MONASH UNIVERSITY
FACULTY OF BUSINESS & ECONOMICS

BUILDING THE LEARNING ORGANIZATION - THE PRACTICAL STEPS

Tim Haslett

Working Paper 13/98
January 1998

Abstract

This paper outlines those fundamental tenets of systems thinking that need to be understood for an organization to be able to move towards being a "learning organization". This process occurs in two stages. Firstly with the mastery of the intellectual technology of Systems Thinking and secondly with the mastery of the computer technology. These two stages represent and require significant development in the sophistication of organizational thinking. An example of the application of Senge's archetypes to this learning is described. A brief overview of the computer technology and its link to causal loop diagrams is provided. A methodology for the development of a learning organization is then outlined and three models for implementation are discussed and evaluated.

BUILDING THE LEARNING ORGANIZATION - THE PRACTICAL STEPS

OVERVIEW OF SYSTEMS THINKING.

Systems Thinking aims to change the thinking of managers from traditional linear mode to non-traditional non-linear modes. For many people who achieve this, the experience can be termed a paradigm shift.

There are three major abilities that need to be developed to do this.

1 Evaluation of long term consequences

2 Understanding of second and third order consequences.

3 Identification of multiple causes and effects.

4 Understanding of variation over time.

The practice of these skills is aided by computer technology that enables the building of scenarios and the testing of assumption, beliefs and mental models in ways, and with speed not previously possible.

THE INTELLECTUAL TECHNOLOGY.

The most useful and practical way to do this is through the application of causal loop diagrams (these are also known as influence diagrams). It is during this phase that the following concepts are established.

1 Causation

Causation is the key element, hence Causal Loop Diagrams. Unlike flow charts which seek to set events out in order, Systems Thinkers explain systems in terms of sequences of cause and effect.

2 Feedback

Systems are non-linear, so their performance today is a result of feedback from what happened yesterday. Populations of rabbits are a result (amongst other things) of the size of the previous generation.

3 Variation Over Time.

Systems Thinkers measure Stocks that accumulate and vary over time

4 Balancing and Re-inforcing Loops.

When building the causal loops it becomes clear that some loops tend to bring the system into balance while others re-inforce or accelerate the conditions they describe.

5 Leverage Points.

These are the points in the system where the greatest leverage for change can be achieved. They are what the economists would call the "Policy Levers"

6 Lags

There are always lags in any system. Often the implications of a policy decision will not become obvious for a long tome. The CFCs released today will not impact the ozone layer for 15 years. Thus, the effect of today's policy decisions (or non-decisions) will have a 15 year lag.

7 Policy is often Counter-Intuitive.

Policy decisions do not always work in the way policy maker expect them. Often they work in quite the opposite or different way. Policy can be "Policy in Action" or "Espoused Policy"

