

#### **Step 3:** Identify how you tend to see this issue:

- √ An events perspective .... Tell the story ... what happened? What are some key events or crises? What was this a problem for us? Share stories and information. Do the 5 Whys? Or a Doom Loop tool. Listen for key variables and trends.
- √ A trend or pattern perspective .... Historically what happened over time? Where were the trends and patterns we saw? Identify key variables important to the issue. Draw 3-5 key historic trends of the key variables
- √ A structural perspective.... Why did this happen? What were some of the processes, policies, procedures that produced this? What perceptions or paradigms (system archetypes and/or mental models) contributed to the problem?

#### **Step 4:** Map the visions and mental models

- √ What is our desired purpose and vision?
- √ What is the current reality and purpose?
- √ Why do we do this? What is the mental model that keeps us here?
- √ Why do we not do this? What is the mental models that keeps us from doing this?

### **Step 5: Map effective interventions**

An effective intervention is:

- Long-lasting and self-sustaining
- Qualitatively changes the long-term pattern of performance – From stagnation to growth ... from unstable to stable performance

A structure can be affected by interventions in different ways:

- √ Break or weaken a link or loop (stop doing)
- √ Add a link or loop (start doing)
- √ Alter the delays
- √ Combination of the above
- √ Reverse the links polarity (e.g. "o" to "s")
- √ Challenge assumptions underlying the need for the fix. Show negative effects and reduce its use
- √ Establish a vision that makes the long-term solution desirable and natural. Do not justify the long-term solution on the basis of the problem symptom
- √ Determine if you can implement a short-term fix in such a way as to build towards vs. undermine the long-term solution.

### **LEVELS AND USE ON THE JOB**

- √ Asking different questions of self and others
- √ Hearing "catch phrases" which raise cautionary flags for you
- √ Recognizing "classic stories" problems or issues
- √ Surfacing underlying mental models of the system
- √ Applying leverage related to classic stories and systems principles

### **BEGINNING TO WORK WITH SYSTEMS THINKING:**

- √ Study the other archetypes
- √ Practice by drawing feedback loop diagrams of material from newspaper articles, etc.
- √ Work with Systems Thinking in a low-key, experimental way at first
- √ Use Systems Thinking first to understand problems in your own work groups
- √ Ask how others see the system you are modeling
- √ Accept the limitations of being new and inexperienced with these tools

## Appendix A: Comparing System Archetypes and Model I Theory-in-Use (Cue-Sheet)

Name of Archetype	The Pattern That It Reveals
<b>Define goals and try to achieve them:</b>	
• Balancing Process	Correction: We try to reduce the gap
<b>Maximize winning and minimize losing:</b>	
• Success to the successful	Winner takes all: Your success produces my failure
• Escalation	One-upmanship, Unintended Proliferation: the harder you push, the harder the competitor pushes back
<b>Minimize generating or expressing negative feelings:</b>	
• Limits to Success	Unanticipated Constraints
• Drifting Goals	Inadvertent Poor Performance, actual and desired performance levels gradually falling
• Growth and Underinvestment	Self-imposed Limits
<b>Be rational:</b>	
• Shifting the Burden	Unintended Dependency
• Fixes that Backfire	Unintended Consequence
<b>Consequences for the behavioural world and for learning:</b>	
• Tragedy of the Commons	Optimizing each part destroys the whole: Eeveryone takes advantage of a resource that doesn't belong to anybody  <i>Decreased effectiveness and tendencies to seek ways to 'reduce the gap' leading back to balancing loops!</i>
• Accidental Adversaries	Partners who become enemies: Two parties want to cooperate, but each sees the other undermining their success  <i>Becomes self-sealing only single-loop learning (little testing of theories publicly – much testing of theories privately)</i>
• Vicious / virtuous cycle	Amplification and reinforcement

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## MY REFLECTIONS