

FESTSCHRIFT

TO BE AND NOT TO BE, THAT IS THE SYSTEM:
A TRIBUTE TO STAFFORD B.

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Editors' Comments

INTRODUCTION	3
ABOUT THIS FESTSCHRIFT	5
ABOUT STAFFORD BEER	5
THE VSM AND TEAM SYNTEGRITY	6
A NEW APPROACH TO WRITING A BOOK	7
Invitation	10
Procedure:	11
ACCOUNT OF EVENTS	13
The Infoset:	14
Process and Structure	14
Technology	14
Procedure	16
REFLECTIONS	26
Electronic Syntegration I: Creating the Agenda	27
Generating Statements of Importance	27
Problem Jostle	28
Hexadic Reduction	30
Topic Allocation	31
Local Syntegration: Discussing the Agenda	32
Outcome Resolve	32
Electronic Syntegration II: Writing the Chapters	36
Electronic Outcome Resolve	36
Chapter production: process	36
CONCLUSION	39
REFERENCES:	39

INTRODUCTION

These are notes and methodological reflections about the process of producing a Festschrift for Stafford Beer. They are about the process we have been through since September, 1995, when we met in England, first at City University in London and then at the University of Humberside, to discuss how to move ahead with the idea of producing a truly systemic Festschrift for Stafford. Since it can be argued that he is the outstanding systems thinker of our day, nothing seemed better than to use his own work for this purpose; the idea of using a Syntegration protocol (Beer, 1994) for producing the Festschrift was a natural one.

In these comments we give details of the process and reflect upon the experience of producing a book based on the collaboration of thirty people. We have tested the Syntegration communications protocol as a means of creating a common knowledge product. Usually, when such a number of people come together, the solution is to make the task manageable by decoupling them and asking each one, or small groups, to produce independent contributions... in this case we have attempted to underpin the production of the Festschrift with a truly integrative protocol.

This book is intended to convey the “real” problems of such collaboration. Each chapter is introduced by a short description of the process leading to its production, so that the reader can appreciate both its successes and failures. The results you will be able to appreciate by reading the Festschrift. Our conclusion: such an integration is possible, and will be increasingly so in the future. But there is much to learn about how to do it better.

We believe that the process on which we shall reflect here has led to an integrated book of 12 interesting chapters. Each chapter is related to one of the colours of the 12 vertices of the icosahedron, the structure underpinning a Syntegration, as shown in the front screen of the book.

OVERVIEW OF THE CHAPTERS

The Festschrift covers a broad spectrum of interesting issues relevant to our world today. While the methodological issues reflected in this part of the Festschrift may be primarily of interest to scientifically oriented cyberneticians, the contents should be of interest also to those who apply cybernetics. The chapters offer insights which may prove valuable for practitioners of management in organisation and society.

The following list gives an overview of the chapters. Each chapter is related to all the others. There is no first or last chapter. Therefore we do not number them, but mark them with the colours used by the teams to identify themselves (see icosahedron).

LIGHT BLUE:	Methodology
SILVER:	Communication and Information
BLACK:	Team Syntegrity as the practice of Democracy
WHITE:	Cybernetics and Ethics
BROWN:	Diffusion of Cybernetics
GOLD:	Spirituality and Self-transformation
GREEN:	Adaptive Ecological Organisations
YELLOW:	Humanising Society
RED:	Management Knowledge and Knowledge Management
DARK BLUE:	Recursive Organisation
PURPLE:	Second Order Cybernetics
ORANGE:	Cybernetics and Community

For the reader less interested in the methodology underlying the production of this book, and more in the many facets of cybernetic concepts and their application, it will make sense to go right away into the 12 chapters (in the 12 vertices of the icosahedron).

The chapters are offered in hard copy as well as in the electronic medium. The hard copy may well be more appropriate for reading; however, to get a full appreciation of the creation process the CD-ROM is likely to be richer. The Festschrift is in your hands.

ABOUT THIS FESTSCHRIFT

The scope of our collective endeavour is reflected in the purpose of this Festschrift, as formally established in September 1995.

“Producing a Festschrift for Stafford Beer’s 70th birthday through a collaborative process, addressing his work using cybernetic concepts, models and tools. This publication should be an exciting process leading to a product worthy of Stafford. It should also be a significant contribution to cybernetics.”

Achieving this purpose was an enormous challenge. Stafford is our teacher, our mentor and our friend. We owe him more than we can tell. The field of cybernetics is wide. Stafford’s own scientific work has been titanic. This is becoming increasingly visible and tangible in the influence it is exerting on scientists and practitioners in many countries, institutions and disciplines. In this situation, a Festschrift project for Stafford had to involve friends of his and people knowledgeable about his work from all over the world.

Many of those who get to know this Festschrift will be more or less familiar with Stafford’s work. For those who are not, we should say something about him at the outset.

ABOUT STAFFORD BEER

Stafford Beer is the founder of management cybernetics, and is known as an international consultant in the management sciences.

He is a Past President of the Operational Research Society and of the International Society for Social Systems Sciences, and has the McCulloch Award of the American Society for Cybernetics, of which he is now a Trustee. Currently he is President of the World Organisation of Systems and Cybernetics, of which he holds the Norbert Wiener Gold Medal, and is a Governor of the International Council for Computer Communication. He also holds the Lanchester Prize of the American Operations Research Society. Other awards include the Silver Medal of the Royal Swedish Academy for Engineering Sciences, an Honorary Doctorate from Concordia University in Montreal and the Freedom of the City of London.

He is the author of over two hundred publications, including eleven books variously translated into thirteen languages. He has several more publications in advanced stages of production. For a bibliography with his publications see Appendix 1.

For the established science of management and administration, Stafford’s work is highly innovative, and even revolutionary. It has, therefore, only been assimilated to a small extent. On the other hand, as the application literature demonstrates, its potential for dealing with the complexities of today’s world is enormous. This explains the growing interest in Stafford’s work among practitioners and academicians.

As an adolescent he fought a conflict between two aims - to become a philosopher or a mathematician - until, at the age of 18, he had the insight that both aims were concerned with the same thing.

With his books “Cybernetics and Management” (English Universities Press, 1959) and “Decision and Control” (Wiley, 1965) he laid the foundation for Management Cybernetics, building on earlier works of Warren McCulloch, Ross Ashby, Norbert Wiener and Heinz von Foerster. At the core of Stafford’s work is his personal concern for contributing to an improvement of life in organisations and society. This concern led to his major theoretical accomplishments regarding the management of complexity in organisations, namely the Viable System Model (VSM) and the Team Syntegrity Model (see below).

Stafford has held managerial positions at every level - including those of Production Controller, Director of Management Science, Director of Development, Managing Director, Company President, and Chairman of the Board - in various companies. He is currently Chairman of Syncho Ltd, a consultancy based in Birmingham, UK, and Team Syntegrity Inc, Toronto, Canada, an organisation dedicated to the application of the Syntegrity Model. He has worked at the governmental level in twenty-two countries and for many international agencies.

Stafford has been a professor at several Universities, including Manchester and Durham Business Schools, the Open University (First Professor of General Systems), the Wharton School in the University of Pennsylvania (Adjunct Professor for many years), University College Swansea (Research Professor) and the University of Toronto (Adjunct Professor). Liverpool’s John Moores University, UK, has nominated him Honorary Professor of Organisational Transformation.

But Stafford has many more facets. He is also a published poet, and has held several exhibitions of paintings. Also, he teaches meditative yoga, learned in India, to individual pupils. Earlier he built many interesting machines and designed unorthodox scientific experiments (cf.: Harnden, R./Leonard, A., eds.: “How many Grapes went into the Wine”, Wiley, 1994). Last but not least, he tells remarkable stories and keeps inventing wonderful jokes ...

THE VSM AND TEAM SYNTEGRITY

A set-theoretic model, developed in the sixties, in which Stafford defined the prerequisites for the viability of systems, was later operationalised as a topological model, known as the Viable System Model (Beer, S.: “Heart of Enterprise”, Wiley, 1979; “Brain of the Firm”, 2nd ed., Wiley, 1981; “Diagnosing the System for Organisations”, Wiley, 1985). In this model, a set of functional requirements are distinguished which together are necessary for viability. These functions and their interrelationships are specified in a comprehensive theory; the theory of recursive organisations.

The Viable System Model (VSM) is conceived as a model for helping organisations to meet Ashby’s Law of Requisite Variety (“Only variety can destroy (absorb) variety”; cf. Ashby, 1964), and is therefore based on the principles of autonomy, recursion and viability. It furnishes the organisation-theoretic foundation for modern approaches to organising such as decentralisation, participation and heterarchy, and for humanistic postulates such as autonomy, self-actualisation and meaningful work.

The theoretical model has been transduced into the language of business and also been widely applied, as documented in several books (e.g. Espejo, R./Harnden, R., eds.: “The Viable System Model”, Wiley, 1989; Espejo, R./Schwaninger, M., eds: “Organisational Fitness”, Frankfurt/New York: Campus, 1996; Espejo, R./Schuhmann, W./Schwaninger, M./Bilello, U: “Organizational Transformation and Learning”, Wiley, 1996).

From the late eighties, Stafford has worked on a new model for the design of communication processes, and management processes in particular - the Team Syntegrity Model. This is complementary to the VSM, and meant to be a concrete approach to organisational adaptation (Beer, S.: “Beyond Dispute”, Wiley, 1994).

Team Syntegrity builds on Buckminster Fuller’s proposition, that all systems are polyhedra. Stafford proposes a formal model for an infoset (thirty people sharing a common information space) to deal with complex challenges or problems, establishing a protocol based on the structure of the icosahedron (the regular, convex polyhedron of 30 edges, 20 triangles and 12 vertices).

