METACONFERENCING

- discovering people/viewpoint networks in conferences

by A . J . N . Judge

Introduction

This paper gives an overview of the process and the results of the « Call to experiment » launched by Stafford Beer, Past-President of the Society for General Systems Research (SGSR), during the recent international conference of the Society in London. The theme of the conference was: «Improving the human condition; quality and stability in social systems». His justification for the experiment in an inaugural address, appeared in a previous issue of Transnational Associations (1). A description of the process as an aspect of « participant interaction messaging » appeared in an earlier issue (2). Stafford Beer's specific proposal to the 228 participants is reproduced here (see Insert 1). The following description is that of an interested participant and does not necessarily reflect all the concerns of the people who made the whole experiment happen, namely Stafford Beer and his colleague Gordon Pask (who initiated the idea and Alan Mossman and S D Howell (who made it work with some assistance from the others).

Description of Round 1

Step 1 : Statement formulations
Participants responded enthusiatically to the proposal. Cards bearing statements were prepared and left in the « message box ».

Step 2 : Editorial regrouping
The cards were sorted into « foci of concern - in the light of the judgment of the metaconference team. This resulted in 69 « statements « which were typed in sequence on a numbered list (see Insert 2),

Step 3 : Statement list for participant response
The list was reproduced and distributed to participants. The list was introduced by some remarks. As indicated, people were asked to respond very quickly - and did so. They were also free to introduce new statements on cards, by mailing them in the same box in which the lists were returned.

Step 4a : Computer processing (people correlations)

Each reply received from participants was

Based on documents, tables and maps prepared by Stafford Beer, Syd Howell, Alan Mossman, and Gordon Pask

numbered for identification during data manipulation. Of the 114 replies, 19 were anonymous (although 11 of these seemingly because they forgot to insert their names, for they later identified themselves, after the data had been processed). The time-consuming part of the task (since no typists were available) was feeding the data into the computer system via a terminal. Once in, a standard statistical programme was used to correlate the patterns of response of each participant.

This took less than a minute of computer time at some distant location in the network. The results were then printed out in tabular form as indicated in Insert 3. It shows, for a given pair of participants, the degree of correlation between the pattern of their responses to the 69 statements (0.00 being zero; 1.00 being total; with - indicating negative correlations).

Because of the format of the table it was printed out in several sections which were attached together with adhesive tape (making a table of 50 x 180 cm).

INSERT 1 Stafford Beer's Proposal

- A large supply of small blank white cards is available in the reception room.
- / ask everyone to subscribe to a single statement, written on a card, at least by the time proceedings begin tomorrow morning, and to mail that card in the postbox provided there.
- What statement ? That is for you to decide. It should be something relevant to the purposes that brought us all here. It could be a declaration, a comment, a question, an injunction, or something e/se that you want to put down. But it should be something you regard as important
- Watch out for motherhood statements. In case anyone present does not know this trick : make sure that the negative of the statement would find defenders. If not, you have made an empty utterance.
- Perhaps you have more than one statement to make. Then please use more than one card- otherwise sorting becomes impossible.
- Please make a conscious effort to avoid the accepted categories : of this conference, of world-affairs, and, (forgive me. but especially) of your own specialism.

- You might say something that has never been regarded as relevant; or someting which - because of the logic of accepted language - could not even be said. In that case, your powers of communication will be strained.
- So far I have spoken to you individually, because I believe in the individual. Make your personal statement, ascribe your name, and post it - by all means. You personally are the unit subset of a group.
  Then what became of the self-organizing groups of two or more ? Easy : if they can agree on a statement, all of them add their names.
- / asked earlier that each of you should « subscribe - to a statement by the morning, and avoided the phrase « write a statement », for just this reason. The more people who discharge the obligation that I am trying to lay on them in group form, the better. Each can make a statement of his own too. of course, but it would be good to catch on to the synergy of emergent groups as soon as we can.
- Please PRINT your names.

Step 4b : Computer processing (statement correlations)

Once the data had been inserted for Step 4a. it was also available to determine the correlations between the statements (Using the same statistical technique). « Correlation » between any pair of the 69 statements then means the degree of similarity of the profile of responses to those statements amongst all responding participants. This of course does not mean that all respondents attached the same meanings to the answers they gave. The results were printed out in the same way as for Step 4a.

