

**List of Stafford Beer Application Documents  
In the 161 Boxes of Beer  
26th February 2005**

Special thanks to Dennis Adams for his significant hard work and contribution in producing this document.

**Box 1 ARMY**

Prediction of the demand for campaign stars and medals (1949), Leslie Wilkins

*An application that Stafford recommended to me a few years ago as an example of how one can produce validated quantitative estimates and predictions for a 'unique' problem with no existing theory or taxonomy for reference.*

*I believe that a nice illustrative application of Stafford's yo-yo modelling process could be produced by bringing together several published and unpublished materials that would cover the following:*

- *Stafford's yo-yo model*
- *Leslie Wilkins 'medals' application report.*
- *Stafford's use of transformations (homomorphic and Isomorphic) to identify and relate experience and its results to new situations, and thereby challenging/examining the popular statement that you cannot know everything (or know enough to tackle 'apparently' new types of problem now and/or in the future). He had often stated to me that people don't really understand the concept of transformations and how they can be used to break free from trapped thinking, or a lack of degrees of freedom.*
- *So-called hard and soft issues being parts of a coherent whole process.*
- *Rivett's comments on dealing with a world where nothing happens twice.*

**Box 2 UNITED STEEL**

The development of our work on control systems

*This 57 page report written in 1957 summarises the 8 years experience of using a combination of cybernetic and statistical techniques for stabilising and improving the performance of steelworks plants of various types. The work was done at Samuel Fox & Co. Ltd., where Stafford was head of the department of operational research and cybernetics.*

*The case material shows that Stafford was innovating at a very high rate on many fronts, including the way in which he was deploying cybernetic principles and statistical techniques within the severe limitations of computational technology. He was also using his scientific models to speculate and envision futuristic scenarios where factories could be designed to be responsive, automatically, to unforeseen market changes.*

*Some business sectors are now using the technologies that he foresaw to automate data capture and communicate these quickly to key points in the organisation. However, the use of performance measurement indices in planning systems of the vast majority of current organisations fall way short of what Stafford was achieving here. The situation is likely to stay that way because current practice uses computer packages whose algorithms relate to a world that is simplistic, deterministic, and static.*

*The aims of the report were two fold:*

- *To document the basis of the methodologies as a reference source, and*

- *To capture the unified experience and achievements of the rapidly growing interdisciplinary team of staff, but also to explain the future potential and unresolved theoretical and practical 'lose-ends', in order to thwart the "danger of losing our evolutionary character".*

*This detailed account of applications was the direct foundation for a number of publications including:*

*A case study in Operational Research by Eddison, Pennycuick and Rivett (to check)*

*A technique for Standardising Massed Batteries of Control Charts*

*The Productivity Index in Active Service*

*The two papers listed above are reproduced in 'Grapes'.*

*The contents are:*

**Part1 Introduction**

**Section 1: About Being Controlled**

*Stafford comments on the remarkably efficient regulation of the thermostatic control mechanism, and contrasts this with the muddle and inconvenience caused by supposedly 'thought out' systems of management. He recognises that most of the uncertainty in the steelwork system is concentrated where it is difficult to handle - at the point where the various bits of plant need to be knitted together to 'create a smoothly running factory'. The existing approaches used to deal with this actually undermined the control of the production flow throughout the steelworks.*

**Section 2: A New Organisation**

*The creation of a control system is made difficult by the pre-judgements of people who define the system requiring control before understanding how the whole thing works. They also assume that control systems need lots of information and paperwork. The job of OR is to find out what sort of information is needed by the system - where, when, its flow and speed, and accuracy.*

**Section 3: The Science of Control Systems**

*The first two sections aimed at developing a new orientation for the reader. This section proceeds to explain the cybernetic nature of control. He uses the examples of horse rider and aircraft pilot to illustrate key points of small gentle movements as responses to information passing between richly connected systems, in contrast to the notion of bullying something to work.*

**Part2: Forecasting with Feedback**

**Section 1: The machine-job Time**

*Some plants in manufacturing and process industries involve the scheduling of many products on many machines, where some machines are capable of making several products but some combinations are not possible. Some combinations are rarely used so that little or no data exists on the time needed to produce a given amount of production. New products can be introduced at any time.*