An infoset is a set of people sharing information about, and having, a common concern. Issues are discussed by the 30 members of the infoset, embodying the edges of the icosahedron, each person being a member of two teams of five, represented by the vertices. Each member of the infoset is also a critic to two other teams.

The protocol, which is also applicable to numbers other than 30, provides a mechanism for a heterarchical generation of the agenda and a precise structure for the sequence of discussions of teams with their critics. As experiments have demonstrated, the discussion in groups of changing compositions creates a reverberative effect, which fosters group cohesion and shared mental models. Although the model is highly formalised, it has been applied by corporations with results that corroborate the experimental evidence.

A New Approach to Writing a Book

In this and the following section, we shall outline our vision of a new approach to the production of a book, in this case a Festschrift, how it emerged, and how we went about realising it.

Our initial conversation about producing a Festschrift happened in St. Gallen in April, 1994. Walking through the beautiful landscapes of the Alps, Markus had the idea of doing a Festschrift for Stafford. We (Markus and Raúl) immediately agreed, and proceeded next to discuss its conception and realisation, again in St. Gallen, in April, 1995. On that occasion we drew a first, rough schedule and fixed the first week of September for joint working sessions in England. Even if we were not clear how, we knew it had to be a truly systemic enterprise.

On his return to the UK, Raúl held meetings with two people from AMAZE Ltd, a multimedia company linked to John Moores University, Liverpool. These were Roy Stringer, a leading multimedia expert and Roger Harnden, one of his colleagues and past doctoral student.

These conversations triggered in Raúl the idea of using Stafford's Team Syntegrity Model as the protocol for the production of the Festschrift. For those who are unfamiliar with Syntegration the Black Chapter in this book offers an overview. However, and more significantly, reading this chapter should be in itself an induction into Syntegration. The chapter should help experiencing Syntegration rather than reading about it.

With the support of Allenna Leonard, Toronto, Stafford's partner, we completed the list of possible contributors to the Festschrift. Over the summer, Raúl established first contacts with Clive Holtham, professor of information management at City University, London and Dennis Adams, initiator of the Stafford Beer Centre, John Moores University, Liverpool, UK, and discussed possible modes of cooperation. We also made first personal contacts to gain the informal commitment of potential participants in the project from members of the systems community in different countries.

During the week starting 4th September, 1995, the two of us met in England to operationalise the design of our project. We met at City University with Clive Holtham, Roy Stringer and Roger Harnden. Clive demonstrated some recent software for CSCW (Computer-Supported Collaborative Work) and presented his view of the Festschrift Project as a Collaborative Global Publishing Project. We discussed the implications of an electronic Syntegration protocol for pertinent computer support. Clive committed himself provisionally to providing the necessary information technology - server, bulletin board, software for distributed signing and voting procedures - as well as the necessary support for users. Roy and Roger then informed us about the possibilities and limits of available technology for the realisation of our plan. We then discussed concrete issues (a) of technical support for the local Syntegration (having decided that all discussions should be video-taped) and (b) of the production of a CD ROM. Roy and Roger assured us of their support. Although this session was successful, because our partners at the technological front were committed and even enthusiastic, many questions about the concrete realisation of our venture were still open and needed further investigation. For example, during the following days, Clive had to check the resources he could allot to the project. The following week he gave us the name of the person who would take care of the technical support from City University: Mark d'Cruz, a doctoral student, who was studying CSCW and would use this electronic Syntegration as an object for empirical studies in his thesis.

We continued our meetings at the University of Humberside, Hull, UK, where we designed a detailed project plan. This involved gaining a close-up operational view of the different phases of the project. Intensive discussions took place, including also Joe Truss, the president of TSI-Team Syntegrity Inc., Toronto. In a long telephone call between the three of us, Joe promised provisionally to coach the required Syntegration with his team of facilitators and logisticians. He was also disposed to advise us on all aspects of organising the Distant Syntegration.

We were aware that we had to design a bold plan, to achieve this demanding project. Time would be scarce. In the whole venture, there was an unmovable deadline, Stafford's 70th birthday (September 25, 1996) and the goal of being able to present a festschrift at that very date.

The plan included the objectives, a series of phases clearly defined, and a specification of procedures, resources (human, technical, financial) and action programmes. As an example,

the Microsoft project software enormously facilitated the identification of critical phases and bottlenecks and the optimisation of our time table.

A condensation of our plan crystallised in project plan (a Gantt Chart). Studying that diagram gave us a sense that this was a bold venture, but provided we could gain a good team of partners and coordinate the collective endeavour appropriately we would have a chance of achieving the envisaged result.

At the end of our Humberside sessions, we had agreed on our plan and documented it adequately. Some important commitments were:

- 1) Markus would try to obtain the substantial funds needed for financing the project from the Foundation for Systems Oriented Management - President Hans Ulrich, Professor Emeritus at the University of St. Gallen.
- 2) Raúl would provide administrative support from the University of Humberside to run the local Syntegration in the UK.
- 3) Markus would largely coach the electronic Syntegration, while Raúl's office would provide administrative support throughout the process.

We assumed that Dennis Adams at John Moores University, Liverpool, would organise a birthday ceremony at the Stafford Beer Centre there. Furthermore, we counted on Allenna Leonard to counsel us on sensitive issues, and in particular to take care of keeping Stafford out of the interaction.

Immediately after our session in Humberside, we undertook the first actions. Markus submitted a proposal to the Foundation for Systems Oriented Management Research, St. Gallen. Clive Holtham guaranteed the commitment of City University to set up a technological platform for electronic interaction. TSI-Team Syntegrity Inc., Toronto, agreed to run the local Syntegration scheduled for March 24 to 27, 1996. Liverpool's John Moores /Stafford Beer Centre under the direction of Dennis Adams agreed to set up the celebration event for Stafford's 70th birthday in September 1996. Roy Stringer committed himself to producing the CD-ROM for the Festschrift. St. Gallen and Humberside Universities agreed to provide logistic support for the project. In December, the grant for the project from the Foundation in St. Gallen was conceded.

By mid-September, an invitation to join the project went out to about 50 persons around the world. These were people knowledgeable about Stafford or his work.

The following reprint of the full text of this invitations should convey a fair idea of our plan, as designed in early September 1995. Later on, we shall account for the path along which we realised this plan, and what can be learnt from it.

Invitation

“We want to invite you to participate in a special process and event. We expect that people receiving this invitation share the view that Stafford Beer’s contributions to management science, management and organisation theory and the social sciences in general are both significant and to a large degree unrecognised. Stafford is now approaching his 70th birthday and we believe it is due to him a proper recognition, at least by those who know his work well. For this purpose we are proposing to produce a special book, a Festschrift, in his honour. It seems to us that a good way of honouring him is to use his own inventions in producing this book. In short we are proposing to produce a multi-media book based on a Syntegration process.

The book should emerge from people's current understanding of his work. Stafford’s work is multifaceted, but above all, is truly transdisciplinary. His work is inserted in Western and Eastern philosophical traditions, in natural and the social sciences, in mathematics and Operational Research, in management and organisational theories. His work is systemic. These considerations suggest that it would be unwise for any one of us, individually, to define the content of the Festschrift. This content should be the outcome of our collective appreciation of his work; what is important for us in Stafford's work; what it is that we like, and also dislike, in it; what are in our views its strengths and weaknesses. Indeed, we want to bring in constructive criticism as well. We want to use this opportunity to learn more about his work; the basic assumptions he is making about the world; the epistemological significance of invariances like the Viable System Model and Syntegrity.

A Syntegration offers us the chance to produce collective answers to these questions and indeed to generate many other questions. We are inviting a group of people who share Stafford's work and perhaps in more general terms, cybernetics and systems thinking, as a common source of inspiration. This is the main criterion we have used in creating the infoset. However, the Syntegration itself should define the content of the book.

Envisage that its chapters will emerge as the 12 vertices of the icosahedron, while most of their content will be the outcome of the iterations during the Syntegration itself. The authorship of the book will be collective. This is an exercise in collaborative work.

There is circular causality in all this effort; the process we are designing is based on the very content that it is enabling to discuss. Therefore we expect that we will learn about the content by making apparent the process itself. This self-reflective aspect will be apparent in the media we use. The book will take the form of a CD-ROM, based on the whole process. We will use video, audio, graphical and written media in its production.

We will use the technology of Team Syntegrity but also other emerging technologies for collaborative work and test their synergistic interaction. The process includes activities before and after the Syntegration itself.

We are assuming that participants:

- have access to Internet and are willing to participate in computer-mediated meetings,
- will be able to attend the London Syntegration from the 28th to the 31st of January 1996 and finance their participation.

We envisage the following stages in the publication:

1. Definition of the infoset. The trigger of this stage is this invitation and will be completed with your answers. On receiving your replies we will know who are the participants but nothing about the book's content.
2. Internet exchanges. Creation of bulletin board to exchange comments, views, information, papers and the like prior to the "local Syntegration". The purpose of this exchange is simply to focus attention as to what are statements of importance for the Syntegration.
3. Local Syntegration. Statements of importance are transformed into 12 composite statements of importance; these being the chapters of the publication. In general syntegrations produce only final statements of importance. In this case the problem is to get those plus visual and written recordings of the ideas exchanged in the iterations and plenaries. The output of this activity should be 12 chapters of a book and the fundamental ideas entailed by each of them.
4. Follow up of local Syntegration. This stage is intended to give depth to the local Syntegration. Often people need the chance to reflect individually, to see references and to clarify their own ideas. During this stage we expect to complete those aspects left unanswered during the Syntegration. We expect to use the Internet for this purpose. People may contribute to any of the 12 chapters.

Note: it is important to realise that these contributions can be in any media since we will be prepared to include, audio, video, graphical... inputs.

5. Editing of CD-ROM. Editors will interfere as little as possible with the content provided, emerging from the process.
6. Special Event with Stafford, to offer him the Festschrift, in September 1996.