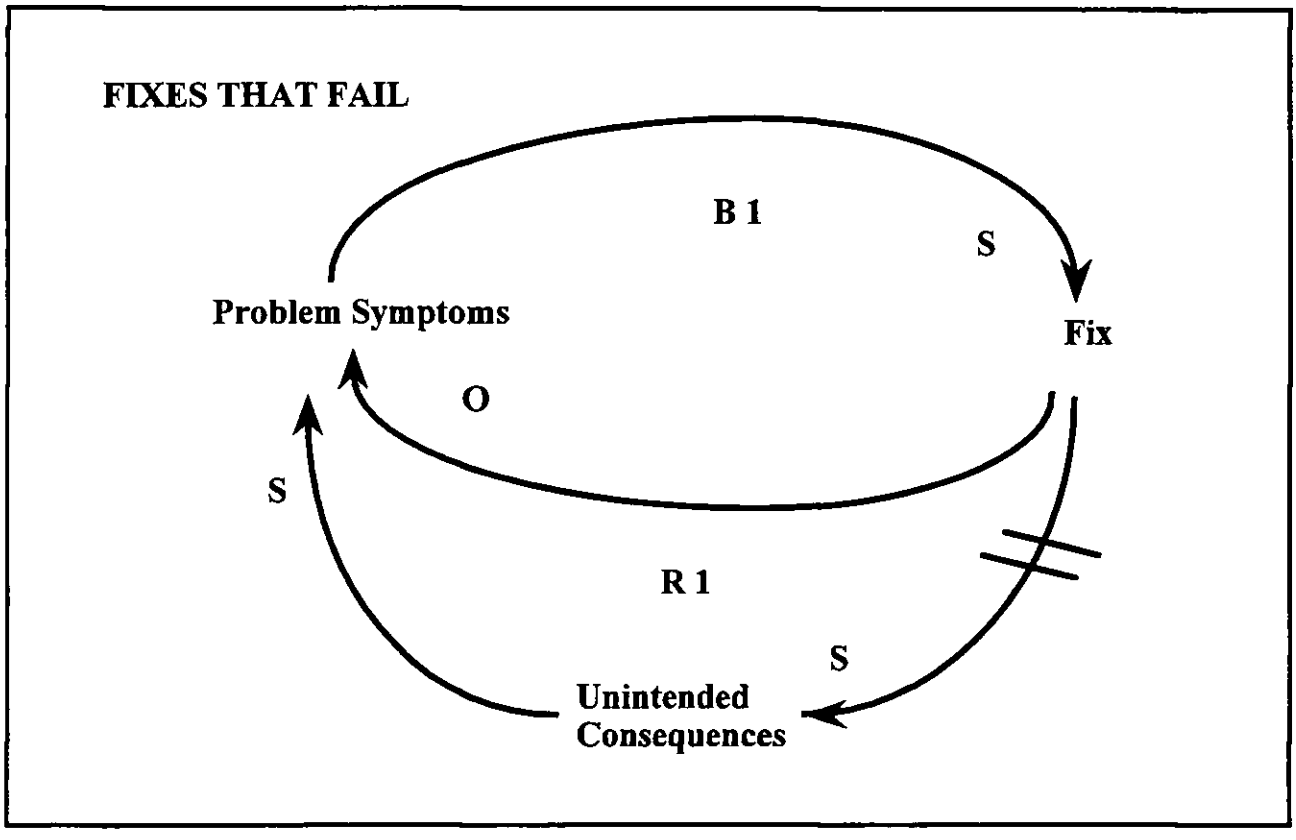
THE SYSTEMS METHODOLOGY

PROCESS	CONSEQUENCES
Establish Learning Groups	
Learn the Intellectual Technology	Personal Mastery and Development
Develop Causal Loops	Understanding Mental Models.
Learn the Computer Technology	Personal mastery and Development
Develop and Test Models	Quantifying Inputs and Outputs.
Run Simulations.	Establishment of Learning Labs.

This process requires considerable commitment from an organization. The basic training takes four days and prepares participants to develop sufficient understanding of systems thinking to begin building their own models using both causal loop and computer technology. The fundamentals of causal loop diagramming are taught using case studies built around Senge's archetypes. What follows is an example of the process that is used.

USING SENGE'S ARCHETYPES TO BUILD UNDERSTANDING OF SYSTEMS THINKING.

This process is started using the simplest and most easily recognizable of the archetypes - "Fixes that Fail". This begins the development of concepts of causation, time lags and variation over time. It moves from a general understanding of the dynamics of this model to a discussion of examples within the organisation.



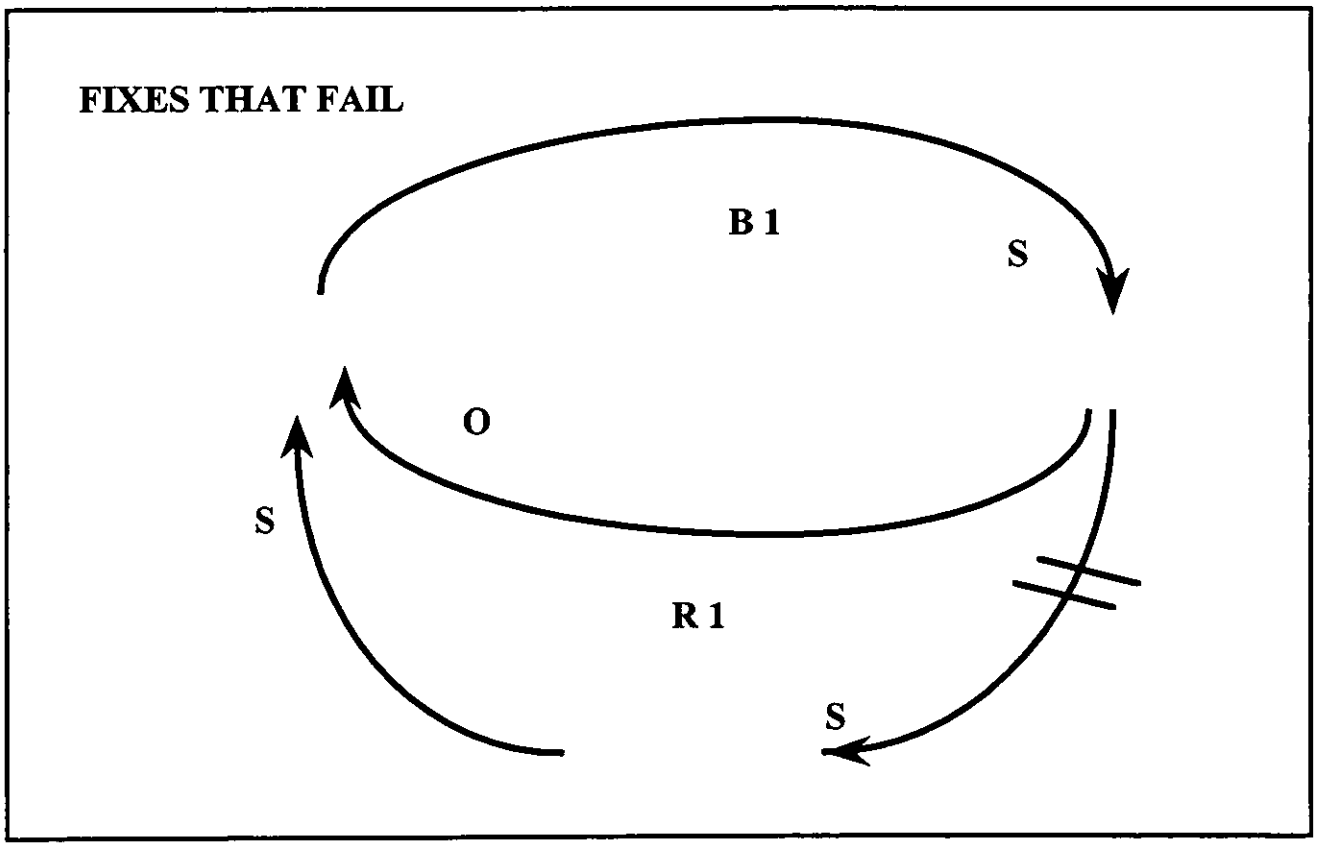
This loop develops when only the symptoms of a problem, and not the underlying problem itself, are dealt with. These actions fix the symptoms and things may appear to improve. However, this symptomatic action can produce any number of unintended consequences that, in the long run, worsen the problem. This worsening may become visible through the appearance of "problem symptoms".