Step 5a: Communication of results to participants (tables)
The two tables (people correlations and statement correlations) were attached to a wall in the reception area, and were the focus of much interest and discussion, if only arising from curiosity. The two people responsible. Alan Mossman and Syd Howell, explained to individual participants with whom they were indicated as being linked.

Step 5b: Communication of results to participants (maps)
They also used the tabulated information on people to draw out manually network maps of the linkages between people (see Insert 4) in the light of the degree of correlation between them. Simple maps could be constructed by neglecting all but the higher degrees of correlation (see Insert 5). More complex maps could be constructed by including lower degrees of correlation. In each case « isolated » individuals were omitted from the maps, or listed on the edge of the map. On the maps the participants were identified either by number only or also by name. The latter could of course be obtained from the table. The maps were the focus of even more interest than the tables, for obvious reasons.

Step 5c : Communication of results to participants (card display)
The cards, once processed by the « editorial group » were stuck on a wall in the reception area. The wall was roughly divided into labelled zones which thus served to cluster the cards. The original intention was also to use the wall area to present statements that would be amalgamations of single-card statements. These would have been « metalinguistic to the formal proceedings ». Participants would then have been invited to subscribe their names to such statements. In practice the wall space was also used by participants to display comments that were not processed through the editorial group (or may have been deliberately rejected by them).

Comments on Round 1

Those conducting the exercise formulated a set of comments on the results of the first Round which were distributed with the invitation to participate in the second. The comments are as follows :

Comment 1 : *Interpreting « average » replies*

Like every aspect of this process, the « average » reply is corrupted with random noise. There is not only a legitimate randomness, from the different views which people hold, and the different meanings which they give to words, but also there is a less legitimate element of randomness, due to vagueness in the statements, and to the excessive compression of using a seven point scale.
Comment 2 : «*Agree* » *vs.* « *Important* »
The implication that « agree » and « important » could be handled together on the seven-point scale was unsatisfactory. They were meant to be complementary, but in fact they clashed. Since it is not possible to cope simultaneously with « agree/disagree •• and « important », participants are asked to rate Round 2 statements in terms of « agree/disagree » only.

Comment 3 : *How to determine a view*
We suggest applying a crude filter to reduce « noise » in the replies. If the response was only one or seven, with probability 0.5 we should ignore differences of less than 0.5 between the mean replies, for a 95 % confidence interval. In the noisier, multinomial conditions here, we suggest that a mean score of 5 or over may possibly qualify as a « resolution of the metaconference ». This of course ignores all clashes in meanings held, as all resolutions do. (There are at least three « meanings » to statement 10). The next problem is discussion and persuasion !

Comment 4 : *Resolutions of the metaconference (average score > 5)*
These may be meaningful votes or may just be « motherhood » statements. Which do you think the following statements are?

(1) *'Don't design the future unless...*
(3) *'The conference should include doers...'*

    (13) *'If one cannot understand how one is part of the prob-*

      lem...'
(30) *'The political nature of systems practice... '*
(32) *'Setup an effective network...'*
(33/42) *'GST in schools'*
(43) *'Duality is not stability..' (Contradicting the conference title?)*

If the same rule is applied in the opposite direction, the conference firmly rejected only two statements:

(10)   *The aim of science is 50 - 50 disagreement' (Do we really believe that science should only research what is not in doubt ?)*
(60) *'Ideas are of secondary importance to the names one*

            gives them...'
Comment 5 : *Standard Deviations of replies*
We hoped to find varying levels of agreement and disagreement, but the differences are probably not meaningful, except perhaps that statement (3) 'Doers versus thinkers' produced more unanimity than (41) 'Central control is incompatible with local autonomy'. (The conference was evenly divided on this, on some basis or bases. Some relation between mean

'foci' themselves seem not to be compatible :

- *What is the nature of the good*
- *I know the nature of the good*
- *How could one 'control' society ('one' and his objectives being variously assumed)*
- *We need new notation for qualitative relations*
- *We must avoid jargon*
- *We must explicate ourselves and educate others*
- *We must act on specific problems*