*At this time, commercially available planning boards did not provide a means of forecasting the time to complete a machine-job, so Stafford had to invent a methodology for doing this.*

**Section 2: Models of machine-job time**

*The large number of combinations of machine and material meant that the computation of production rates could not be done empirically - insufficient staff.*

*A specially constructed measure of objective throughout time was designed to allow the modelling of production rates. An array of statistical techniques was used to identify 'families' of behaviour within which any combination of machine and material could be allocated.*

*This approach was later found to be infeasible in a plant with highly diversified engineering tasks, and a black box approach had to be used.*

**Section 3: Coefficient of Correction**

*Having obtained measures based on 'objective' time, these needed to be corrected to reflect the actual time required. A statistically designed sampling of previous jobs provided correction factors in the form of ratios of actual to objective times. This provided a great reduction in complexity from the original multi dimensional space to a uni-dimensional space of one coefficient taking values between 0 and 1.*

*The overall technique therefore comprised two components; a coarse approximation from the statistical model, and the fine-tuning provided by the correction factor.*

*The first component is invariant, whilst the second detects and responds to changes such as management actions that impact productivity.*

*The advantages are:*

- *Always up-to-date, quickly and cheaply*
- *Direct form of management control*
- *All factors affecting production are reflected somewhere in the index*
- *Automatically forecasts values for combinations of circumstances*
- *Management by exception reduces reporting load on the manager.*

#### **Section 4: Forecasting and Feedback**

*Various benefits of the cybernetic control system are explained. The use of this system avoided problems of instability caused by human operators. Examples included the inaccuracy of estimates of throughout time that varied from 10% to 300% of actual time for machine-jobs.*

*On time fulfilment of orders quickly rose from 27% (industry standard) to nearly 90%, with the remaining 10% being less than 6 weeks late against the previous system where many orders were more than 1 year late. Reductions in stock levels, work in progress and progress chasing were achieved, together with increases in production capacity.*

*Issues of self-optimising systems are discussed together with the relationship between stability and the risk of system 'run-down'.*

*A brief reference is made to adaptations of this model to avoid the 'run-down' risk using appropriate positive and negative feedback loops with successful applications to problems of costing.*

#### **Part 3: Further Developments**

##### **Section 1: Speed of Response**

*The 'acute' defect of this control system is the speed of response, which is governed by the periodicity of sampling. Even if sampling were speeded up, the flow time of information through the system would be a constraint to responsiveness. Information flow would need to be continuous for the operations to be sensed all the time.*

*Various applications of automation are described for solving these problems.*

*Reviewing the whole application, Stafford points out that OR has delineated the true extent of the problem and solved it in principle by a logical study of the information situation. It is therefore ideally placed to see the project through to the envisaged possibilities.*

*He sees a compelling reason for such speed in the long-term - integration. Stafford distinguishes issues of integration at the local plant level, and the whole factory level, and the relationship between the two. "This is the ultimate spur to the solving of the problem of speed in response".*

##### **Section 2: Feedback without Forecasting**

*The control-system based on 'forecasting with feedback' assumed the forward planning of a detailed order book. Five alternative approaches to controlling for stability are considered for the case where the machine-job loading is not required. These include organisational changes, and controlling by measured importance, level of demand, the cost of queues, and by measured priority. The OR investigators are surprised at the profound effect that a simple rule can have, and conclude that the rules governing the control systems, providing they are properly designed, do not need to be elaborate.*

##### **Section 3: Conclusions**

*Given the necessary and sufficient criteria of control as self-regulation within physiological limits and stability, the limitations of these control systems are discussed. The trade offs between purpose, optimisation and practicality are examined, together with the ultimate possibilities.*

*The importance of the role, requirement, and limitations of statistical forecasting in these systems is examined. (DCA - later taken up by PhD student at Brunel who published a book that credited Stafford with an innovation that he did not claim. Furthermore, Stafford identified a role of forecasting that he has not been credited with. Just needs rewording of one of the statements here, and pulling some points together).*