FIXES THAT FAIL CASE - OUTWARDS GOODS.

You are the Shipping Manager in a factory and you believe you have a problem with productivity levels in the out-ward goods area. There are sporadic complaints about late deliveries from customers. You know from your own observations that you could hold machine gun practice in the area at 9.30 and not hit a soul.

It is clear to you that if everyone starts at the correct time then more work will get done. From your observations the supervisor is as much to blame as the staff in letting this situation continue. So you have decided to act and install a time clock to ensure that work starts at 9.00. You institute the rule "Lateness costs a morning's pay".

Six weeks later, the problem has become worse. As a result of your actions however, everyone now arrives on time. However, you have noticed that everyone finishes right on five o'clock regardless of what work needs to be finished.

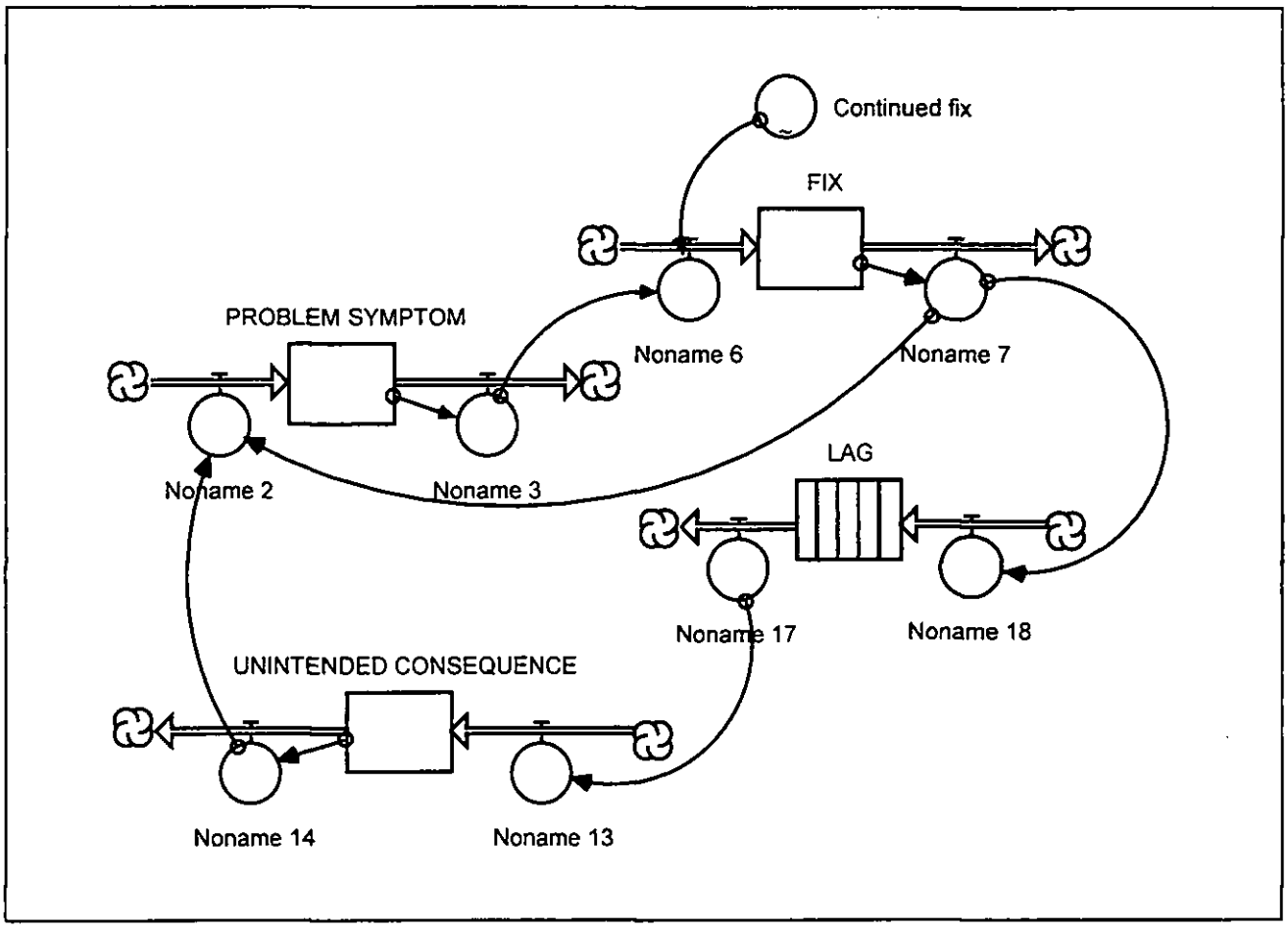


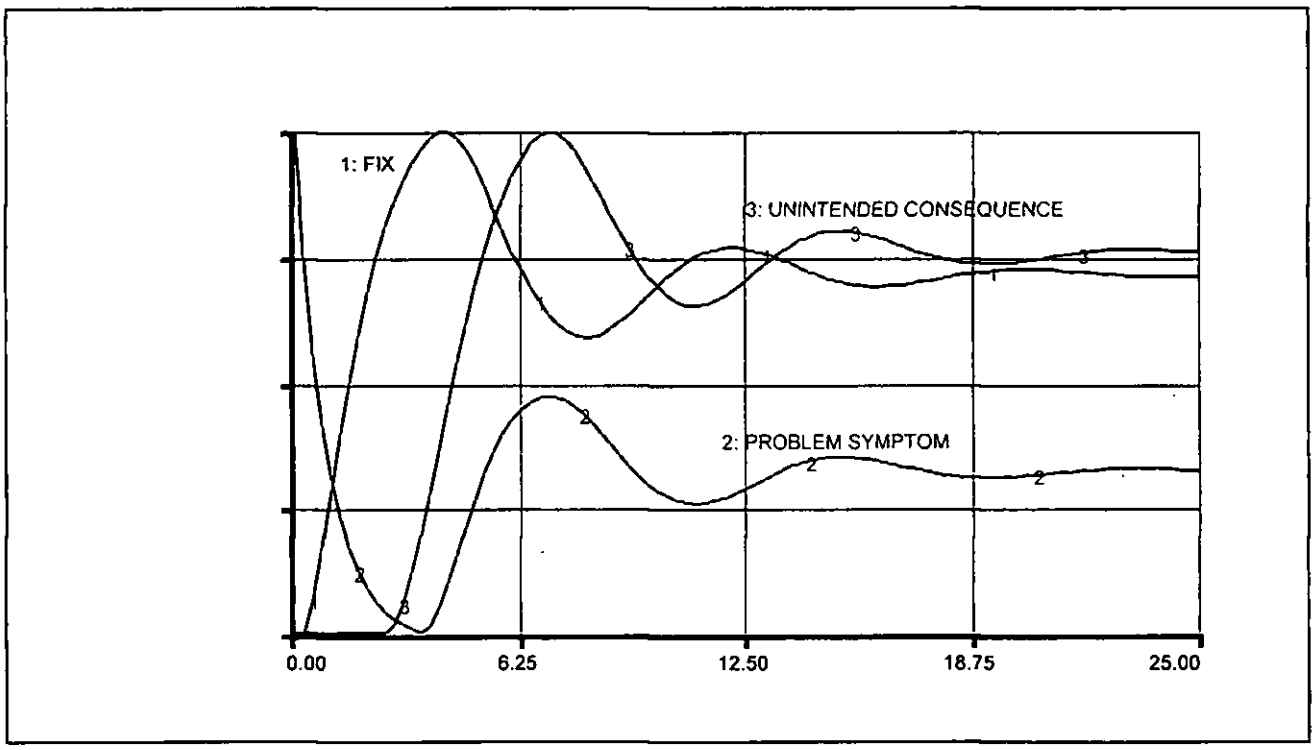