- *We are inward looking eccentrics*
- *SGSR is...*
- *The Conference process is...*
- *Systems are explicable - or not ?*

  - *Systems are personal constructs - (the converse hypothesis might be more interesting.)*
- *Systems are objective facts*
- *Systems are fortuitous in Nature generally.*

Comment 7 : *Correlations of the statements*
How should we relate the machine and member-generated clusters to the schema just given above? (Given that product-moment correlations are not necessarily a stable metric on ordinally collected data).
Correlation can arise for any and no reason (we ignored correlations below .35. If the variables had been cardinal and normally distributed, the 95 % confidence interval around zero would have been ± 0,20).
Correlated statements would relate to 'issues', if and only if : the respondents attached the same meanings both to statements and replies, and if 'issues' themselves did not have accidental overlaps, in the attitudes they provoked.

Comment 8 : *Uncorrelated statements*
There is a striking number of statements which are uncorrelated with all others, ie. the conference members showed no tendency to group them with other statements.
These statements may not all be 'issues'. Some are isolated statements of value or belief, across which every member holds his own pattern of views. Others arise from loose definitions, or from unshared meanings. Which do you think applies in each case ?

  (4) *Systems theory may be unique per person*
  (5) *Attitudes change only in catastrophes*

  (7) *Create a unified symbology*
  (8) *'Free expression' leads to oppression of the meek*
  (10) *Science tries to find statements subject to disagree-*

        ment
  (13) *If one cannot understand one is part of the problem...*

  (20) *We create rather than discover reality*
  (21)   *Discursive processes - biased ?*
  (34)   *Salvation lies in applied theory*
  (39) *Variety reduction the key to system formation. (Tended to be rejected)*
  (43) *'Quality' is not 'stability' (Accepted)*
  (46) *GST is a perspective*
  (47) *Ontogenesis*
  (48) *Nature writes symphonies (This piece of anthropmorphic analogy was accepted)*
  (57) *Better social conditions before batter character (Rejected ?)*
  (63) *Paradigm stages of GST*
  (67) *Science and art of GST*

Comment 9 : *Clustered statements*
The titles we give the clusters are provisional and provocative. Do you object to the title of the cluster, or where you find yourself clustered ? Discuss and persuade !

(1) *Complaints about SGSR/Systems Generally eg. 6,.11, 15, 16, 18, 25, 26, 36, 42, 50, 51 (Did the group accept*

    these on balance ?)
(2) *Need to spread the GST gospel, mixed with a general*

Here is a list of statements which you, the Conference Members, have severally made.
Will you now help us ?
We invite you to compress your opinions on each of these statements into a single number; a rating from : 1 to 7. For example :
1 = disagree/feel unimportant
4 = don't know/neutral
7 = feel important/agree
Please enter the appropriate number against each statement in the space provided.
We have edited some of the statements slightly, in order to make this form of answer somewhat less unnatural.
200 people and 70 statements means we need 14,000 judgements from the conference, by the end of tea time today at the latest.

1. Don't design the future unless you can take the responsibility of living in it. (...)

2. Elections are the outcome of coercion, or of monetary manipulation of info-national channels. (...)
3. The Conference should include « do-ers » as well as « thinkers » (...)

4. System theory may be unique per person. The task of the system sociologist theorist is to be able to describe these thinking - forms. (...)
5. Attitudes undergo major modifications in catastrophic situations only. (...)
6. 'Systems' ineffective. (...)
7. All efforts to be directed towards the generation of a unified symbology, so that systems in diverse areas of study can all be seen to be special cases of this

higly generalized supertheory.
8. In taking measures to favour the free expression of human values, societies weaken themselves, creating conditions which diminish their ability to protect the safe and free existence of their most civilised human members. (...)
9. General systems theory can reduce prejudice. (...)
10. The aim of science is to find statements on which people disagree 50 - 50 %.

11. SGSR is dying ! or pathological. (...)
12. Develop a non-mathematical notational scheme for complex, dynamic phen-

omega. e.g. music, labanotation.
13. If one cannot understand how one is part of the problem, one cannot understand the nature of the solution required. (...)