*“The boundaries within which the entropy can vary have to be determined. At present, they are nowhere understood”.*

*Stafford was already thinking about the philosophy behind these achievements (that actually worked) but recognised that there were other developments still to be made and that “it is too early to state this”.*

**Diagram: Cybernetic Model**

LP record on Introducing OR

*?HAS ANYONE STILL GOT AN LP PLAYER? (Doug and Patrick do)*

#### **Box 4 UNITED STEEL**

The organisation of management services at the branches

*A fundamental examination of the need for the integration of expertise in solving complex problems. A critique of mainstream reductionist approaches to problem solving including its limitations and professional rivalries. This is contrasted with the typical systemic features of problems and the need to trace the ramifications to discover what’s happening.*

*Explains basis on which a services group can be organised.*

The Cybernetic Factory

Production Control in the Factory

*Production Control in the Press Forge Department; Capstick, Lucas & Jordan 12/05/58*

*Not authored by Stafford, but a nice example of how information in the form of a priority index can be used to support coherent decision-making at several points in a system (including jobs that haven’t been started) and help the system to become self-controlling.*

*Includes an example of Black Box modelling by feeding back the difference between two cumulative measures to correct a bias in the process, which led to improved customer delivery performance.*

*An early example of a design for a central display of the necessary and sufficient information for decision.*

A Pegasus Computer Programme for the Statistical Control of Productivity Indices; Mee and Owen, 27/02/59

*Describes the basis for the automation of the statistical computations for finding the statistical group and updating its parameters in the light of new data about an individual item. Relates to Stafford’s report ‘The Development of Our Work on Control Systems’.*

*Reflects the growing experience of using computers and demonstrates the potentialities. It proved that a computer could be made to deal properly with the very high variety of information required for production control.*

#### **Box 5 SIGMA**

HM’s Treasury, working party on management training in the Civil Service

*Stafford appears to have been asked a series of questions about the design of management training (not included in documentation).*

*Instead of answering these, he first sets out a number of typical deficiencies in manager's competencies, and explodes a myth about the difference in the objectives of a civil servant and a business manager.*

*"Problems are becoming so complex that they no longer fit into the boxes prepared for them, and managers do not know how to knit its functions together again horizontally.*

*Integral models are needed to produce integral policies for fuel, transport, education, health and defence.*

*Summing tactical exploits does not produce a strategy.*

*Managers are apt to seek the 'right' tool to solve their problem rather than attack the real problem.*

*The result is that most studies of problems are partial and slanted when they should be integral and interdisciplinary."*

*Stafford then uses this basis to answer some of the questions (others have now become irrelevant).*

*He proposes that the use of case studies should be replaced by actual unsolved problems.*

An OR project on technical education

*Only first 2 pages*

The solving of complex problems in real-time, Spencer-Brown

Box 6            SIGMA

Sitrep report of progress on an assignment in Chile, 30/06/63 Andrew Muir.

*This just caught my eye. Marino Dizy, working in the bar and rod mill in the Huachipato works in Concepcion, has been able to increase the works capacity from 140K metric tons to 175K metric tons and all the extra production can be sold. The company was able to suspend its capital expenditure plans. This solution was not achieved by Linear Programming - just by getting the sales, production planning and production departments to work together!*

**Box 8 Missing?            International Publishing Corporation**

The Electronic Firm

## **Solo Projects**

**Box 15            Launching Personal Consultancy**

A proposal for consultation in management sciences

*Sets out the practical circumstances of real life problem solving and relates these to the basis on which the consultant should be hired.*

**Box 17            Dominion Bureau of Statistics – Canada**

The content of the correspondence could be used in several ways:

- *To illustrate the point about the role of general proven principles and models in supporting thinking about the rich detail of situations, and not as a substitute for this thinking (the trap that Stafford felt many people had fallen into in trying to use the VSM diagram before thinking about the whole situation, despite making this point in his publications).*
- *To make points about organisation, management and problem solving in managerially accessible language, including the use of powerful but simple concepts such as 'cross-over' points.*