A more detailed Procedure was appended to this invitation. Reading it helps to compare the final outcome with the initial planning.

Procedure:

We believe the Festschrift should be focused on the relevance of cybernetics/systems thinking in general and Stafford's work in particular to contemporary society.

The Festschrift is planned as a collaborative effort, supported by distant and local communications among contributors. Its content will be defined and developed by the contributors using a "Syntegration process". In these notes we explain the general procedure we plan to use.

Contributors are the members of an "infoset" sharing knowledge of cybernetics and Stafford's work. The infoset will consist of 30 to 35 participants from different parts of the world.

Once the infoset is created we envisage that the process of producing the publication will take place in three stages:

1. Pre-Synte-gration

This stage will be based on distant communications. A bulletin board will be set up at City University, London, to support infoset electronic communications. Other forms of communication (e.g., mail, fax, telephone...) will have as a hub the University of Humberside in the UK.

Participants will be asked to contribute individually with “statements of importance” (SI) for the Synte-gration. These statements should be relevant to the general focus of the Festschrift. Hopefully most statements will be sent electronically. The infoset will have from the 9/10/95 to the 15/11/95 for this purpose.

The process facilitators will be responsible for the editing of statements in order to avoid unnecessary repetitions and inconsistencies. The edited statements, with the names of their originators, will be made public on the bulletin board by the 22/11/95 and if necessary they will be sent by fax to some participants.

At this stage we expect that all kinds of lateral communications will take place; the problem jostle will be in progress. From the 23/11/95 to the 03/01/96 we expect people will elaborate statements of importance into “aggregated statements of importance” (ASI). By the 03/01/96 we expect to have a set of ASI, supported by several members of the infoset rather than by single individuals. In any case our expectation is that this process will reduce significantly the number of SI. Different voting procedures will be made available for people to express their preferences and thus support the reduction of variety.

The last activity before the “local Synte-gration” will be the hexadic reduction. This activity will consist of the following sub-activities:

- Elision of ASI: participants will be asked to consider all the ASI and produce triads of “related ASIs” - which groups of three among the general list of ASI seem to be talking about the same topic. The facilitators will edit these elided ASIs and submit them to the infoset using the bulletin board.
- Voting: infoset members will be asked to vote their support for the elided ASIs. The first 12 (now called Consolidated Statements of Importance - CSIs) will be the primary candidates to become topics for the “local Synte-gration”. In our case these will be the 12 chapters of the publication.
- Discussion of “borderline issues” the infoset will be asked to consider any statements that are close in number of votes received to the 12th accepted statement, to determine if it/they can be elided with others of the 12 accepted topics. The facilitators will publish the final 12 topics for the local Synte-gration by the 29/02/96. The infoset will have the chance to ponder about these topics for the next three weeks and eventually generate related papers in advance of the local Synte-gration.

2. Synte-gration

The plan is to hold the “local Syntegration” from the 24/03/96 to the 27/03/96 in a venue near London.

The first activity of this local Syntegration will be the allocation of colours to the participants. This activity will be computer supported and will rely on people expressing their topic preferences. The outcome will be to assign each participant her/his four colours.

Outcome Resolve Iterations: the purpose of these interactions will be to create the content of the publication. The meetings will be facilitated and video recorded.

3. Post-Syntegration

We envisage at least 64 hours of video material (there will be 2 cameras in each meeting room). This material and other documentation emerging from the Syntegration will be studied and organised after the Syntegration. The outcome of this activity will be a “transcription” document to be circulated to the infoset.

Infoset members are expected to offer further elaborations of this material; however, no new topics will be allowed. Electronic media will be available for this purpose. Contributions can be made in any media.

The editors will organise this material and make it available to produce the final multimedia publication.

This publication will be presented to Stafford the 25/09/96.“

ACCOUNT OF EVENTS

Several of Stafford’s friends and more knowledgeable colleagues, while expressing support for the initiative, excluded themselves from such a “technological” event. Indeed, the technological requirements to join the group were demanding. Those who agreed to join it were about 40 individuals - students, academics, and practitioners. These were the members of our initial Infoset. The information technology available to these individuals was varied. Some of them were users of University networks, others had modem connections to the telephone exchange, while another subset had never used information technology for communication purposes. Some of the participants were used to communicate via Internet, while the emerging World Wide Web, or WWW, which would become a very important instrument for our collaborative idea generation process, was not yet in their hands. With some of the members telephone and fax communication were the only means for distant interaction. Over the next six months, all of the final members of the Infoset had developed skills in using Internet and WWW. The very few ones who did not acquire these capabilities eventually dropped out of our joint activity.

The Infoset:

As said, about 40 persons joined the electronic Syntegration. However, the composition of this Infoset changed over time. A number of the people who originally signed in never became active. In particular, this was the case with several US academics. There were some participants who, despite their commitment, did not succeed in solving technological communication problems, and therefore did not become as active as they would have wished to be in the electronic Syntegration. There were others who showed active participation in the electronic Syntegration but were unable to join the local Syntegration. Three academics whose commitments did not allow them to participate sent their assistants.

Eventually, for the local Syntegration we had exactly 30 participants, who constituted the final Infoset. They came from 16 different countries in four continents. Not all of them were very experienced in organisational cybernetics in general or Stafford Beer's work in particular. However, all were committed to the project and its aims, and were also working with models, methods and tools initiated by Stafford. A set of their CVs is included in this book (Appendix 2) .

Process and Structure

Our next task was to create the structural context for collaborative work. The technology and the stages of the process had to be organised. We had to plan for four phases:

- 1- Electronic Syntegration I (pre-local Syntegration)
- 2- Local Syntegration
- 3- Electronic Syntegration II (post-local Syntegration)
- 4- CD-ROM production

Technological and procedural considerations were critical:

Technology

- 1- **Electronic Syntegration I (pre-local Syntegration): September 1995 - March 1996**
At the beginning most of the interactions were via email. The Statements of Importance (SIs) were first given to Mark d'Crux at City University via Internet. However, by October 10, a WWW site on the City University server (address: <http://www.city.ac.uk/sbfp>, the sbfp standing for "Stafford Beer Festschrift Project") was in place. The members of our Infoset received User Identifications and a Password to get access to the web homepage. At that stage, they could input their SIs directly via the web onto our homepage. However, some of the SIs were still arriving via fax and being inputted manually by Mark and Alfonso Reyes, an assistant to Raúl.

In the following months, diverse inputting, signing, and voting procedures were handled via WWW throughout (dumps of some WWW pages are included in Appendix 3).

However, some of the members of our Infoset who were still moving into the new technology or who had trouble adjusting to it had to be assisted in these procedures. At the same time, multiple lateral communications took place, mainly via email and phone. The final stage of this electronic Syntegration, the allocation of topics to participants, was done by TSI, supported by two computer protocols (one using the “Hancock algorithm” the other the “Sutton algorithm”).

Managing the process required several telephone conferences linking Toronto, St. Gallen and Humberside.

2- Local Syntegration (Mickleton, England, March 24-27, 1996).

The local Syntegration in Mickleton, organised from Humberside, was done with the complete technological support of TSI - in particular, the logistics specifying all the necessary resources to support the meetings, the protocols to run concurrent meetings and the continuous logistic support of meetings. Most of the technology for the local Syntegration was non-computer based; flipcharts, boards, physical icosahedra, copying machines, etc. were used. As all the sessions were video-recorded, this implied the activity of two cameramen.

3- Electronic Syntegration II - post-local Syntegration - March - August 1996

The post-local Syntegration activities were supported by First Class, a communication software package from SoftArc Inc, Canada, which runs under Windows. This package permitted, when accessible, fast and easy interaction between the members of the Infoset. It also allowed each one of us to keep an overview of progress in the discussion and production of chapters in the different teams (dumps of a few First Class screens are in Appendix 4).

While using this software was successful, there were some members who did not succeed in using it, particularly because of the software they were using for communications. These members reverted to email and fax communications.

First Class was installed in two servers, one in Canada to support American users, and one in Wales to support all other users. In the end the Wales server was the only one active for this purpose.

Most of the production of the chapters was realised on Word for Windows, version 6.0. Substantial use of co-authoring facilities was made. However, on the whole, we could have made far more use of these facilities, in particular as far as version control of documents was concerned. Also, several graphics packages were used - e.g., Designer 4.1, PowerPoint, etc. Graphical decoding created some difficulties in the process.

4- Production of CD ROM

This was realised by Roy Stringer in England. Extensive use of scanning and digitalisation of video materials and documents was necessary.

Procedure

1- **Electronic Syntegration I - pre-local Syntegration**

All activities were based on the definition of a focal point for the Festschrift, - the opening question - as well as the Rules for Participation. Both had been received by each member of the Infoset, with the letter of welcome.

The opening question was formulated as follows:

“What is the (actual and potential) contribution of cybernetics in general, and Stafford’s work in particular, to organisation and society“?

Each member of the Infoset, after signing in, received a letter of welcome with a set of procedures and “rules of the process“ for the distant Syntegration. These were also published on our WWW homepage (see Appendix 5). As the phases proceeded, the rules were successively specified in more detail and, if necessary, complemented.

From October 1995 to March 1996, we passed through the following phases:

1.1 **Generating Statements of Importance - SI**

Between September and December about 150 SIs were given in. The format of these was very varied. Some were short sentences, others were several paragraphs long. In general there were no problems in prompting the production of SI; the flow was good. The web page had facilities to input graffiti (comments triggered by individual SIs), which however was very sparsely used.

As far as content was concerned, the SIs were very varied. Some were focused on scientific issues, others on application - e.g., consultancy and marketing topics - some on spiritual and humanistic concerns. Finally, there were eulogies of Stafford. Overall, the spectrum of topics covered was very rich (see list in Appendix 6).

The board was closed for SI inputs in early January.