14. You must lose yourself to find yourself.

15. My first acquaintance with systems people : peculiar men who have lost them-

16. The hierarchy of the SGSR is becoming a pathogen to the SGSR, & systems

ideas generally.
17. The Society is badly in need of anomalous behaviors, and deviation-amplifying strategies, if it is to move to new levels of organisation. (...)
18. « Conference proceedings » which stretch the arm do not stretch the brain.

19. Much - systems - research now seems to be looking at variables from the larger system with an old. non-systemic epistemology. (...)

20. We increasingly create rather than discover.
21. If there exists a discursive procedure that guarantees a consensus, then it must first be demonstrated that this procedure is not biased in favour of any particular consensus.
22. TV and the novel are the only effective ways of changing cultural values.
23. Even GST-people will not solve problems of war. racial conflict, prejudice, inequality etc.. Let us not frustrate ourselves/society by claiming that we can im-

prove « quality & stability in social systems ».
24. Systems do not have boundaries, but only limits set in the analysts' imagination, so systems are imaginary.
25.
Systems 'are ways of communicating our ideas about phenomena to our-selves and others. Nothing else. The communication is currently ineffective. (...)
26. The lack of progress in 25 years of SGSR is to a large extent due to the fact

that many of the pioneers blundered in with ontological statements without realising that in producing ontological gnats they swallowed a camel. (...)

27. You cannot create a viable system through revolution, it must evolve. (...)
28. Choose a pet distressed area in the world. Apply GST on a gigantic international cooperative scale (a la IIASA ?). (...)
29. Let SGSR form task-oriented cells for the next decade to address specific societal issues (energy. health etc.).
30. The political nature of systems practice needs to be critically examined. (...)

31. Highest SGSR resource priority should be given to modelling and measuring patterns & flows which sustain the desire to survive.
32. Set up an effective communication network for mutual exchange of new ideas on general systems and its applications.

33. System theory should be included in the secondary (possibly primary) school curriculum. (...)
34. The human condition will only improve with action (application) of theory.

35. Improving the human condition (whilst a marvellous faith) is neither susceptible to careful definition, operational meaning nor unambiguous pursuit

unless that objective is severely decomposed and pursued at many appropriate levels of resolution.
36. The Systems movement is characterised mainly by an unquestioned crude

Remember this is the first iteration.
We are in experimental mode, so please feet free to examine or criticise our data and methods.
Fresh statements or additional information should be made on cards as before.
Indicate your name (not obligatory).
If you do this we can report :
- The level of agreement and disagreement about issues.
-- The way you Conference Members have grouped the issues by pour collective judgements.
- The way you the Conference Members form clusters in the way you hold opinions.
- Lastly we will report to you personally the other two people who agree most and disagree most with the total pattern of judgements that you have expressed.

tern. The cards will be prepared and the patterns spotted (more, one hopes, than mere counting by two people). Since they cannot step outside their own frames of reference. Now in a real self-organising social system every single

memeber simultaneously « sifts the cards » and acts according to his or her perceptions. So the verdict has to be a gallant try but not worth doing. (...)
38. I can't get outside of hierarchies! (...)
39. Reducing variety is the key to systems formation.
40. Procedures,rules and milieu conditions that attract humans to a new,small social system trend to evolve into unsatisfying, no-productive contraints as the system becomes large and densely populated. (...)
41. Teachers should assimilate GST into the teaching of specific disciplines.(...)

42. This conference is really about how to admit the existence of god without embarrassing your friends ! or upsetting your concepts !
43. Quality in social systems is not stability but a ceaseless. Qualitative develop-

ment towards something better. (...)

44. Living systems' development is better facilitated through a process of non-co-

ercive recognition and sympolization of their international structures of experiencing. (...)
45. Change the election option in all societies'elections to always have one option

« NONE OF THE ABOVE ». (...)
6. G.S.T. is a perspective. Any « theory » methodology, method must come out of the perspective
47. Ontogenesis : ignoring our relationship with what we know, we can only be known (and so entailed) by the obiects of our knowing: we grow-impotent (...)