In this exercise, you need to "fill the gaps" for the Fix, Unintended Consequence and the Problem Symptoms. This simple exercise is designed to demonstrate causation and the counter-intuitive nature of policy decisions. It is important to understand that this archetype is about the manager's perceptions of the problem and the consequent treatment of the symptoms of the problem. The manager sees the problem as one of "Work Hours Lost" and deals with this problem. The real problem, (not stated in the case) is that the delivery trucks do not arrive until just after 9.30. Some also arrive after 5.00pm. Dealing with the symptoms and not the cause ultimatelt makes the problem of productivity and late deliveries worse.

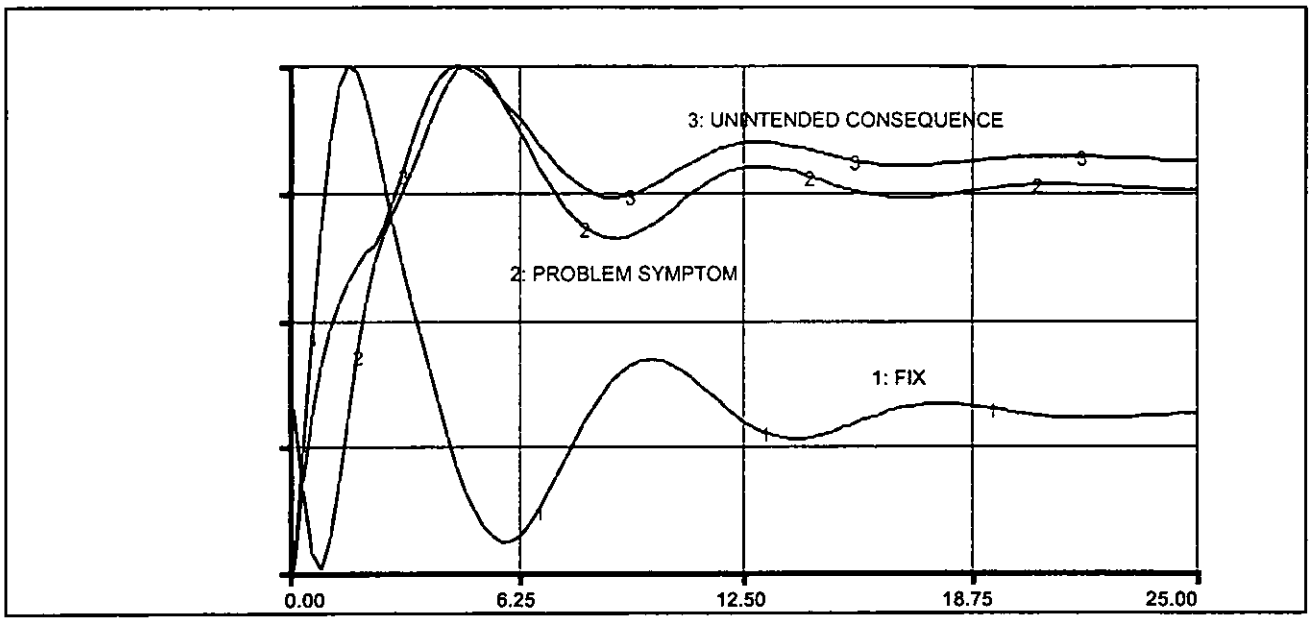
The examples on the next page show the iThink model for the "Fixes that Fail" archetype and two graph outputs for different systems conditions for the model. These graphs can be used to begin discussion of the dynamics of the model and what certain types of behaviour on the part of the manager will produce.