- *To show how you can see a situation as an interacting system of people for furthering the well-being of individual people and the enterprise, rather than promoting one in favour of the other.*
- *To blow out of the water the way some scholars have portrayed his ethics and his practitioner and modelling stances by mis-reading part of his published work, showing that people were at the centre of his considerations.*
- *Some SB terms such as ‘data pollution’, and quotes, such as ‘technical virtuosity is not a substitute for problem solving’.*
- *Show some interesting VSM modelling points*

*Notes for preparing flip chart presentation on main points of a systems approach.*

**Box 18          Dominion Bureau of Statistics – Canada**

**Box 19          Dominion Bureau of Statistics – Canada**

**Box 20          Dominion Bureau of Statistics – Canada**

**Box 21 Warburtons**

*Warburtons are a family owned bakery business with headquarters in Bolton. The business was started in 1876.*

*Stafford had a retainership spanning the period 1974 upto the early 1980s.*

*The document titled ‘programme for Professor Beer’s Visit week commencing 17<sup>th</sup> June 1974’, details a 5-day schedule of morning, afternoon and evening discussions with managers. The last meeting is with the two family directors and the MD.*

*Basic cybernetic ideas and VSM terminology have been presented and preliminary structural models of each division have been provided to Divisional Executives who have been asked to elaborate them with their general managers for further analysis.*

*The results of Stafford’s early analysis are captured in four reports:*

***First Instalment is titled ‘Pivotal Issues’ dated 20<sup>th</sup> July 1974***

*In the foreword, Stafford explains that successful collaboration is an on-going affair involving continuous team thinking and sequential team action, and that his contribution will therefore come by instalments as inputs to the evolutionary process. He warns against expecting ‘The Beer Report’ as an exhaustive and polished job that answers every question and becomes a sort of Bible. “Those things take years to get wrong”.*

*Stafford calls for real dialogue so that his last instalment will be a record of change rather than a report to be imposed.*

*This 14-page document focuses on a pivot issue concerned with the changing role of the family executives. Cybernetic concepts are used to identify 3 elements of this issue including ‘clonic algedonic response’.*

*Other analyses mention the importance of:*

- *A social system two,*
- *Normative, strategic and tactical planning,*
- *Role and design of a development directorate,*

- Separation of business style from individual managerial style in the consideration of continuity of managerial succession in a family business,
- Special rules for managing the early life of a new business unit to help judge when it should join the System 1 of the total enterprise,
- The need for two types of information system in the Board Room.

**Second Instalment is titled ‘Group Diagnostic Model’ dated November 1974**

*This 7-page document describes Stafford’s response to finding no progress on the divisional modelling and no comments on the Board Room information system ideas. Some adverse reactions to the development directorate suggestions lead Stafford to do deeper cybernetic modelling at the group level. He hoped that this exercise would demonstrate the VSM as a diagnostic model and help the divisional management to do more work on their own recursion level.*

*As business functions (such as sales) are involved in many of the VSM subsystems, it was pointless to use these labels on the group VSM. A better separation was therefore achieved by expressing the sub-systems in terms of available resources - materials and machines, money, people and time. Colour coded structure diagrams for these VSM ‘resource views’ are included.*

*A group VSM was then constructed in terms of each of these resources. The process was therefore to start by structuring a viable system model of the total enterprise, shaping this model in terms of each of the resources being considered, and then to read right through these 4 models to get back to an enriched total system model.*

*Many diagnostic points were picked up in terms of systems 2 and 4 for each ‘resource view’. Further diagnostic points were found for the other sub-systems.*

*The importance of developing an effective system 4 for the group was strengthened by this analysis.*

**The Third Instalment is titled ‘Requisite Variety’** and according to later correspondence was presented in early 1975. It was presented in the form of a Sound on Slide 3M machine designed for use in training. It showed slides of pictures and diagrams with Stafford’s voice over. Stafford’s idea was to use this device to capture the responses of viewers by inserting extra slides together with their verbal commentary. This way, a complete history of the discussion of a topic could be captured together with any appropriate visuals - photos, schematics etc. A set of slides could be archived for future reference if required. Stafford was using this form of presentation of the third report to illustrate the potential use of this technology for system 4 discussions. Only a hand written version of the content is in the file.