48. Nature writes symphonies not legislation. (...)
49. Central control is incompatible with local autonomy. (...)

50. SGSR has proven to draw its juice from some gifted men but it is a dry stalk by itself: no fruit, no future.
51. The General Systems Research movement exists mainly to provide an intellectual therapeutic safetyvalve and a psychic income lor academic loners - « Academic Gipsies » - who are reluctant to join the vibrant living world. (...)
52. Use cybernetics and general systems to develop a new approach to economics. (...)
53. It is appropriate for system scientists to become missionaries and covert de-

cision makers to the general systems faith. (...)
54. SGSR to publish leaflet explaining system science, successes, heroes, failures and ongoing research areas, emphasising fundamental differences from

mainstream of disciplines. (...)
55. What is learned from the Meta-Conference ? Cohesions that occur will not be shared with us. (...)
56. Systems are real, nothing is true, my mind is hungry and over to you. (...)

57. Improvement of social conditions must precede improvement of character (...)
58. The undisciplined General Systems become a bag of tricks to be sold, not a

milieu in which we can learn from each other. I propose the formation of a Committee on Discipline to examine and propose remedies for this problem.
59. Developing « Systems Language » does not mean obliterating - other - terms established in other disciplines - we need a correspondence. (...)
60. Ideas are of secondary importance compared to the names one gives to them.

61. Impressing the human condition depends entirely on the ethical standards (particularly self-denial and regard for others) accepted and acted on by each, individual in society. (...)
61. SGSR should get involved in application projects - either as consultants/participants or as originators.
62. The major variables in human social systems are political/attitudinal. (...)

63. A new paradigm has three stages :
(1) In-stage: It has become a fashion.

(2) Disillusion
(3) Normalization: the paradigm is judged according to its merits.
We may be somewhere in Stage 2 or in transition to 3 1/2. Moral: Declining membership not matter. (...)
64. A summary without a problem is a bore.
65. Boundaries are by definition undefinable except in terms which negate their

existence. (...)
66. There is no concept of quality without the possibility of mailing or finding

'activism' towards project work eg. 28, 32, 41, 52, 53,
54, 59, 61

(3) Some 'radical' attitudes eg. 15, 45, 56, 60, 68
(4) An 'intellectual liberal' attitude eg. 12, 17, 28, 44.

Comment 10 : *Correlations of people*
The charts are on display, together with the correlation matrix, and the actual list of all the replies which were made. Do the correlations mean anything ? We Know that ambiguities abound both in the statements and in the single number answers. The correlations give equal weight to all the variables - not just the ones you personally feel strongly about (there are potentially 100 such 'personal' correlation matrices, each a selection from 2^{68}, or about 10^{20}, possible sets of questions). Only if a) two people held similar meanings; b) their respective correlations with each other were both high; c) the statements carried importance to each, would the correlations convey real similarity between two people. (But should we be trying to meet our opposites, or even 'uncorrelated' people ?) In these circumstances, our release of the correlations is simply one more input to the conference. We don't know what effects you will cause that input to lead to. But... we were interested to see that a husband and wife had a correlation of .75 (nearly the highest), and that they had agreed on the meanings for the statements before deciding their answers. We also noted very little tendency for the members of any one institution to correlate !

Description of Round 2

Step 1 : *Statement formulations*
Participants were invited to drop statements in the message box at any time, so that this procedure was in operation in parallel with the later Steps of Round 1, as well as in response to its outcome. Cards were collected from the box by the 'editorial group' whenever convenient.
Step 2 : *Editorial regrouping*
The editorial group retained those statements from Round 1 which « looked like » potential « resolutions ». together with some new statements emerging from Step 1. plus some statements they noted from the manual analysis.

Step 3 : *List for participant response*
The resulting list of statements (see Insert 6} was distributed to participants with the above comments on Round 1 and the invitation to respond as before (except that the scale 1 to 7, was now to signify from « disagree » to «agree», and excluded the notion « unimportant » and « important»). It was also dearly indicated that the computer processing would only be undertaken if « a clear majority of the conference responds ».

Step 4a : *Computer processing (people correlations)*
This was a repetition of Round 1 Step 4a, Of the 84 replies, only 1 was anonymous, although there may have been several pseudonyms (since a few people could not be identified from the participant list - maybe they did not register;.