GIven the behaviour of this system, it is possible to begin discussion of the nature of systems equilibrium and stability.

FIXES THAT FAIL (ITHINK MODEL)







During this stage participants in the program use the archetype to understand the dynamics of the case study. The iThink model is used at this stage to introduce what will be the next stage of the learning process.The graphical output is used to demonstrate the dynamics of the archetype over time. The key concept here is that of system equilibrium.

THE NATURE OF THE COMPUTER TECHNOLOGY

There are a number of Systems Modelling packages available on the market, iThink (which will be demonstrated here), Vensim, Powersim and Simview. Discussion of relative virtues becomes like comparing Word with WordPerfect, they are all very good.

The software allows the translation of causal loop diagrams into computer models. Thus a causal loop diagram like the one modelling a new MBA program (Fig 1) becomes a computer simulation (Fig 2)

Figure 1 - Causal Loop Diagram of new MBA program.

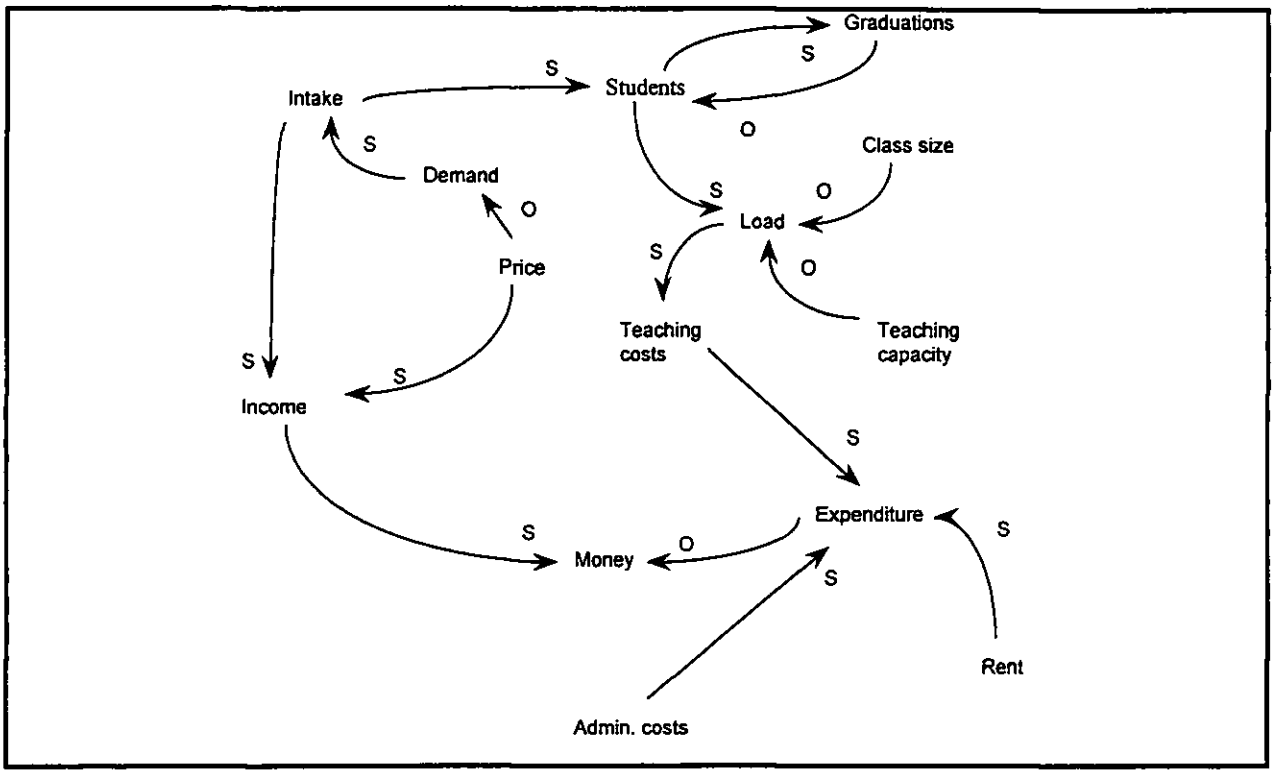
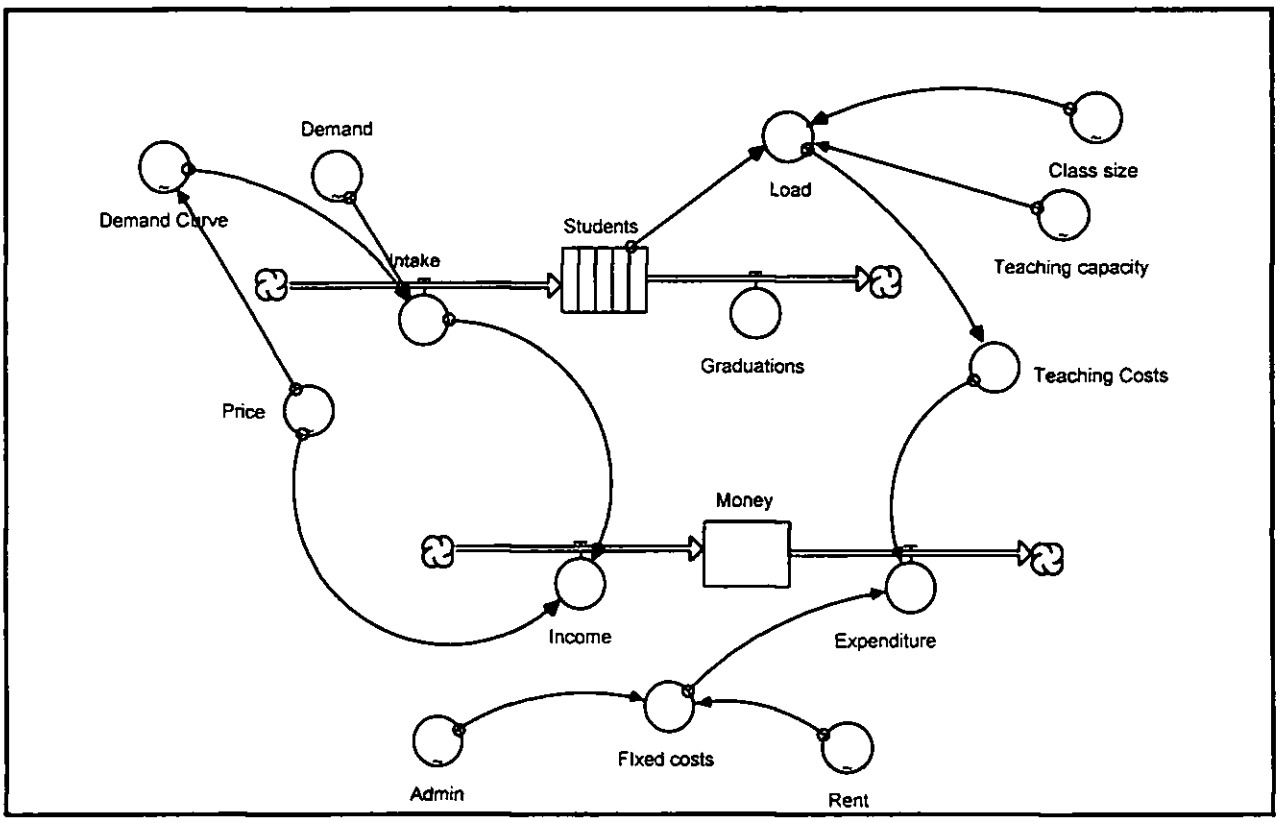