1.2 Generating Aggregated Statements of Importance - ASI

The coordinators encouraged Infoset members to organise the SIs into categories, to gain an overview of the contributions. A sample of such a clustering was made available on the WWW site (see Appendix 7). Participants were then supposed to create their own ASIs, and for that we stimulated them to engage in lateral conversation with other members of the Infoset. This proved to be a difficult part of the process. For some time, ASI inputs did not take off. Eventually, it was necessary for the coordinators to take a proactive role, in order to catalyse the process. Also, our own running of the WWW site was not clear in all details. For instance, “categories” for classification of SIs were inputted as SIs and listed on the board as such. It would have been better to have a separate page for participants “to trade” different categories, thus grounding differences among them.

Eventually, a clear page for each member to input ASIs was made available. With some persuasion by the coordinators, it was possible to have 38 ASIs, at the end of the process -February 12, 1996- (see Appendix 8). Some participants suggested that these ASIs should be classified, and two different taxonomies were offered and implemented in the page, but the respective facility was only irregularly used. The first taxonomy classified statements according to their nature - theoretical, applied, descriptive or prescriptive. The second, according to whether the statement was explanatory, an extension of existing knowledge, an application of knowledge or a promotion of cybernetic ideas.

1.3 Signing ASIs

To make of an ASI an “Infoset-ASI”, it had to be supported by at least 5 members. The process of signing to show support took place over a period of two weeks (January 30 to February 12, 1996). Signatures were attached by clicking buttons under ASIs. There was no limit to the number of statements one member could support. In the event, 35 ASIs were supported by the Infoset.

1.4 Eliding ASIs and Voting

It was then necessary to reduce the 35 statements to 12 topics (Composite Statements of Importance - CSI). A first step consisted in “eliding” ASIs. Participants were asked to form doublets and triplets of ASIs related according to their personal logic. The procedure was to send, via email, the respective numbers to Andreas Krafft at St. Gallen, who proceeded to sort them with the EXCEL Software (the whole list was sent to those who did not have access to the web page). The outcome was then published on the WWW homepage. It clearly made apparent shared clusters of ASIs, but for validation purposes a telephone conference took place between Toronto, St. Gallen and Humberstone. The evidence unambiguously supported reducing the 35 ASIs to 18 Elided Statements of Importance (ESIs). No objection was made to this result by any member of the Infoset.

1.5 Deciding on Composite Statements of Importance - CSI

The next step was to open a voting page in WWW. Each member of the Infoset was entitled to cast 20 votes on the ESIs, according to their preferences, over a period of one week. This voting could be done tactically, since the results of voting could be pursued in real-time.

The outcome was a ranking of topics ranging from 45 to 6, with twelve of the themes receiving significantly more support than the other six (see WWW pages, Appendix 9). If this had not been the case, a “borderline discussion“, considering an inclusion of further ESIs, would have been initiated. The outcome of this step was a list of 12 CSIs, coded with letters from A to L, which constituted the topics for the local Syntegration (its agenda, and a preliminary list of chapters for the festschrift):

- A) Developing Cybernetics Methodology
- B) Communication and Information
- C) Syntegration: An Architecture for Democracy
- D) Cybernetics and Ethics
- E) Diffusion of Cybernetics
- F) Spirituality and Self-transformation
- G) Adaptive Ecological Organisations
- H) Humanising Society
- I) Management Knowledge and Knowledge Management
- J) Recursive Organisation
- K) Second Order Cybernetics
- L) Cybernetics and Community

1.6 Individual Topic Selection

Two weeks before the local Syntegration started, each member received, by fax, a form to establish their topic preferences. They voted from the topic they most wished to participate in (score 1) to the least preferred one (score 12).

1.7 Allocation of Topics to Individual Members

The individual votes were returned to Joe Truss in Toronto, who following the criterion of individual preferences, allocated topics to participants; he used two algorithms (the Hancock and Sutton algorithms) to optimise topic allocation. The result achieved was an allocation which reached an average satisfaction level of 94%, with 100% for 14 of the 30 participants. This way, the list with the four roles for each member of the Infoset was ready when the local Syntegration started: 2 roles as a player, and 2 roles as a critic. This allocation is shown in the following table.

Table 1: Allocation of Topics

	Title	Colour	Players	Critics
A	Cyber-Methodology	L-Blue	Tony Gill Graeme Britton José Perez Ríos Markus Schwaninger Paul Stokes	Allenna Leonard Nina Temple Oleg Liber Roger Harnden Werner Schuhmann
B	Communication & Information	Silver	Alan Pearson Angela Espinosa Oleg Liber Raúl Espejo Werner Schuhmann	José Perez Ríos Markus Schwaninger Nina Temple Peter Stadelmann Mark d'Cruz
C	Democracy	Black	Alan Pearson Christine Cullen Hans Losscher Ilias Ortega Joe Truss	Andreas Krafft David Beatty Diane Bowling Maarten Willemsen Neil Stewart
D	Cyber-Ethics	White	Albakri Ahmad Bjorn Erik Dahlberg Ilias Ortega Roger Harnden Werner Schuhmann	Allenna Leonard David Sutton Graeme Britton Paul Stokes Jacob Avis
E	Diffusion	Brown	Diane Bowling Albakri Ahmad José Perez Ríos Neil Stewart Peter Stadelmann	Alan Pearson Angela Espinosa Christine Cullen David Beatty Mark d'Cruz
F	Spirituality	Gold	Angela Espinosa David Beatty David Sutton Graeme Britton Maarten Willemsen	Albakri Ahmad Christine Cullen Diane Bowling Ilias Ortega Jacob Avis
G	Adaptive Ecological Organisations	Green	Neil Stewart Bjorn Erik Dahlberg Maarten Willemsen Raúl Espejo Tony Gill	Alfonso Reyes Andreas Krafft Hans Losscher Jerry Meek Joe Truss
H	Humanising Society	Yellow	Allenna Leonard Christine Cullen Nina Temple Mark d'Cruz Jacob Avis	Albakri Ahmad Angela Espinosa Graeme Britton José Perez Ríos Werner Schuhmann
I	Management Knowledge and Knowledge Management	Red	Jerry Meek Andreas Krafft David Beatty Markus Schwaninger Mark d'Cruz	Alan Pearson Joe Truss Neil Stewart Peter Stadelmann Raúl Espejo
J	Recursive Organisation	Dk-blue	Joe Truss Alfonso Reyes Nina Temple Peter Stadelmann Roger Harnden	Jerry Meek Markus Schwaninger Oleg Liber Raúl Espejo Tony Gill
K	2nd Order Cybernetics	Purple	Paul Stokes Alfonso Reyes Andreas Krafft Diane Bowling Jacob Avis	Bjorn Erik Dahlberg David Sutton Hans Losscher Ilias Ortega Maarten Willemsen
L	Cyber-Community	Orange	Oleg Liber Allenna Leonard David Sutton Hans Losscher Jerry Meek	Alfonso Reyes Bjorn Erik Dahlberg Paul Stokes Roger Harnden Tony Gill

Bold type indicates names of coordinators' (appointed at the end of the local Syntegration). The name of Topic L was changed by the group itself from Public Management/Policy to Cybernetics and Community.

2. Local Syntegration - March 24 to 27, 1996

2.1 Preparation and Support

The local Syntegration was realised at the Three Ways Hotel in Mickleton, a small town near Stratford-upon-Avon, England. The financing of this event was made possible by a grant from the Foundation for Systems Oriented Management, St. Gallen, Switzerland, and also by the individual efforts of the participants and their institutions. The logistics were run in collaboration by TSI, the University of Humberside, and Syncho Ltd, a consulting firm in Birmingham.

The Infoset gathered on Sunday, March 24, 1996. Several persons who had participated in the electronic Syntegration were unable to join. One person who had not participated until then came in, almost accidentally, "at the last moment". This was a fortunate coincidence, because it allowed us to have exactly 30 persons on the local Syntegration.

The event was facilitated under the direction of Stephen Davies from TSI, Toronto, Canada, who was supported by:

Garrick Filewood
Nicola Kurk
Antonia Gill
Cornelius Crane

Karin Losscher, Garrick Filewood and Franc Mosbaugh were the logisticians of the event. Roy Stringer and Roddy Gilliard were the cameramen.

2.2 Opening Plenary - Discussion of Pre-Local Syntegration and Final Agreement on Topics (including first SYZYGY questionnaire)

The opening plenary was preceded by a meeting between the facilitators and the project coordinators. We agreed on the following structure for the three iterations of the Outcome Resolve:

- Iteration 1: idea shower
- Iteration 2: finding a kernel for each chapter and developing its conceptual model
- Iteration 3: implementation/commitments for realisation

In the plenary itself we discussed the electronic Syntegration process. Though several weaknesses were recognised (in particular, technological deficits with some of the members), in general the process was recognised as successful by everybody. All participants accepted both the list of topics as a valuable agenda and the outcomes of the roles allocation. The foci for the three iterations were also accepted.

During this plenary, the SYZYGY questionnaire was administered for the first time. This is a method to measure group cohesion developed by Stafford himself. The results are given in Appendix 10.

2.3 Outcome Resolve (3 Iterations)

The three iterations were developed over three days, the first two in sessions of 75 minutes each, the last with 45 minutes per session (see schedule in the following table). Between each pair of sessions there was a break of at least 15 minutes, which proved to be welcome opportunities to finish up discussions, to relax and to exchange all kinds of information.