Step 4b : *Computer processing (statement correlations)*
This was a repetition of Round 1 Step 4b.

Step 5a : *Communication of results to participants (tables)*
The two tables (people correlations and statement correlations) were only available for the closing plenary session for inspection by participants. It was however possible to draw conclusions from them for a verbal presentation to the closing session.

Step 5b : *Communication of results to participants (maps)*
A network map of the participant linkages could only be prepared after the event (see Insert 7). None was prepared for the statement correlations (as was the case for Round 1).

Comment on Round 2
(in comparison with Round 1)

Comment 1 : *Different participation*
In Round 1 there were 114 participants. Of these 56 participated in Round 2, which had 84 participants altogether. This information may not be completely accurate because some of the 8 who remained anonymous after Round 1 may have participated in Round 2 (there was only one « anonymous » person in Round 2). It would not be appropriate to conclude too much from this turnover in participants. In an academic conference it is normal for people to attend for only brief periods which may have ensured their participation in the first or second Rounds only. It is also to be expected that those who emerged from Round 1 as •< well-connected » in the network map would be reinforced in their interest in Round 2 and the

INSERT 3 :
Portion of computer
people-correlation tabulated
output for Round 1

(Participant names and allocated numbers in left margin; participant numbers
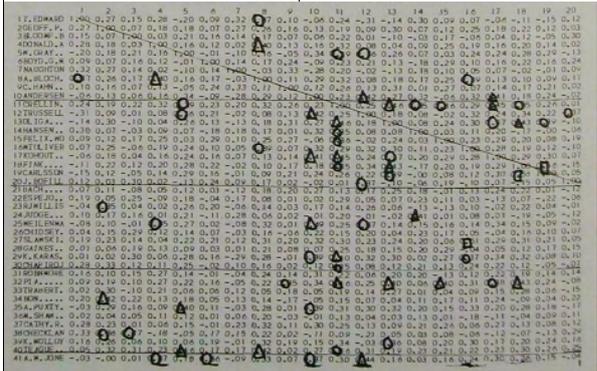
process in general. Conversely, those who emerged from Round 1 as « poorly connected », world not be especially interested in Round 2.

Comment 2 : *Resolutions o1 the metaconference*
The average and standard deviation of responses by participants to the 25 statements (see Insert 6) are given here in a corresponding table (see Insert 8). In the light of Round 1 Comment 3, it was concluded that Statements 1, 2, 4, 5,7 (especially in the light of 3). 15, 19, 20, 21, 23 and 25 could be considered to be •« resolutions ». There is of course a problem of concealed differences in interpretation, although these would also be present under other conditions. With regard to the standard deviations, Round 1 Comment 5 should be noted.

Comment 3 : *Content of resolutions*
It is clear that the « resolutions » are far from being earthshaking. As with many sets of resolutions they suffer from not having been conceived in terms of the addressee. As such they have fallen into oblivion already. The content of the statements for Round 1 was equally un interesting - particularly if it was supposed to reflect what individual participants held to be most important in relation to the conference. The question here is whether this is a reflection of the metaconference process or did the latter merely reveal the banality of what is central to the preoccupations of a set of intelligent people at an international conference of this type ? Of course it is easy to argue that the methodology was such that the process cannot be said to have revealed anything. However if the process did reveal what can be considered as the symptoms of partici-