Figure 2 - Computer Model of new MBA program.



The transition from diagram to model has now allowed the testing of assumptions about pricing, student load. This is because while the great strength of causal loop diagramming is in the examination of mental models underlying the interactions inside an organization, it is limited to a demonstration of causation. It is the computer simulation that requires the quantification of the causation. This is the point at which the hard thinking takes place. It is also the point at which it is necessary to make the commitment to mastering the technology.

During the presentation it will be possible to demonstrate this software and this model in detail.

THE ESTABLISHMENT OF LEARNING LABORATORIES.

Once participants have gained the skills to build models, they can work in functional groups to develop models of key processes in the organization. These models can then be used as flight simulators for training other staff. These models can be loaded on to a laboratory network. Staff can use the models to understand the dynamics of these key processes. The authoring version of the software allows high levels of control over access to the model and does not require any modelling skills to operate, thus increasing its applicability as a learning tool.

IMPLEMENTATION METHODOLOGIES.

1 Top Down.

The Senior Executives do the complete Learning Organization Program which includes the mastery of the software. They then have ownership and mastery of the technology and can decide when to implement this learning with their own staff.

The obvious advantage is commitment and ownership at the top which can drive implementation at lower levels. Senior staff understand what the outcomes will be and can remain in control of the process. As the impact of changed modes of thinking can have a widespread impact throughout the organization, this approach has everyone thinking in the same terms. This approach allows easier implementation of the "Learning Laboratory" concept which is a large pay-off for organizations wishing to become learning organizations. The disadvantage is that an senior staff suffering technophobia may effectively block implementation at lower levels for any one of a number of reasons, "It's not applicable to my area.", "It's too time consuming", "Lets wait and see what the others do with it" etc. There are also concerns that knowledge of this technology is not properly located at senior levels.

2 Bottom Up.

Work Groups are trained in the technology which they use to understand and improve processes at the local level. As interest in the successes spreads it becomes time to allow other groups access to the technology.

The advantage of this is that it really puts "Money Where the Mouth Is" as far as Empowerment is concerned. It is important that any group that learns how to use this technology has a powerful sponsor who understands the process and will help with the implementation of change. Computer literacy may be a problem with some groups even though the program is very user friendly. Of more concern is the introduction of a new and powerful methodology for action that will not be widely understood in the early stages and achieving integration of systems ideas may not be easy especially if the member of the work group do not possess the necessary skills to do this.

3 Special Task Groups.

This approach identifies a group or groups within an organization who have a specific problem to solve and equips them with the systems skills to deal with the problem.

This is a relatively low risk strategy where the costs of perceived failure are relatively low for decision makers. It enables evaluation of the technology against a clearly defined problem and suitable broadcasting of the successes. If the groups consist of "rising stars", there is considerable motivation to achieve success. It also enhances the mystique and exclusivity of the technology. The disadvantage of this approach lies in the exclusivity. It becomes the domain of the technocrats who hold the secrets and this may hinder the spread of systems thinking as an organization wide technology.