Table 2: Festschrift Syntegration Schedule

March 24-27, 1996

<i>Time</i>	<i>Sunday</i>	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>
7:30 am	Arrival	Breakfast	Breakfast	Breakfast
8:30 am		Outcome Resolve Iteration 1 <i>(75 minute team meetings - 15 minute breaks)</i>	Outcome Resolve Iteration 2 <i>(75 minute team meetings - 15 minute breaks)</i>	Outcome Resolve Iteration 3 <i>(45 minute team meetings - 5 minute breaks)</i>
9:00 am				
10:00 am				
11:00 am				
12:00 am				
1:00 pm	Lunch Buffet	Lunch Buffet	Lunch Buffet	
2:00 pm	Registration <i>(including Syzygy forms)</i>	Outcome Resolve Iteration 1 <i>(cont'd)</i>	Outcome Resolve Iteration 2 <i>(cont'd)</i>	Presentations
3:00 pm				Closing Plenary <i>(including Syzygy forms)</i>
4:00 pm				Departure <i>(Design Team Planning)</i>
5:00 pm				Electronic Process Review
6:00 pm	ASI Discussion	Personal Time <i>(6:30 to 7:00)</i>	Personal Time <i>(6:30 to 7:00)</i>	
7:00 pm	Dinner	Dinner and <i>Orthogonal Meetings</i>	Dinner and <i>Orthogonal Meetings</i>	
8:00 pm	ASI Discussion <i>(Cont'd)</i> Strut Allocations	Plenary Session	Plenary Session	
9:00 pm	Personal Time	Personal Time	Musical Evening <i>(Optional, but don't miss it!)</i>	

The level of commitment and discipline was high throughout the event. Meetings were run and facilitated in very different forms. Facilitation broadly consisted of steering progress and recording discussions on flipcharts. In several cases, members of the teams took command of this recording. In other meetings it became necessary to have two facilitators operating simultaneously. Since several of the topics were technical, on a few occasions some of the participants dominated the discussions, since they were experts in the respective fields of knowledge.

The role of the critics was fundamental. Critics often gave very substantial, hardly ever destructive inputs, and spurred progress in many instances. In some cases they were almost too helpful. To one critic's comment, "You are a lazy team", another interjected "It is not as bad as it looks". In some cases, critics pointed at disequilibria in the involvement of different participants in a group.

2.4 Later in the Bar ...

There were multiple conversations later in the bar, even before the event started (Some people arrived one day early). They proved, as usual, very valuable. However, in this case, one of the startling outcomes of these conversations was the title for the Festschrift. The Gold group, including Roy Stringer, proved later in the bar that for some time they had taken over the overview of the Syntegration, and had the capacity to generate a most insightful name:

**“To be and not to be, that is the System.
A Tribute to Stafford B.”**

An event with musical performances was organised by Joe Truss and Franc Mosbaugh on one evening. This helped informal interaction and the discovery of hidden talents - e.g., José Pérez Rios guitar-playing and Werner Schuhmann Lieder-singing.

2.5 Final Plenaries - Presentation of Results, Commitments, Agreement on Production Protocol (including second SYZYGY questionnaire).

Each of the 12 teams presented their results and appointed their coordinator for the following phase, - the production of the chapters. Additionally, agreements were reached as to the process for the post-local Syntegration activities ("Electronic Syntegration II"). Guidelines for collaborative authoring were formulated by Mark d'Cruz (see Appendix 11) and rules for the Festschrift production were edited (see Appendix 12). Teams agreed on a production schedule.

This was a design for an optimal process, in the sense that interplay and alignment between players and critics would be guaranteed. It should be noted that we had agreed to maintain the structure of the local Syntegration beyond the local event itself. We will develop this further in the next section.

Unfortunately, later on these guides and rules were not sufficiently followed by the teams, which made both the work in the groups and our job as coordinators far more difficult than it should have been.

In the concluding session, the SYZYGY questionnaire was administered for the second time. The results are appended. They show a step improvement in the Infoset's cohesion, something that we will reflect upon later.

3. Electronic Syntegration II - post-local Syntegration

The debriefing of the Local Syntegration videotapes was done by Andreas Krafft and Alfonso Reyes. For two weeks they worked on this task at the offices of Syncho Ltd in Birmingham. These transcriptions are included at the end of each chapter in the Festschrift.

The idea was to maintain communication within groups in ways similar to the iterations of the Outcome Resolve, and to give critics a chance to exercise their editorial, quality-assurance role. This idea worked only partially. The team structure for the production of the Festschrift was mapped in First Class, where the twelve nodes and their critics had independent but related folders (see Figure 1 and Appendix 4).

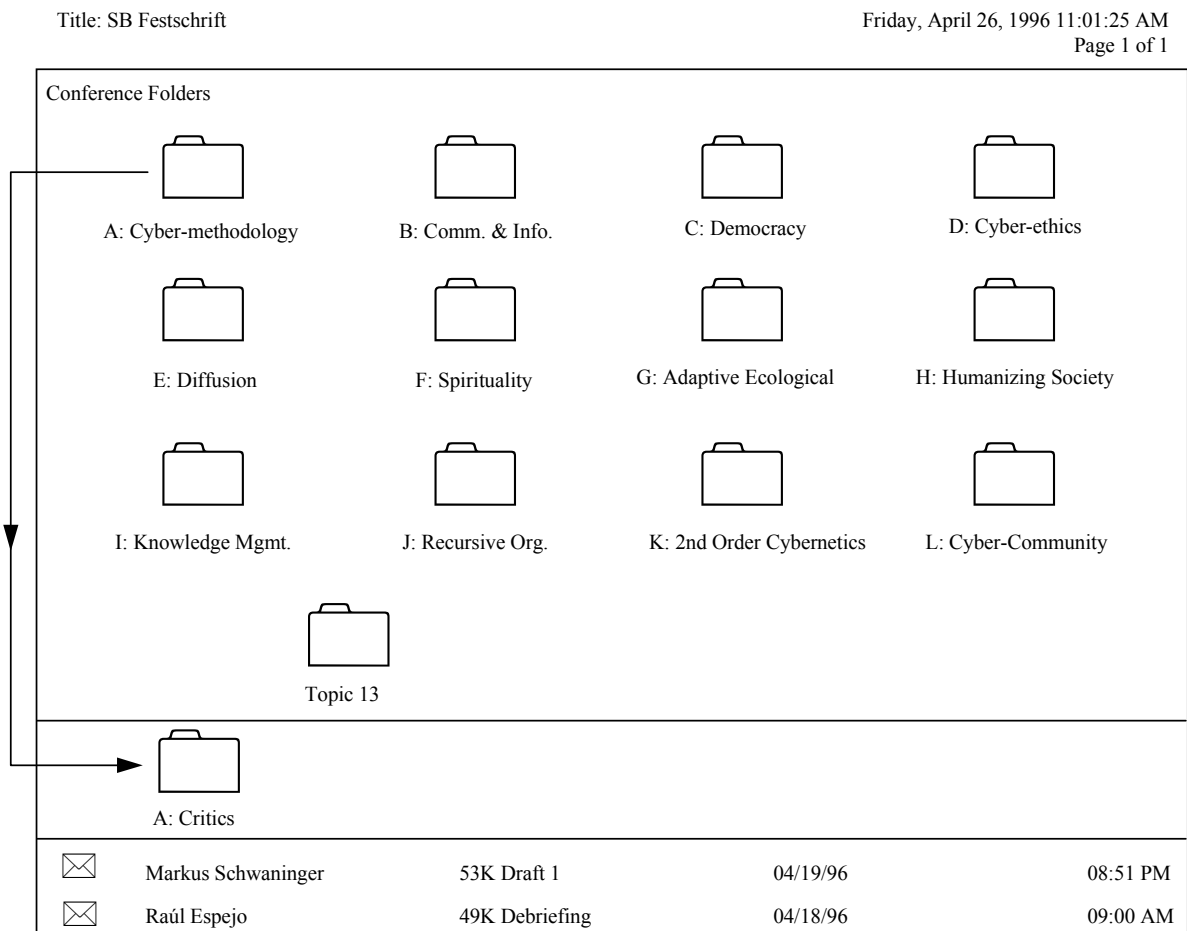


Figure 1: The software platform for the Electronic Outcome Resolve.

This phase was characterised by an interaction which was much more intensive and competent than the communication in the Electronic Syntegration I. This indicated that the local Syntegration had achieved a step increase in group cohesion.

The modes of operations were very different among the teams. At one extreme, we had a couple of teams adhering strictly to their schedules and to the production rules. At the other extreme, one team had no clear idea what to do or how to organise itself. They moved from a proposal to generate the content via a small form Syntegration (see the Black Chapter) to the production of a chapter which basically reflected the view of one person. In between we could observe multiple forms of cooperation, which are reflected in the content of the Festschrift.

As editors, the two of us met in St. Gallen from July 15 to August 1, 1996, to proceed with the final editing of the 12 chapters and with writing these reflections. This was an intensive phase, during which Andreas Krafft, Markus' research assistant, provided invaluable help to us. As agreed at the end of the Mickleton Syntegration, the definitive versions of all 12 chapters should have been available since the beginning of July. In practice, only four chapters were ready on July 15. In the remaining 8 teams, finalisation was still going on. In the following almost three weeks, we experienced not only excellent teamwork between the three of us in St. Gallen, but we had a lot of interaction with practically all teams (mainly via their formal or informal coordinators) and individuals, because we needed further information even from those whose papers were ready: Comments on the process, introductions linking papers, keywords and CVs of group members. This was, overall a very enjoyable experience. An atmosphere of excitement, creativity and commitment was palpable. A large number of individuals made enormous efforts to get their contributions ready. They also did not hesitate to keep improving their "last version" as many times as needed to accommodate the comments and critiques of their colleagues (and their own; some of them were their own most severe critics). So we got many "last versions" of papers and graphics, and had a hard time keeping track of all the changes. The last correction on the last one of eleven chapters was inputted two minutes before Raúl left the Institute of Management at the University of St. Gallen, on August 1, 1996, heading back to England. At that stage only the last one of the chapters was still in process; this was with Roger Harnden, and upon special agreement. Roger, despite a lot of stress in his job, had been writing the final versions of two chapters; the groups responsible for these chapters were each short of two persons, who had not shown any - or hardly any - activity since the local Syntegration.