also head each column. Example: Donald (4) and Bloch (8) have positive correlation 0.40 giving thin line connection on Insert 4 map. Black circles and triangles were used to highlight significant correlations when drawing maps. Note absence of high negative correlations).
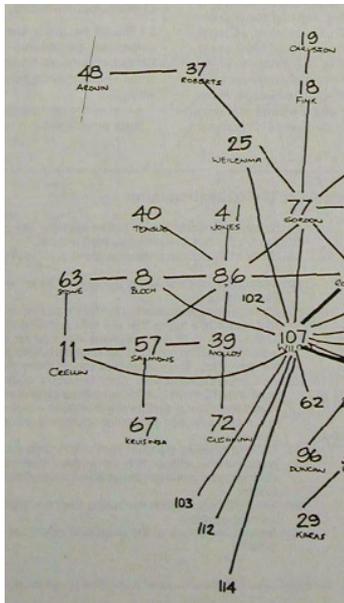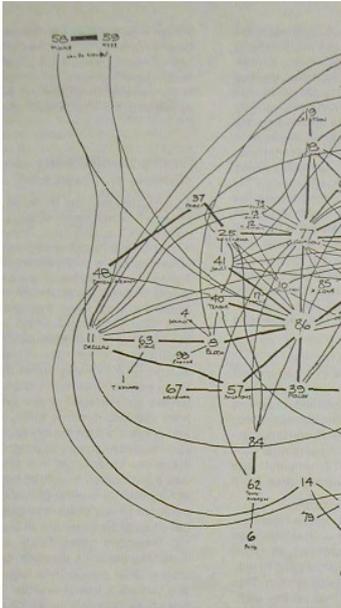
pant « disease » it may be that future development of the process can help to remedy that disease,

Comment 4 : *Change in participant correlations (map)*
The network maps arising from Round 1 (Insert 4 and Insert 5) may be compared with that arising from Round 2 (Insert 7). It is unfortunate that processing of the data did not result in the same numbers being allocated to people in the two rounds, but even after establishing the correspondences it is clear that the network of Round 2 bears little resemblance to that of Round 1. In terms of who is linked to whom. Clearly since the maps were hand drawn in an unsystematic manner the structures cannot be compared as a whole. This limitation can be better understood in the light of an earlier participant map initiative by Peter and Trudy Johnson-Lenz (3). As one of the participants however. I cannot deny that although in Round 1 and Round 2 I am indicated as highly correlated with different sets of people, in each case one of the people (previously unknown to me in both cases) shared a very important range of concerns which it would have been difficult for me to express verbally in any simple statement. It would certainly have been difficult to relate such a verbalization to the statements in either Round. In both cases the shared interest was confirmed before the network map was available. If there had been more Rounds, and if the statements had been of better quality and covered a wider range of issues in a more systematic manner, it is likely that the relationship between the maps would be greater. Also if all respondents had been indicated on the maps with an appropriate range of line thicknesses it would be much clearer what was happening. Other aspects of this question are discussed under « future possibilities » (below).

Comment 5 : *Number of Rounds (delays)*
it was not possible to have more Rounds because although it was a 5-day conference, the idea was presented on the first day. The list of Round 1 statements was distributed on the morning of the second. The replies were collected that same day and the results were available on the third day. The list of Round 2 statements was available on the fourth day and closing time for replies was mid-afternoon. The results were available at midday on the fifth day. The main delaying factor was the time taken for data input via the terminal using semi-skilled typists, which took about 6 hours in the evening for each Round. If this time could have been reduced, and the editorial work and statement typing streamlined, one or more Rounds a day could have been achieved if this were desirable.

Comment 6 : *Resources required*
Under the conditions of this experiment the resources required were very modest since the time of those involved was given freely. I understand that the computer processing (once the data had been input) involved less than an minute of central processor time all told. The terminal was available through a university institute.

Comment 7 : *Iterative philosophy*
During the experiment the « Rounds » were called « iterations ». The intention was, through several iterations, to arrive at a convergence of viewpoints and to establish some measure of consensus. This approach is similar to that of the well-known Delphi forecasting technique. The question is whether seeking for convergence and consensus is what is most significant about Beer's initiative. It could be argued that it is a technique which does not require that variety be reduced in the manner of the Delphi technique. Meaningful results can be presented concerning the relationship between a diversity of

viewpoints. The quest for consensus may be analogous to hunting the chimaera. It is not necessary, even if it is possible, and it encourages dangerous delusions concerning the stability of consensus and the structures that can be built upon it.

Future possibilities :
analysis and tables

1 : « Tidying up » the package
Whilst all the elements of this experiment have been available for a number of years, it is only now that it is becoming easy to relate them to a conference environment. It is now quite feasible to rent a telephone-linked portable computer terminal for a conference, to feed the questionnaire data in from the conference site, and to print out the tables there. The question is whether in a given case it proves desirable to do it this way rather than to take the questionnaires round to any computer bureau (commercial or institutional) and have the data entered there, processed, and printed out on a high-speed printer. With regard to computer programmes, the statistical programme is a standard one which any bureau should possess, whether for batch or on-line operation. The experiment needs to be repeated in a number of settings to establish a checklist of recommended procedures and guidelines. Hopefully conference centres and professional conference organizers will see this as a useful addition to the services they already offer, which are in some cases computer-based.

