Communications and forum

Global transdisciplinary research co-operation: 30 cyberneticians online

Received February 1997

On 25 September 1996 a research project directed by Professor Raúl Espejo, University of Humberside, England and Professor Markus Schwaninger, University of St Gallen, Switzerland, reached its culmination: A *festschrift*[1] for his seventieth birthday was handed over to Stafford Beer, the founder of management cybernetics[2]. This commemorative publication is the result of a model-based interaction carried out mainly via electronic media, of 30 cyberneticians from 16 countries and four continents. The ceremony took place at John Moores University, Liverpool which houses the Stafford Beer Collection. The project was supported by a considerable donation from the Stiftung für Systemorientiertes Management (Foundation for System Oriented Management), Chairman: Professor Hans Ulrich.

The aim of this project was to create a *festschrift* worthy of the founder of management cybernetics. At the same time it should constitute a substantial contribution to the body of knowledge of cybernetics. The initiators – Espejo and Schwaninger – decided in 1994 to realize a corresponding project. Stafford Beer is a professor at several universities in Britain and the United States, the winner of several prizes, and president and ex-president of high-ranking scientific societies (including the Operational Research Society). He is also a conceptual architect of new models of organization, including innovative uses of information technology; as a practitioner he was one of the great pioneers in their realization.

In principle, at the core of a *festschrift* project is the generation of a knowledge product. However, commemorative publications often represent collections of articles that show little integration. Worldwide, there is a large number of people who know Beer's works well and probably would have been willing to contribute to this *festschrift*. How was it possible to canalize this high potential into a coherent effort that would lead to a genuine knowledge product? In order to reach the demanding objective the project was aiming for, a new approach was required. The initiators decided to apply Beer's Team Syntegrity Model® as a basis for organizing the process of creating the *festschrift*. That model appeared to be especially suitable for carrying out the ambitious endeavour to work on the complex domain of knowledge embodied in

Editor's note: Communications and forum contributions are not sent to referees and consequently will be available to readers much more quickly. Comments and alternative viewpoints on all matters pertaining to cybernetics and systems are sought, particularly on the many issues that are raised in this section.

Kybernetes, Vol. 26 No. 4, 1997, pp. 459-463. © MCB University Press, 0368-492X

management cybernetics, in a global co-operative research and publication project.

The challenge confronting us was mastered as follows:

- Gaining a circle (infoset) of experts in cybernetics (among others from the universities of Manchester; Toronto; Valladollid; Dublin; De Los Andes, Bogotá; Mannheim; Humberside; John Moores/Liverpool; City University, London; St Gallen; Bangor; Nayang Institute of Technology, Singapore).
- Interaction on the basis of the team syntegrity model, a cybernetic model of organization created by Beer himself (see Appendix).
- Combination of distant and local communication between the persons involved, making use of the most advanced technological means.

The Team Syntegrity Model had previously been applied in numerous strategy and organization projects but always merely in workshops, i.e. via local communication. In order to make a genuine process of generating knowledge resulting in an actual product – the *festschrift* – possible, it was required to plan and control the project in an exceedingly circumspect fashion. To get the most out of the project, the first electronic syntegration ever realized was among the planned technological innovations. Another innovation was the endeavour of 30 people writing a book together, mainly via the World Wide Web.

The project proceeded in the following phases:

(1) *Preparation*: Installation of a World Wide Web site as a communication platform (we used a server at City University, London, which also gave the corresponding technical support).

(2) *First electronic syntegration*: By way of distant interaction the agenda for a local syntegration was generated that was to take place at the end of March 1996 in Britain. In the course of five months an infoset of more than 30 cyberneticians from four continents and 16 countries was interacting via electronic means.

At the beginning a multitude of ideas was generated, all the participants handing in multifarious issues viewed from very different perspectives. Later priorities were set successively. By means of election procedures (via the World Wide Web) and lateral discussions (that were partially also carried out by supplementary means of communication such as telephone, fax, e-mail etc.) the infoset created, in self-organizing fashion, an agenda, namely the 12 topics for the various chapters of the *festschrift*. In this phase 147 initial statements of importance were transformed, step by step, into 12 consolidated statements of importance. Finally, each member of the infoset could decide to which topics he or she would prefer to contribute, i.e. which of the 12 teams he or she would join as a player.