*Stafford’s recommendation was to use this type of personalised report to achieve requisite variety at executive meetings. It would constitute a self-organising system that uses amplification and attenuation in a sensible way. However, he cautioned about the presentation of data if unreliable eyeballing was to be avoided, “as I learned in Chile”.*

**The Fourth Instalment was titled ‘A Divisional Model with Algedonic Control’ dated February 1976.**

*Some business analysts will find the ‘viable system models’ recorded in these documents to be rather simple models (hand drawn as working models but typed up in the reports) of the key organisational structures with a few annotations, personal notes, and some quantities inserted on arrows. In contrast to his latter protestations, Stafford has inserted the names of people who are managing the various sub-systems into the appropriate boxes in these models.*

*The experienced reflective practitioner however will recognise the various roles that these ‘simple’ models are playing within the personal consulting process; sometimes capturing a few essential structural points about observed patterns or lack of activity, and other times when the unfolding model can point a directional finger at the need for further exploration of the situation.*

### ***Comments on Stafford’s consulting approach.***

*As one works through the documents of a few of these larger assignments, the pattern in Stafford’s consulting process becomes clearer. Personal experiences of working with Stafford on applications and various discussions with him on application practices confirm that important aspects of his craft in using these models have not been fully explained in the literature. To Stafford, these points were omitted from published applications because they were obvious; “it’s what modellers and consultants do”. But they were only obvious and understandable if you have had a prolonged experience of complex modelling and consultancy in organisations. Certainly, Stafford’s ‘Guide, Philosopher and Friend’ approach is also very different from the standard practice of the major commercial consulting companies.*

*The published application in Note 5 Part Four of Heart of Enterprise (page 511) provides a glimpse of the way in which Stafford worked and the kind of issues that arise. One has to actively ‘read between the lines’ of this account to appreciate what actually happens in managerial cybernetics consultancy. The same patterns and principles can be seen at work in the major applications documented in this collection. For example, the correspondence contains questions asked by people who are grappling with the new language and the logical inter-connections of the model, and Stafford’s way of answering them ‘in context’. His responses are given in the spirit of inputs to their thinking and discussions, not as his solutions to their issues of concern.*

*However, Stafford also used his models and tools personally to examine the nature of the situation and the key people in order to shape his interactions with the client organisation. This included a consideration of the capability of the enterprise to deal with the major future and current dynamics in its environments. Naturally, these are very sensitive issues for discussion with clients in the initial stages of an assignment and details are usually not formally documented. Evidence is therefore anecdotal.*

*These aspects of practice are in sharp contrast to the scope of published papers of those authors who have used the Viable System Model as if it was a technique for getting right answers to management puzzles.*

*I therefore believe that a monograph on managerial cybernetics ‘consulting’ practice would be very valuable in revealing how cybernetic thinking and Stafford’s models and tools can be used for different purposes in different stages of an assignment. These uses could also include personal examples of managing ‘everyday’ activities that learners could easily relate to. Some of this material will be used in the Cybernetics-North workshop for Sharing Practice on April 15<sup>th</sup> to be held at LJMU. We aim to pull together personal knowledge of Stafford’s practices and are own experiences of using these ideas. Allenna Leonard will be joining us in this workshop - details to follow.*

### ***Output from cyberfilter application.***

*There is very little material on the application of cyberfilter at Warburtons. Nothing that would help in setting up and running Bayesian filters. In fact, at the present time, I cannot find anything in the collection that would help in this regard. Bayesian time series modelling has progressed significantly anyway since Stafford’s use of the initial Harrison-Stevens model.*

## **ICI**

*Correspondence from ICI on the need for Stafford's help on reorganising management services function and aspects of R&D. Need to follow up information provided by ex-ICI employee (at LSE event) who described application of the VSM by Stafford in an ICI business unit headed up by Harvey-Jones. Believed that Harvey-Jones used same ideas in slimming down ICI management levels when he became chairman of whole ICI Group. Needs some follow up work but I think this would add a lot of credibility to Stafford's work, as Harvey Jones is seen by global business as the only 'management guru' in Europe.*

## **Jamaican Government**

Feasibility of creating a free port area.