SUMMARY.

The successful organization of the future will be the learning organization. Systems thinking is a tool that enables managers to gain the necessary understanding of the dynamics of a complex world. Computer simulation provides information processing capabilities well beyond those of the human brain and an understanding that can be gained in no other way. The process of mastering the technology establishes new habits of thought that only be established through he discipline of systematic and systemic thinking. Organizations which adopt this technology provide their staff with a powerful analytic tool that establishes common ground rules for discourse within the organization. These tools and the skills and attitudes that go with them will be indispensable for the manager of the mid-1990's.

DEPARTMENT OF MANAGEMENT

RECENT WORKING PAPERS

1/98 Alison Dean, "Issues and Challenges in Training HRM Practitioners by Distance Education" (January, pp.16)

2/98 Simon Moss, "Exposing Biased Samples: Derivation of the Sample-Subdivision Method" (January, pp.10)

3/98 Ian Roos, "Technical Regulation and Work Autonomy: Human Resource Management in a Specific Pathogen Free Animal Unit" (January, pp.15)

4/98 Loong Wong, "The State, Economic Growth and Environment in Malaysia" (January, pp.21)

5/98 Tim Haslett, "The Senge Archetypes: From Causal Loops to Computer Simulation" (January, pp.22)

6/98 Loong Wong, "Management Theory Meets the 'Other'" (January, pp.15)

7/98 Tim Haslett, "Implications of Systems Thinking for Research and Practice in Management" (January, pp.19)

8/98 Jan Schapper, "'We had no Choice. It was Inevitable.' Some Thoughts on Parallel Processes Between Researcher and Researched in Response to Organizational Change" (January, pp.17)

9/98 Tim Haslett, "The Dynamics of Garbage Collection: A Case Study of Privatization" (January, pp.17)

10/98 Tim Haslett, Simon Moss, Charles Osborne and Paul Ramm, "The Application of Local Rules in Self Ordering Systems" (January, pp.17)

11/98 Ramanie Samaratunge, "Decentralisation and Development: Partners in the 21st Century?" (January, pp.15)

12/98 Tim Haslett, "Teaching Systems Thinking and Theory: Management Education at Monash University" (January, pp.11)

13/98 Tim Haslett, "Building the Learning Organization - The Practical Steps" (January, pp.10)

1/97 Joy Selby Smith, Chris Selby Smith and Fran Ferrier, "Survey of Users in 1996 User Choice Pilot Projects" (January, pp.36).

2/97 Joy Selby Smith, Chris Selby Smith and Fran Ferrier, "Key Policy Issues in the Implementation of User Choice" (January, pp.26).

3/97 Phyllis Tharenou, "Is There a Link Between Family Structures and Women's and Men's Managerial Career Advancement? " (January, pp.23).

4/97 E. Anne Bardoel and Phyllis Tharenou, "Organisational Predictors of Work-Family Responsiveness" (January, pp.18).

5/97 Joseph Dagher and Dr. Brian D'Netto, "Managing Workforce Diversity in Australia" (January, pp.16).

6/97 Margaret Lindorff, "Perceived Support, Received Support, and Source of Strain: An Exploratory Study of the Characteristics of Workplace Relationships for Managers" (January, pp.17).

7/97 Judy Gray, "Diversity in Small Business Strategy" (January, pp.16).

8/97 Judy Gray, "Entrepreneurial Decision-Making Style and Small Business Success in Australia" (January, pp.13).

9/97 E. Anne Bardoel and Tim Haslett, "Teaching Organizational Behaviour Concepts Using Systems Thinking as an Informing Paradigm" (January, pp.13).

10/97 Nereu F. Kock Jr., Megan Baker, Robert J. Mcqueen and Anne Rouse, "Topic Negotiation in Information Systems Action Research" (January, pp.12).

11/97 Ken Reed, "Integrating Qualitative and Quantitative Data in Organisational and Management Research" (January, pp.).

12/97 Andrew Seen, Peter Liesch and Megan Baker, "What's in a Name? Employment Relations Constructs and Labels for International Business Research" (January, pp.8).

13/97 Margaret Lindorff and Steven Tan, "The Influence of Personal Values on Organisational Choice" (January, pp.8).

14/97 Dr Wendy Bell and Evelyn Schaber, "'Two Way' Management in Aboriginal Organisations in Central Australia" (March, pp.44).

15/97 Wendy Allen and Wendy Bell, "Managing the Use of Email in Telstra" (March, pp.29).

16/97 Dr Wendy Bell, "An Anthropological View of How Organisations Think" (March, pp.26).

17/97 Larissa Mezentseff, Max Coulthard and Wendy Bell, "The Relationship Between Japanese National Values and Organisational Values as a Paradigm for Business Success" (March, pp.21).

RECENT WORKING PAPERS

18/97 Larissa Mezentseff and Michael Morrison, "Transaction Cost Economics from a Cooperative Learning Perspective" (March, pp.14).

19/97 Wendy Bell, "Quality in the Eye of the Perceiver: A Cultural Analysis of the Quality Movement" (March, pp.14).

20/97 Nicholas Beaumont, "Scheduling Staff Using Mixed Integer Programming" (March, pp.22).

21/97 Marjorie Jerrard, "Collegia: The First Trade Unions?" (April, pp.29).

22/97 Nicholas Beaumont and Amrik Sohal, "Quality Management In Australian Service Industries" (April, pp.20).

23/97 Mary Anderson, "The Implementation Of TQM Practices and their Effect on Organisational Performance: A Literature Review" (April, pp.18).