(3) *Local syntegration*: From 24 to 27 March 1996 the definitive infoset – 30 cyberneticians from all over the world – met for a three-and-a-half-day workshop at Mickleton near Stratford-upon-Avon, England. In an intensive, and for all participants, fascinating, exchange of ideas the 12 chapters of the *festschrift* were drawn up. The discussion was organized according to the geometry of an icosahedron: each of the 30 participants was a member of two teams as a player (represented by an edge connecting two corners of the icosahedron), as well as a critic of two further teams. Each team met in three iterations: first for a kind of brainstorming; second for a conceptualization; and finally for designing an action plan, i.e. how to proceed in order to produce the respective chapter within the team. All sessions were recorded on videotape. These recordings were then transcribed (in excerpts) by Andreas Krafft and Alfonso Reyes, the assistants of the project co-ordinators.

(4) *Second electronic syntegration*: Again through distant interaction the 12 chapters were written between March and the beginning of August 1996. For this purpose a further platform with a special groupware (first class) was installed on a server of the University of Bangor. An important input for this phase was the transcripts of the sessions in Mickleton. The consolidation of the chapters and the writing of one chapter reflecting on the process used by the editors took place between the middle of June and beginning of August at the University of St Gallen.

(5) *Production of the CD-ROM*: In the months of August and September, a CD-ROM was produced at AMAZE, a media company in Liverpool, under the direction of Roy Stringer and Dr Roger Harnden, two multimedia experts. This CD-ROM is a technological and educational masterpiece. It documents more than the results of the project. The user can navigate through a multidimensional structure in an interactive manner, to discover the process that led to this end product.

The title of the forthcoming *festschrift* is, *To Be and Not To Be, That is the System: A Tribute to Stafford Beer* (Eds Raúl Espejo and Markus Schwaninger). The work will be published as a CD-ROM as well as in the form of a book, probably under the title, *Cybernetics in Organizations and Society: A Self-Constructing Approach.*

The presentation at John Moores University, Liverpool demonstrated that this *festschrift* constitutes a world innovation. In a global, decentralized, co-operative research and publication project we created more than a work of 12 highly integrated chapters. At the end of the process we realized that a most promising new method had been found to organize distributed processes for the elaboration of knowledge-intensive products. The full potential of this completely new method remains to be actualized in the future.

Notes

1. The term *festschrift* also stands for commemorative volume.
2. A special issue of this journal was dedicated to Stafford Beer, at an earlier stage (*Kybernetes*, Vol. 22 No. 6, 1993).

Appendix: The team syntegrity model – an architecture for organizations of the future

Team syntegrity is a future-oriented approach to the design of democratic management in the sense of the heterarchical-participative type of organization. It is a holographic model for organizing processes of communication, in particular for the (self-)management of social systems. Based on the structure of polyhedra it is especially suitable for realizing team-oriented structures as well as for supporting processes of planning, knowledge generation and innovation in turbulent environments. In the following the architecture of the model will be illustrated by using the structure of an icosahedron, as an example (see Figure A1).

The formation of networks by persons at different locations, who are connected by mutual interests, is a manifestation of the information society and a structural answer to challenges of our times. An infoset is a set of individuals who share a common concern and who are in possession of corresponding information, or rather knowledge, connected with the subject. The Team Syntegrity Model (for details see: Beer, S., *Beyond Dispute: The Invention of Team Syntegrity*, Wiley, Chichester, 1994) supplies the structural framework for the synergetic interaction of an infoset that is intended to lead to an integration of multiple topics and perspectives. The term "syntegrity" results from a combination of synergy and integration. An infoset of 30 persons can organize itself using the structure of an icosahedron. (For different numbers of people solutions with the help of other polyhedra are possible.) Each member of the infoset is represented by one edge of the icosahedron. Each vertex corresponds to a team: with the icosahedron there are 12; they are marked by different colours. Five edges lead to each vertex, therefore there are five members to each team (as players). Thus each participant as a player