As editors of this collaborative work our position has been that the chapters were wholly self-produced. We have not interfered in their content nor excluded anything based on our judgement. One of the strengths of this Festschrift is that it is genuinely the outcome of thirty people's effort, albeit with different degrees of contribution.

4. CD-ROM Production

On Saturday 3rd of August, Raúl went to Liverpool to hand over to Roy Stringer the final versions of the chapters. Allenna and Roger were there as well. Roy had already digitised the videos shot during the local Syntegration and created an electronic icosahedron to access chapters following their colour names. This meeting made apparent to Raúl that several of the chapters had been produced without enough care for their intended medium. For instance, too much text either in graphs or in chapters for the purpose of effective multimedia communication. Roy was left with the hard task of making sense of a mass of seemingly chaotic material.

REFLECTIONS

This section offers some reflections on the experience of producing a Festschrift in Stafford's honour. These comments are organised around the stages of the Syntegration protocol.

We have developed a process based on electronic and personal interactions to produce an integrated book. Many questions emerged during this process. Some of them can be answered based on the experience detailed above, several have only been mooted during the process itself and are awaiting further research.

For one year, from September of 1995, we have been creating a Global Publication, with the participation of people from 16 countries working in 11 different countries. The first part of the process, the Electronic Syntegration I, had more participants than the eventual 30 who attended the Local Syntegration. However, some of these 30 did not participate in the Electronic Syntegration I. Among the infonet participants in the local Syntegration there were 9 academics, 4 students, 12 consultants, 4 entrepreneurs and one politician. Some had very strong views about cybernetics and were involved in its current development, others had much more passive and pragmatic views about it. Some wanted to make a contribution to the field of cybernetics; most, if not all, were interested in co-operating in something that in itself was a test of Stafford's ideas. All were interested in different aspects of Stafford's personality, though a few knew little about his work or cybernetics in general. Some were very well supported by information technology - others had little or nothing of it. Some had more time to spend on this project than others. Indeed, the Infonet had a diversity of cultural, knowledge and situational backgrounds.

With all these characteristics, this has been a genuine exercise in Computer Supported Co-operative Work (CSCW). In these reflections we want to assess the process and its outcomes. What have we learnt? What are its strengths and weaknesses? How has the Syntegration protocol influenced the outcome? How could we use the same approach better in the future?

Our intention was to provide a structural context for people interested in Stafford's work to come together and produce a worthy book. This had to be a highly integrated work with a self-generated content. Indeed, we did not want to define the content beyond saying that its purpose was to discuss the relevance to society of organisational cybernetics in general and Stafford's work in particular.

Syntegration, as developed by Stafford in his book "Beyond Dispute", is a protocol for the above purpose. The protocol has been adjusted as explained above in order to produce this book. We also wanted to give the chance for many different forms of expression to emerge in producing the chapters, hence the idea of a CD-ROM, multimedia publication.

In what follows we reflect on the process in detail, including the adjustments we made to the standard Syntegration protocol, the experiences we had in its realisation, and its shortcomings and possible improvements.

Electronic Syntegration I: Creating the Agenda

Generating Statements of Importance

In this case, creating the agenda meant creating the book's content; that is, the names of the chapters. To do this, the protocol requires the generation of statements of importance (SIs). The procedure used in this project and its results were explained above. Now, our question is:

- Assuming that everyone has adequate technology - something to be expected more and more in the future - how can we increase the quality of this part of the process?

In this part of the process there were several contributors who later on did not attend the local Syntegration. Is it important to maintain the membership of the Infoset throughout? Or, is there an advantage in having as many ideas as possible at this stage regardless of whether or not their originators attend the local Syntegration? Statements which create new insights in others, even if unintended, enrich the process. In that sense we see no problem in having bona fide participants in this stage even if they are not intending to continue later on.

The statements of importance we received varied in format and length. Some of them were in fact lengthy position statements, others were short, open-ended statements. In some cases people wanted to send graphics and other audio-visual material. We were not ready for this possibility; the technology of several participants was not adequate for the necessary transmissions. However, the purpose of this stage is to increase the participants' variety relative to the opening statement. Therefore, the technology should be set up in a way that contributions in other formats than just text can be processed. At least there are two factors to consider; on the one hand an "electronic" process makes possible the use of more powerful and insightful forms for statements than do local syntegrations, where time and resources may restrict them to sentences. On the other hand, statements of importance have to be succinct and to the point in order to increase the chance of people being influenced by them. Otherwise, there is the risk of information overload.

In order to make everyone's ideas visible to the whole group, while avoiding personal concerns and reserves, we numbered them - maintaining anonymity at that stage. In fact, participants could relate names to numbers under another option of the WWW, but at least it was clear that should it be desirable, statements could remain anonymous, even though the option was not used in this case.

Facilitators have little influence over this stage of the process, other than to determine when to move into the Problem Jostle and to offer encouragement to participants to continue generating statements.

Problem Jostle

After a period of variety expansion the participants have to reduce the variety of the statements of importance (SIs) into a set of group-owned Aggregated Statements of Importance (ASIs). Often the process may imply arranging SIs in clusters, in order to develop an overview of them and start the problem jostling.

The purpose of this stage is to create shared SIs rather than individually owned statements. Sometimes this will imply aggregating statements. However, aggregation is in terms of coverage as well as in ownership. Therefore it is possible to have an ASI which is basically the same as an original SI but, because it is now shared by more than one member, it takes the status of an ASI.

Again there are significant differences between the “local Syntegration” mode and the “electronic” mode. In the first, problem jostling takes place over a period of few hours. In the second, this phase may take several days or weeks. Participants can look at the SIs and cluster them in any form they wish, try alternatives and develop an overview of the total issue before they start the jostling. In our case, participants were instigated to do this. An example of this clustering, produced by the facilitators, was put into the WWW (see Appendix 7). A few followed this example.

However, on the whole this stage did not move smoothly. On the one hand, people were still experiencing technological difficulties; on the other, this was the beginning of a truly co-operative process in which learning had not yet taken place. It took some time for people to realise the nature of the required interactions and the fact that ASIs were not “aggregated statements of importance” from one point of view but statements of importance shared, and perhaps aggregated, by several participants. Eventually participants started to communicate via email and telephone and ASIs emerged. However this was an effort undertaken by about half the Infoset. Only 14 members of the Infoset gave in ASIs, doing the job for the rest: 3 members gave in 1, 5 member gave in 2, 2 gave in 3, 2 gave in 4, 1 gave in 5, and 1 gave in 6.

One could use the term “clique”, here. A “clique” took command of the agenda; in other words, the rest of the Infoset refrained from taking charge. In several cases there were individuals taking an active stance in the ASI discussion, but letting their colleagues give the results in.

ASIs were input onto the bulletin board and a facility for signing them was made available. For a statement to be considered an accepted “Infoset ASI”, at least five signatures were required. Participants could sign as many ASIs as they wanted. In practice this meant that 25 participants gave signatures. 16 of these signed for 6 or more ASIs, with 4 of them signing for between 13 and 19 ASIs. Here again, one could talk about a “clique” (all of these four having formulated less than 5 ASIs: 1 with 4, 2 with 2, 1 with 1 ASI formulated), probably concerned with giving a chance to a broad spectrum of ASIs.

In a situation where there is active support for this process, this is not a problem. However, if only a few members participate, they could influence the final agenda beyond their representation. In an ideal situation, one with each member technologically linked and actively participating, it would have been better to have the number of signatures for each individual confined to a certain limit. In practice, as explained above, the selection of ASIs was strongly influenced by about 16 participants (with 6 to 19 signatures) and weakly

influenced by another 9 (with one to three signatures), while the rest of the Infoset (15 persons, given that 40 persons had given in SIs) did not sign at all.

As an outcome of this signing phase, the 38 initial ASIs were reduced to 35 - i.e., only 3 of the statements were rejected by the Infoset.

In fact, the second clique's action made this filter less strong than it could have been. This was considered to be less damaging than reducing the 38 ASIs to a much smaller number simply because people were not jostling enough. It was only after the event, when the 35 accepted ASIs were put on the board, that members became more active in their discussion. In summary, we can say that "physical distance" affected negatively this stage of the process. Perhaps more clarity about the purpose of this stage and better acquaintance with the technology would have improved its quality.

Participants needed to learn that they had equal "currency" in this process - the "currency" of their signatures, which could be used to help advance a topic to the next stage of the process.

Sharing an ASI does not imply agreement about it. It merely implies agreeing on its significance as relevant to the opening statement, while accepting that this significance may not be the same for all signatures.

The outcome of this stage of the process is a set of statements recognised as significant for the opening statement, without individual commitment to them as yet. There is only agreement about their coherence and significance. Considering these points, it would appear that it is not fundamental for participants of this part of the process to be exactly the same as those of the local Syntegration.

The particular role of facilitators in electronic syntegrations is to monitor progress and keep participants informed about it. They have less capacity to influence the development of statements than in "local syntegrations" where they can help participants express their ideas or enter into the discussions taking place during the Problem Jostle.

In our view, the Infoset - by and large - developed an insufficient appreciation of the potential of electronic interactions. This was a significant drawback considering that they were coming from four different continents. Participants have to learn to overcome distance as a barrier for communications.

Facilitators decide when it is time to move into the Hexadic Reduction. In our case this was decided by the project's timetable.

Hexadic Reduction

The purpose of this stage was to reduce the 35 ASIs to 12 composite statements of importance (CSIs). These CSIs would be, as explained above, both the agenda for the local Syntegration and the chapters for the Festschrift.