*Preliminary report to Dr. Hervey. (DCA can provide further anecdotal evidence from discussion with Stafford).*

## **Denmark**

Application of the cybernetic model to multi-level management for AMEV companies

## **Box 20 Rome**

A self-organising system for management education at the very top.

Annual address to leaders of Italian businesses.

## **Ernst and Ernst, Canada**

Stafford acted as retained consultant.

Correspondence

## **Box 35 Canadian Air Transport Administration**

Development of a project performance reporting system (James Robbins reading and commenting on)

Organisation and development of CATA

The airport machine

A system's analysis of the development problem

Future Issues for CATA

## **Canadian National Railways**

Management science at the corporate level

## **Canadian Department of the Environment**

### **TransCanada Telephones**

A management cybernetics model

### **Trans Canada Telephone System**

Notes on preparation, methodology and cybernetic model, with plans for an Operations Room

File contains INTEC 4 – photo of the Chile Operations Room

**Canadian Pacific Railways**

The application of cybernetics to IS development

**Alberta Government**

Five part report on the integration of government planning

**Canadian National Statistics Department**

Towards a national information system.

**Ministry of State for Urban Affairs, Canada**

A nervous system for someone else's body

**Indian Affairs Department, Canada**

The dynamics of band development

**The City of London, Ontario, Canada**

Development of an integrated managerial support system

**CNCP Telecomms (Partnership between Canadian National and Canadian Pacific Railways)**

Practical structure for successive transformations for various foci of concern

A methodology for transformation in directional planning

Directional planning: transformation charts

A directional plan: to senior management

**VIA Rail**

This was a combined passenger transport service for the CNCP.

Towards a Viable VIA

**Canadian Red Cross**

VSM mapping of Red Cross and diagnoses of the Red Cross proposals.

**Fisheries Commission, Canada**

Design of management frameworks: managing complexity

**The Auditor General, Canada**

Production of an auditing procedure for information flow.

**The Department of Industry, Trade and Commerce, Canada**

VSM mappings of DITC

**Manulife, Canada**

The Cybernetics of the business.

*Need to review this content in relation to the case study details published in Heart of Enterprise.*

*Are there any more case study details with manuscripts of 'Heart'?*

**Sunlife Insurance, Canada**

**BOX 55 Chile**

Article from Computing magazine 29/03/73 on Stafford's Cybersyn project.  
Correspondence from start of the project.  
Notes from first visit.  
Photographs of the team.

**BOX 56 Chile**

Project Cyberstride 1971, 1972  
Manuscript presentations of the project  
VSM of the project.  
Progress report from each team.  
Operations Room

**BOX 57 Chile**

Fernando Flores report on statistical modelling  
Cyberstride suite

**BOX 58 Chile**

Ron Anderton documentation  
Reports on the Chico project  
Model of the Chilean economy  
Stafford's presentation of the project

**BOX 59 Chile**

Arthur Anderson's proposal  
Hemming's paper  
Cyberstide suite program specification  
Bayesian analysis  
Report on algedonic signals  
Handwritings on Cybersyn (pedagogic tool)

**BOX 60 Chile**

Five principles for the people: Towards Good Government (Angela reading and commenting on)  
Government is for People's Help  
To Help Means Help Now  
The Road to Help Has Signposts  
Help is a Name and A Face  
The Future Starts Today  
  
If the government IS the people  
The revolution of government  
Starts with YOU

Project Cybersyn (Angela reading and commenting on)  
One year of relative solitude (Angela reading and commenting on)

**BOX 61 Chile**

Project Cyberfolk (cybernetics, people and politics) (Angela reading and commenting on)  
The algedonic meter (Angela reading and commenting on)