24/97 Alison M. Dean, "The Impact of Consumer Participation on Perceived Service Quality" (April, pp.17).

25/97 Jan Schapper, "A Celebration of the Frocktail Queen or Fear and Loathing in Drag? - An Analysis of an Aids Agency" (April, pp.18).

26/97 Ian Roos and Keith Trace, "Strategies for Medical Research Institutes" (April, pp.18).

27/97 Ken Reed, International Differences in Job Satsfaction: An 11-Nation Comparison" (April, pp.11).

28/97 Stuart Orr, "The Role of Quality Management in Strategic Manufacturing Decision Making" (April, pp.10).

29/97 Lynne Bennington and Carly Addison, "Metaphorical Power in a Picture - Clarifying Organisational Expectations" (April, pp.12).

30/97 Lynne Bennington and James Cummane, "The Road to Privatisation: TQM and Business Planning" (April, pp.10).

31/97 Michael Morrison and Annie Rosenthal, "Exploring Learning Organizations: Enacting Mental Models - The Power of the Rosenthal Stage©" (April, pp.9).

32/97 Milè Terziovski, Andrea Howell, Amrik Sohal and Michael Morrison, "Establishing Mutual Dependence Between TQM and the Learning Organisation: A Multiple Case Study Analysis" (April, pp.9).

33/97 Kathryn M. Antioch, Michael K. Walsh and Chris Selby Smith, "Pathways to Improved Detection and Prevention of Colorectal Cancer: Achieving Goals for Australia's Health to 2000" (April, pp.44).

34/97 Ian Roos, "The Debt of Systems Theory to Thermodynamics" (April, pp.18).

35/97 Lynne Bennington and Bronwynne Roberts-Calvert, "Anti-Discrimination Legislation and HRM Practice" (April, pp.18).

36/97 Lynne Bennington and James Cummane, "Linking Employees to Customers: Employee Involvement and Quality Mapping" (April, pp.13).

37/97 Peter Townsend and Jeff Wrathall, "An Analysis of the Cross-Cultural Transferability of Western Motivation Theories to the Developing Eastern, China Region" (April, pp.12).

38/97 Nicholas Beaumont, "Investment Decisions in Australian Manufacturing" (April, pp.12).

39/97 Peter Townsend, "Symbolism in Management Education: An Analysis of the Origins and Academic Relevance of the 'Bachelor' Qualification in a Gender Balanced, Multi-Cultural Society" (April, pp.11).

40/97 Nicholas Beaumont, "Using Mixed Integer Programming to Design Employee Rosters" (April, pp.16).

41/97 A.S. Sohal, R.M. Schroder, M. Putterill and W. Maguire, "The Effects of Company Size, Ownership and Industry Sector on AMT Adoption: An Australasian Study" (April, pp.15).

42/97 James C. Sarros, George A. Tanewski, Richard P. Winter and Joseph C. Santora, "A Neo-Marxist Study of Organizational Leadership" (July, pp.34).

43/97 Peter O'Neill and Amrik S. Sohal, "Business Process Reengineering: Application and Success in Australia" (July, pp.31).

44/97 Phyllis Tharenou, "How Do You Explain Advancement in Management?: An Integration" (July, pp.29).

45/97 James C. Sarros, Walter H. Gmelch and George A. Tanewski, "Role Stress and Satisfaction of Academic Department Heads" (July, pp.26).

46/97 Amrik S. Sohal and Richard C. Schroder, "Teamwork in New Technology Implementation" (July, pp.25).

47/97 Milé Terziovski, Danny Samson and Douglas Dow, "The Business Value of ISO 9000 Certification for Australian and New Zealand Firms" (July, pp.24).

48/97 Amrik S. Sohal, Milé Terziovski and Nick Beaumont, "Adoption and use of Quality Management Practices in Australian Organisations: Comparison of Two Empirical Studies" (July, pp.22).

49/97 Stuart Orr, "The Role Of Capacity Management in Strategic Manufacturing Decision Making" (July, pp.20).

50/97 Phyllis Tharenou, "Determinants Of Participation In Training And Development" (July, pp.18).

51/97 Alison M Dean, "The Applicability of SERVQUAL in Different Health Care Environments" (July, pp.18).

RECENT WORKING PAPERS

52/97 R. W. Edwards, H. O'Reilly and P. Schuwalow, "Global Personnel Skills: A Dilemma for the Karpin Committee and Others" (July, pp.18).

53/97 Ian Roos and Tuija Makela, "Human Resource Issues In Cytotoxic Drug Dispensing" (July, pp.19).

54/97 Terry Brookshaw and Mile Terziovski, "The Relationship Between Strategic Purchasing and Customer Satisfaction Within a Total Quality Management Environment" (July, pp.17).

55/97 Stuart Orr, "The Role of Technology Management in Strategic Manufacturing Decision Making" (July, pp.15).

56/97 Marina Sagiadellis and Dr. Brian D'Netto, "Determinants of Australian Expatriate Success" (July, pp.14).

57/97 Judy Gray and Iain Densten, "Qualitative Analysis of Latent and Manifest Variables in a Study of Entrepreneurial Locus of Control" (July, pp.13).

58/97 Wendy Webber, "Factors Influencing Employee Choices to Participate" (July, pp.11).

59/97 Iain Densten and James Sarros, "Re-Thinking Transformational Leadership Factors" (July, pp.9).

60/97 A.S. Sohal and M. Terziovski, "TQM in Australia: Factors Critical to Success" (July, pp.9).