One option was to ask people to vote their preferences on these 35 ASIs. However, elisions of similar ASIs may be suggested if voting too early might have a negative impact by splitting votes across similar topics. Facilitators help the group to make the necessary decisions in eliding ASIs.

This stage of the process was perhaps the most successful in the electronic “pre-local Syntegration”. At this stage participants were more at ease with the technology and everyone was using email and accessing the WWW Bulletin Board.

Elision and voting options were well supported by Andreas Krafft at St. Gallen and Mark d’Cruz at City University. Since it was clear that several of the ASIs were similar, the first step was to ask participants to elide them in triplets or doublets. In fact this was done by email. Participants had time to study ASIs, develop their views about them and offer their individual views about overlaps and similarity. In a local Syntegration this stage takes place over a short period (say an hour); this makes hasty elisions and unreflected agreements more likely. The outcome is perhaps a weak grounding of group distinctions. The electronic version of elision makes the surfacing of genuine similarities and distinctions more likely. In fact, we had 24 responses suggesting 115 doublets and triplets, which made possible the elision of 35 ASIs into 18 Elided Statements of Importance (ESIs).

Each of these ESIs had a meaning for the participants. Names emerged for them and somehow they helped to anchor in the participants’ minds a possible agenda for the local Syntegration and possible chapters for the Festschrift.

However, the 18 ESIs still had to be reduced to 12 CSIs. For this purpose we used a voting procedure. Each participant had a number of votes and could allocate them according to their preferences - as explained above. The outcome was 12 CSIs.

In an electronic Syntegration this stage is likely to be richer than in a local Syntegration. Participants have more time to reflect about the topics and to assess the implications of their voting. The meaning of these topics is more grounded in their social consciousness. In the event the 12 CSIs were short sentences, emerging from the elision stage. Even if their meanings were still unclear, they were enough to support a basic “agenda” agreement between the Infoset members.

This stage was particularly important in a project like this, where the names of the topics defined the content of the discussions in the local Syntegration and, beyond that, the content of the Festschrift’s chapters. Although at this stage we had a fairly clear picture about who was coming to the local Syntegration, there were still gaps. A few of the people who had been contributing at this stage did not come and a few of those who eventually came had not been contributing. Most likely it was for this reason that during the local Syntegration some topics were discussed by people who had little to say about them. This was particularly the case for the “second order cybernetics” topic, but by no means only for this one.

Such mismatches of topics and participants had an effect, no doubt, on the degree of commitment that people expressed to the actual production of the chapters, observable in the process descriptions of the 12 topics. They are, no doubt, less likely to occur in a full local Syntegration. However, those who are active participants in an electronic Syntegration may be expected to develop a stronger commitment and have a deeper appreciation of the topics at this stage.

For the Hexadic Reduction, the same membership would seem to be necessary as in the local syntegrations.

Topic Allocation

As explained, this was the last activity of the electronic pre-local Syntegration. Each of the participants was asked to express their preferences for the 12 CSIs by completing a topic selection form which allowed them to indicate, by prioritising from 1 to 12, their topic preferences.

Again, this is an activity that might benefit if participants had more time to reflect upon it. In a local Syntegration, such ranking of topics has to be done in a short period. In our case, people were asked to email their rankings to the facilitators; allocation was not possible before receiving all the answers.

In the event, answers came to us over a period of 10 days, making it impossible to send out results in advance of the local Syntegration. This was unfortunate, as it meant that we could not inform participants about their topics, which reduced their chances to prepare themselves for the event. In general, however, an electronic Syntegration should make it possible for all participants to know in advance their topics - whether as players or as critics. This possibility must be a procedural advantage (compared to a local Syntegration) when preparation is important for the discussions.

Local Syntegration: Discussing the Agenda

In the event, the local Syntegration had exactly 30 participants, so that it was not necessary for the facilitators to make adjustments to the composition of groups. Nor had they to take care of participants unhappy with their allocations. Everyone accepted their allocation. On the whole people found them consistent with their expressed preferences - though for a few this consistency did not mean much; they did not know much about the topics anyway.

The purpose of the local Syntegration was to develop the Festschrift's content. For this purpose each of the 12 groups (related to each of the 12 topics generated in the Agenda Creation stage) would meet three times, over three days, for about 3 hours in total. These were the Outcome Resolve meetings.

At the outset of the process we thought, naively, that a good deal of the content for the chapters would emerge from this event. The expectation was that the editors could take the recordings of the meetings and produce the final chapters. As we were approaching the event it became apparent that this would not be the case. The Agenda Creation had produced only general CSIs and the most we could expect from the local Syntegration was directions to produce the chapters. We realised that we were involved in a much bigger process which required, in order to produce a book, continuing after the local Syntegration with an Electronic Syntegration II.

Outcome Resolve

In general the Infoset, as a whole, should have the freedom to take the discussions in any direction they wish during the Outcome Resolve meetings. In our case, however, we felt the need to give some structural help in order to facilitate the subsequent writing of the chapters. Our suggestion was that the first meeting should focus on an ideas shower, the second on defining the kernel and conceptual structure for the chapter and the last on revising the results of the previous session and defining commitments and plans to produce the chapter. Most teams followed these guidelines, though a few took different directions.

Individual topic teams were in any case free to establish the meaning and focus of their topic, and critics were free to comment during their prescribed, and sometimes unprescribed, times. It was in the hands of topic teams to define the division of time into team member and critics time slots. Critics have a fundamental role in "steering" the topic discussion. Most of the time, topic teams and critics had an easy relation. However, sometimes it was not that easy - as is made clear in the process account of the Dark Blue team.

The highly specialised nature of the topics made it clear that specialised facilitation was necessary. Some of the facilitators were unfamiliar with cybernetics; they found it very difficult to follow and keep records of the discussions on flipcharts. In several cases, the participants themselves took this role. This raises the question, to what extent self-facilitation should be pursued. Contrary to this suggestion, in Mickleton most meetings were facilitated by two people. In one case the facilitators and cameraman became so involved in the discussions that they became participants themselves! Fortunately all the meetings were video-recorded and it was possible to do detailed debriefing after the event. (These debriefings are included at the end of the 12 chapters). However, in general it became clear

that facilitating specialised topics requires facilitators with at least a general knowledge of the language in use.

In general, all participants participated in the meetings. It did, however, become apparent that people's knowledge of their topics was uneven, something that created varied effects on the outcome. More focused discussions emerged in groups with similar knowledge levels. Groups with dissimilar knowledge levels took either the avenue of more general discussions or, at least in one case, a more complementarist approach, in which the person with least knowledge about the subject offered his personal case to support discussions.

In certain cases these imbalances produced a good deal of frustration in some of the participants. In general, groups which followed more clearly the original guidelines for meetings had more structured discussions and in the end had less problems in producing the final chapters for the Festschrift. Those groups which followed a less structured approach either had more fun or more problems during the meetings but, in general, had more difficulties in producing an integrated chapter. We cannot, however, say much about the creativity and originality of the outcomes. Evidence goes in different directions about this point.

One of the most important characteristics of a Syntegration is the reverberation of ideas around the Infoset. Participants are free to take what they hear and share it with others as they wish. We cannot say much about this point in comparative terms (with reference to other syntegrations). However, the idea was mooted that in a totally free Syntegration (i.e., with no guidelines), the chances for reverberation are higher.

This is a point that requires further study.

From the videotapes debriefings we can state some of the ideas that reverberated throughout the local Syntegration.

POINTS THAT REVERBERATED THROUGHOUT THE SYNTEGRATION

- 1) We need to work out a way to apply Team Syntegrity to a broader (social) context.
- 2) We should develop an awareness of the consequences of a cybernetic intervention in an organisation.
- 3) We should use cybernetic ideas and tools to promote the development of self-awareness in organisational members and the community.
- 4) We should design mechanisms to promote empowerment and self-organisation.
- 5) We need a clearer understanding of structural recursion to tackle issues such as ecology and democratisation.
- 6) It seems quite important to develop a "bridge language" to facilitate communication between cyberneticians and the community.
- 7) We need a clearer understanding of the circularity between the quality of the

communications supporting people's interactions and the development of cultural values.

- 8) Organisations are structure-determined systems in which change can be done only from within. How can we trigger (systemically and culturally) feasible changes?
- 9) It is important to understand how we may use the VSM and Team Syntegrity together in order to enhance autonomy without losing cohesion.

At the end of each meeting of the first two iterations, teams were asked to video-record a 2 minutes summary of discussions and to offer a statement of outcomes. At the end of the third meeting they were asked to video-record 5-minute summaries of the overall conclusions of the group. These recordings are the bases of the video clips in the CD-ROM.

At the end of the local Syntegration each topic team had a kernel for the chapter, an outline of its content, individual commitments and in some cases timetables for the production of their chapter (see Appendix 13 as an example). In this case, there were no Final Statements of Importance, the usual outcomes of a Syntegration.

As the local Syntegration was evolving, one of our concerns was to define a technical platform to support our work after the event. It became clear that production of chapters had to be the responsibility of each team and moreover that their "quality control" had to be the responsibility of their critics. The advantages of keeping an icosahedral structure for our interactions while preparing the chapters became apparent.

The idea of an "Electronic Syntegration II" started to take shape. During the plenary session after the first day of the Outcome Resolve Clive Holtham offered different technical alternatives for this purpose.

The two key issues to consider were communications (how to transmit files?) and working with different versions of the same document (i.e., version control). For file transmission we had to decide whether to continue using the WWW platform or to move into some other technology. For version control, we had to agree which software to use and the procedures to follow. Over the next two days we reached some decisions. Oleg Liber, from the University of Wales-Bangor, offered to make available the First Class software and the University's server to support communications. We took up his offer. Mark d'Cruz, Clive Holtham's assistant at City University, offered a procedure for document version control based on Microsoft Word as the standard software (see Appendix 11). Most people were users of this software, but by no means all. However the Infoset accepted these proposals, as well as an overall procedure to produce the Festschrift (see Appendix 12).