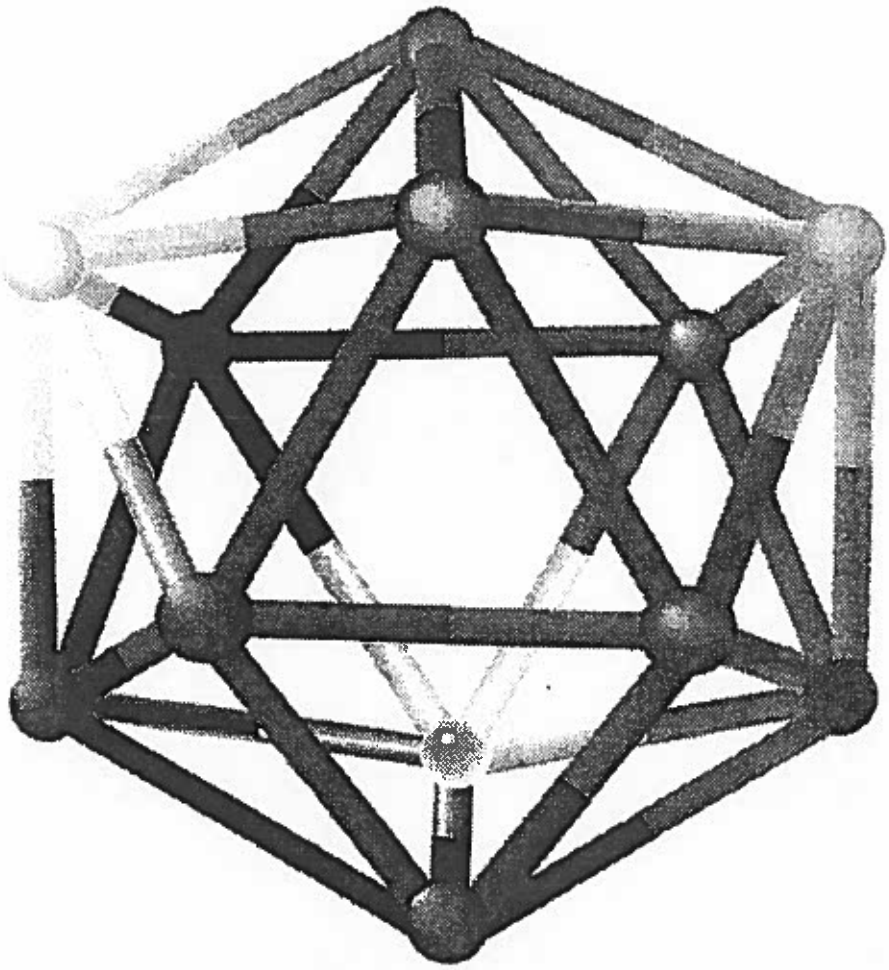


Figure A1.
The icosahedron reflects the structure of the team syntegrity model

belongs to two different teams: those connected by the edge that represents him or her. Mrs Black-Yellow, for instance, belongs to the teams black and yellow. At the same time she is acting as a critic to two other teams. This means that each team consists of five players and five critics.

The process of a syntegration proceeds as follows (simplified representation):

(1) *Opening*: The syntegration stands under a general topic that focuses all mutual efforts and is explicated in an opening question, e.g., which form should management training take in future?

(2) *Generation of the agenda (problem jostle)*: Each participant hands in contributions that seem important to him or her (statements of importance). In the following these are discussed and combined (aggregated statements of importance). Then, in a process of successive synthesis and prioritizing, the agenda for the actual work on the general topic or problem is generated (hexadic reduction). It is finally worded in 12 topics (consolidated statements of importance).

(3) *Assignment to groups (topic auction)*: Each member of the infoset decides on the topics to whose processing he or she would prefer to contribute. A corresponding listing of the individual preferences forms the basis for the assignment to the various teams, with the help of an optimization algorithm. One alternative is random assignment to groups.

(4) *Working on the topic (outcome resolve)*: The individual teams (consisting of five players and five critics each) discuss their respective topics. Each team meets several times (e.g. in three iterations). The fact that the same problem setting with its different but interconnected aspects is continually processed by the same set of people, who gather in alternating compositions (reverberation), clearly corresponds to a self-organizing process with a high effect of integration.

(5) *Conclusion*: Final co-ordination if necessary, presentation of the results in plenary.

Markus Schwaninger
Professor of Management
University of St Gallen
Switzerland