Group problem solving by John Baldwin (Angela reading and commenting on)  
Published paper by Stuart Umpleby  
Letter by Stafford critiquing the use of questionnaires  
Letter from Umpleby accepting Stafford's points and describing a rethink.  
Paper by Stuart Umpleby: Is greater citizen participation possible and desirable? (Angela reading and commenting on)  
Paper by Lorne Peterson: Artistic social indicators: alternatives to quantifying the quality of life (Angela reading and commenting on)

**BOX 62**      **Chile (MISSING?)**  
Operations Room

**BOX 63**      **Chile**  
Letters and correspondence (Allende etc.)

**BOX 64**      **Chile**  
Operations Book  
Design  
Technical proposals  
Maps

**India**  
Nerves and sinews of government

Zaheer lecture notes

**Brazil**  
*Ex-Chile team member Jorge Chapiro set up a consultancy company in Brazil, and was in a workshop with Stafford. Contains a file of plans of company organisation marked 'Project Brazil: management science'. Does this tie in with a large application in Brazil mentioned by Stafford elsewhere.*

**Cable TV project, Merseyside**  
Community TV to help people know what goes on in their community and to get involved in decision-making. Some VSM diagrams by Stafford.

**International Institute for Applied Systems Analysis**  
The attempt to cybernate the Chilean Industrial Economy in real time 1971-73.

The scientific approach to the management of large organisations.

**NASA**  
SB chaired a discussion on 'construction of intelligence'.

**Manchester Business School**  
The Organisation of Business School.

**Ontario Ministry of Health, Canada**  
The (General) Model of a Healthcare system.

Brochure of one-day conference with details plan of speakers and leaders of discussion of the model.

**Saskatchewan Wheat Pool, Canada**

Production of a viable system for operating the pool.

**Community Development Plan; Kentville, NS**

**Odds and sods**

*An Institute of Cybernetics at Brunel University.*

*This paper was written by Stafford to gain support for his proposal that the UK should have a chair in Cybernetics. He was supported by IPC and a dinner was held in London to which all the CEOs/chairmen of UK's largest companies were invited with a view to receiving their financial sponsorship. Stafford's 'Model of Science' circular diagram was produced for this event and appeared on the front cover of the menu (?). I have a personal note of what happened at this event.*

**BOX 129 Unpublished Work**

Challenge To Paradigm

*Includes concept for a book and invitations to world leaders in different disciplines to submit a paper. I had hoped to find the missing 'only' copy of Brian Eno's 'Self-Organisation and Autopoiesis in Modern Music' in the Eno folder, but the correspondence finished just before May 15<sup>th</sup> 1978, the day that Eno wrote it. It is not in the current Toronto materials listed by Vanilla.*

Project Cybersyn; Hermann Schwember, November 1975

*Should this be in the Chile boxes?*

The Quincunx Manifesto

**Just Don't Knows**

*"Well that is the Bittlestone report....". Does this relate to the work of Robert Bittlestone mentioned in Heart of Enterprise?*

**BOX 120 No Title?**

*This content seems to be about governmental use of cybernetics.*

A Measurement in Real Time

Why Government Should Investigate OR

Nerves and Sinews of Government – From a Perspective of India

*Lots of working notes and is a copy of paper in the India box.*

The Future of Wales – As a System

**BOX ??? ???No Title (next to following box on top shelf of last section)**

A Viable System for Healthcare

*Contains a cybernetic model for managing 'health', apparently for a one-day conference where Stafford provided the plenary talk to be followed by discussion sessions involving Stafford and medical people. I suspect that this model was the one produced by a methodology that Stafford discussed with me some years ago. It started with the simplest homeostatic model consisting of two*

*system states - in this case, people who are well, and people who are ill. Then you examine the transitions between these two systems using attenuators and amplifiers.*

**BOX ???     ??? Times July/September 1975**

Canadian Red Cross

*This seems to be (some of?) the missing material on the Canadian Red Cross study. Contains recursive VSM diagrams. Should be in the Red Cross box. Care must be taken in dealing with 'Ernst' reports. Rubinyi often edited Stafford's reports against Stafford's wishes.*

**Artifacts**

Ten large slides of Cyberfilter.

Partners in Management: Shaft

Papers typed on Stafford's typewriter called System for Bayesian Forecasting.