But beyond the technology, perhaps the critical success factor for this enterprise was the cohesion of the Infoset. Were people prepared to work together after the event, particularly considering the problems of location (people working in 11 different countries), and punishing schedules (all were busy people, with multiple commitments)? We had some indications about this cohesion; a cohesion test was administered at the beginning and at the end of the event (see SYZYGY questionnaires, Appendix 10). These tests made apparent that most of the Infoset members were more inclined at the end of the event to work with the others, except for two who expressed a slight decrease and two who felt significantly less inclined than before to work with the others. It was found that these last two did not

participate in post-Synte-gration activities, while the first two did remain committed to the Infoset throughout the post-Synte-gration process.

Among the questions that emerged regarding the Outcome Resolve were these:

Do we need to have participants with similar levels of topic knowledge for best results or does it help to have very dissimilar backgrounds? Does this extra variety improve or impair the outcome? We do not have a definite answer. However, it is clear that communications were more likely to run into difficulties in sessions with a very heterogeneous knowledge base.

Is it better to leave groups to define their own procedures or does it help to establish a purpose for each of the three iterations? How do these alternatives affect the reverberation of ideas? The first option, - to have some structure - gives more purpose and focus, while the second may support creativity better. Our observations in this Synte-gration do not give final answers, but there are some emerging points of understanding. Those teams that were better structured (in the sense of following our suggested structure - idea shower, kernel and implementation) in the local Synte-gration were more efficient in producing the final chapter. On the other hand, those teams with less structure were able to generate more ideas. The proof of this is in the transcription of the sessions, attached to the chapters.

Electronic Syntegration II: Writing the Chapters

Electronic Outcome Resolve

In effect the Infoset took the decision to continue with the Outcome Resolve after the local Syntegration. However, it is very different to have 30 members of the Infoset in one place at the same time than to have them at several places with different activities at the same time. The challenge was to set up a structure with the capacity to support requisite interactions. The time frame for the Electronic Syntegration II was from March, 28 to July, 15. The closing date was defined, first, by the need to have the Festschrift ready in time for Stafford's birthday, the 25th of September, and second, by the editors' available time to do the necessary editing work before passing the chapters to Roy Stringer for the CD-ROM production. During the local Syntegration each team worked out dates for draft exchanges between themselves and between them and their critics. However, we had little idea of how these interactions were going to work.

The next two activities were to be debriefings of the videotapes recorded during the local Syntegration and the setting up of communications facilities for groupwork.

These debriefings, based on their chronological and thematic accounts (as interpreted by Reyes and Krafft) were ready by April, 14. By that time Oleg Liber had already set up a conference site for the Electronic Syntegration at Bangor (see Figure 4) and sent to all Infoset members the necessary software for them to log in to the system.

As usual in these cases there were many problems in installing the software. In fact until the end of the project there were participants who were unable to access FirstClass. Those with this problem had to rely on email and other colleagues to load files into the server. In spite of these problems First Class became the cornerstone of the process. Hundreds of content files were uploaded and downloaded from the system during the 4 months of the project (see Appendix 4 for examples). Of course, a large number of interactions happened by email, by-passing First Class. In spite of all the technological, and other shortcomings, explained below, the Electronic Syntegration II did succeed in producing the twelve chapters of the Festschrift.

Chapter production: process

This was a classical example of collaborative work between people working in different locations and at different times. The contribution of the individual members of the Infoset to the post-local Syntegration process was very varied. About 15 members were highly active throughout this electronic Syntegration II.

10 members were occasionally active and 5 did not contribute at all. The effect of this was different levels of participation in the production and criticism of the chapters. An account of these different degrees of involvement can be found in the introductions to the individual chapters.

All the 12 teams produced their contributions as promised. Much was learned in the process. The ten occasionally active (responsive) members of the Infoset made contributions but were hardly involved in debates or discussions.

Two of the inactive ones were unable to contribute due to illness. Unfortunately, in some cases the coordinators were in one or the other of the last two categories. This produced delays in starting the process.

While it was not difficult for coordinators to accept their responsibility during the local Syntegration, this responsibility became much harder to discharge during the electronic Syntegration. During the last plenary of the local Syntegration our concern was “inactive teams”; we even discussed contingencies in case a team did not deliver. In the event a more significant problem was inactive individuals, particularly when they were the coordinators. Two groups had a late start and this only happened after someone else took over the coordinating responsibility.

While First Class permits participants to see in real time each of the “conferences” in progress, and also permits critics to see in real time the files sent to them by the teams for their inspection, in practice this powerful capability had only a limited use. Not only did several of the active participants experience difficulties in accessing First Class, but even some of the successful users did not experience “in the flesh” the pressures of an on-going interaction. This psychological effect of distance made interactions much less effective than in the local Syntegration. The powerful effect of being in the same place at the same time with 4 others became diluted during the electronic process. Perhaps the pressures of daily life and the concreteness of many other physical “real” interactions make much less relevant these distant, future oriented, “virtual” interactions.

The latter were the type of interactions taking place during most of the electronic Syntegration and it was not until the time for producing the final drafts for the Festschrift that people started to bridge the distance barrier. Indeed over the three weeks from the 15th of July to the 1st of August, people responded with great commitment and effectiveness to our email and telephone requirements.

There is much to learn about collaboration at a distance. Significant problems appear to derive from people’s inexperience in managing “virtual” complexity in contrast to their much higher familiarity with “real” complexity. Once this point is recognised, technological barriers to collaboration become much less significant. In fact, in our case the latter were sorted out, at a cost, but with some ease when pressures to hit the deadlines became real.

Preparing a book following the Syntegration protocol makes apparent a number of problems.

First, it implies communication requirements far beyond those that are necessary to produce a book of weakly related chapters. Therefore it makes sense to use it only if the interest is in producing a highly integrated book in a collaborative venture between several or many authors. Syntegration “small forms” (for which, see the Black Chapter) permit groups of less than 30 people to carry out this kind of integrated task.

Second, the need to produce a highly integrated book depends on the nature of the issues at hand. If these issues are highly interconnected then it makes sense to map them with the requisite network of interpersonal interactions. In this case our foci were on a variety of

highly interrelated organisational and societal issues, suggesting the value of integration. Our concerns were the multiple and interconnected insights that can emerge from cybernetics in general and Stafford's work in particular, relevant to society.

Whether the book has achieved this aim is left to "readers" to judge; however, we are left in no doubt that the 12 CSIs were highly interrelated and that treating them in isolation, even if individual contributions could have been of higher quality, would have meant a less comprehensive and rich approach to the total situation. At least in our case there is an underlying co-ordination and integration of the CSIs which offers the potential for a holistic view of social issues. During the earlier parts of the process one of the participants suggested to end the "local Syntegration" with a strong statement integrating all the views expressed during the three days. He even suggested the possibility of giving a "tour" to the reader through the chapters showing the evidence of this integration. Surely, however, the complexity of thirty people is much higher than any synthesis produced by an individual viewpoint. In fact we expect that there will be as many syntheses as readers of the Festschrift. We considered that integration of the content was fundamental to our endeavour. Not a rational, one-viewpoint integration but an experiential integration based on "real world" interactions. We learnt a good deal about cooperation in these circumstances but we also had to accept that we were a long way from knowing how to facilitate good levels of cooperation. The process comments at the beginning of all the chapters make this apparent. They show that in several of the chapters there was a failure to achieve common authorship. Quite naturally, people felt ownership for what they were producing and there were difficulties in the integration of different contributions. Though the Infoset members had cybernetics, and Stafford's work, in common, most had not worked together before. Often the implicit view was that integration meant diluting individual thinking into the minimum common denominator. However, there were participants who were not prepared to dilute their thinking. It became more and more clear that collaboration meant to express individuality around a common kernel, not to dilute it for the benefit of common authorship.

In the end, the chapters have different configurations of authorship; this is explained in every case. However, chapters are owned by individuals and teams and they are fully responsible for their content. We did not want to exercise editorial censorship of any kind. For us, as editors, our concern has been creating a structural context with enough checks and balances to guaranty the quality of the Festschrift. We are aware that the Syntegration protocol, as realised here, and the Festschrift itself, have shortcomings, for which we assume responsibility. We believe, however, that the path is open for much learning starting from this experience.

The third problem that became apparent was that, even if integration is achieved through this process, the cost of producing it may be too high. The accounting criteria necessary to make this assessment are certainly not those of standard, traditional accounting. Perhaps this book itself is and offers an initial step towards clarifying this issue; for more on this, see the Green Chapter.

Conclusion

Producing this Festschrift has been an exercise in applying cybernetics to the production of a knowledge product. The process being used in its production illustrates the interplay between structure and content (Espejo 1993). The Syntegration protocol provides the model to create good “cybernetics”, that is, good communications and control, with adequate channel capacity between thirty people pursuing the common goal of producing an integrated book. The actual interactions, focused on the relevance to society of cybernetics in general and Stafford’s work in particular, were responsible for creating the content.

This project has made it clear - and the evidence is in the video tapes - that strong checks and balances are likely to emerge during a local Syntegration, when participants are communicating in the same space and time. These checks and balances are much weaker when people operate in different places and at different times. It could be argued that the problem is their lack of commitment and/or the limited resources available to them. However, our experience suggests that there is much to be learnt about how to make more real a virtual space of interactions. Space and time became much less of a problem, suggesting that there was commitment and there were resources, as soon as people realised the immediacy of the task. Unfortunately, at this point the interactions became more “hierarchical”, focused on responding to the pressures of those producing the Festschrift in St. Gallen, than “heterarchical”, focused on the creation of self-constructed chapters, influenced by the reverberation of multiple lateral communications. Yet, producing this Festschrift has offered a wealth of new insights and possibilities to improve cooperation.

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