2 : Round flexibility and variety
Once the procedures have been improved, many more Rounds would be possible. These may be conceived in various ways :
- a « converging » series of iterations (as Beer envisaged)

INSERT 6 Round 2 Statement List/Questionnaire

1. Don't design the future unless you can take the responsibility of living in it. (...)
2. Systems theory should be included in the secondary (possibly primary) school curriculum. (...)
3. Ideas are of secondary importance compared to the names one gives to them. (...)
4. Quality in social systems is not stability but a ceaseless, qualitative development towards something better. (...)
5. The political nature of systems practice needs to be critically examined. (...)
6. We know what would be good for the Society, if only we could achieve it (...)
7. The Conference should include 'do-ers' as well as 'thinkers'. (...)
8. The objective of systems theory in society is to provide the tools for controlling society. (...)
9. We are 'thinkers', not 'doers'. (...)
10. Systems are in principle capable of being explained fully. (...)
11. Systems in Nature are fortuitous, not designed. (...)
12. Systems have objective existence. (...)
13. Systems are only personal constructs. (...)
14. Personal constructs are systems. (...)
15. Interpersonal constructs are systems, and should be researched as such. (...)

16. Study of continuous quantitative systems has priority. (...)
17. Study of qualitative nets has high priority. (...)
18. Study of stochastic systems and entropy has high priority. (...)
19. Descriptive study of actual functioning social systems has high priority. (...)
20. Don't design a blueprint for the future, but let us contribute to a vision of a future that will fulfil human potential. (...)
21. The fulfilments of the consensus views so far will require education, action, consideration, underpinned by consistent theorizing. The conference should these things. (...)
22. Our understanding and communication about systems work would benefit from maintaining a clear distinction between technical action (problem-solving, value-exclusive) and practical action (meaning - communicative, value-inclusive). (...)
23. General systems theorists dont' necessarily have to solve problems from without, they can instead illuminate them for the immanent solution-finding (evolutionary) powers of the system. (...)
24. The SGSR should stop examining itself and get on with examining systems. (...)
25. Beware the hubris of the illusion of control of living systems. (...)

- single Rounds based on a particular set of statements (whether formulated by, through, or without, an 'editorial group') in the light of specialized concerns emerging during the conference
- an « introductory » Round, specially conceived prior to the conference, as a set of statements from the pattern of responses to which participants could then determine with whom they may or may not share concerns (a « warm up conversation piece » to supplement the public relations function of introductory receptions and cheaper).

3 : Larger conferences

Whilst the possibilities of the previous point are interesting, it is important to be realistic about participant attitudes to questionnaires, and the data input and processing load in the case of large conferences. It may be less of a « drag » to participants if the statements are ordered in sets within the statement list, with the smaller sets preceding the longer sets, Participants could then be asked to give priority to the smaller sets and to stop as soon as they lost interest. Also they could be asked only to respond to the points with which they strongly agreed or disagreed, the remainder being treated as « uninteresting ». This could reduce the data input load, which would of course be important in conferences of over 100 people. There are of course constraints in using the standard statistical packages. These may limit the number of statements per Round or the number of participants. It is possible to get around this, somewhat unsatisfactorily, by splitting the Rounds. Another constraint may be the amount of computer memory or processing time required, depending on the computer.

4 : Edited tabular output

It would be helpful to have a specially designed interface programme to ease the task for those unfamiliar with statistical packages. This could also provide an appropriately edited tabular output. It would be convenient to produce summary « measures » for each individual in a table (especially in the light of the next point) and to facilitate comparison between data for succeeding Rounds.

5 : Social network characteristics

A number of indicators is available to express the position of a person (or a statement, for that matter) in a network, including centrality, range, intensity, and for the network as a whole, coherence. Special statistical packages are available to calculate these and they could be output in tabular form. (Information may be ob-
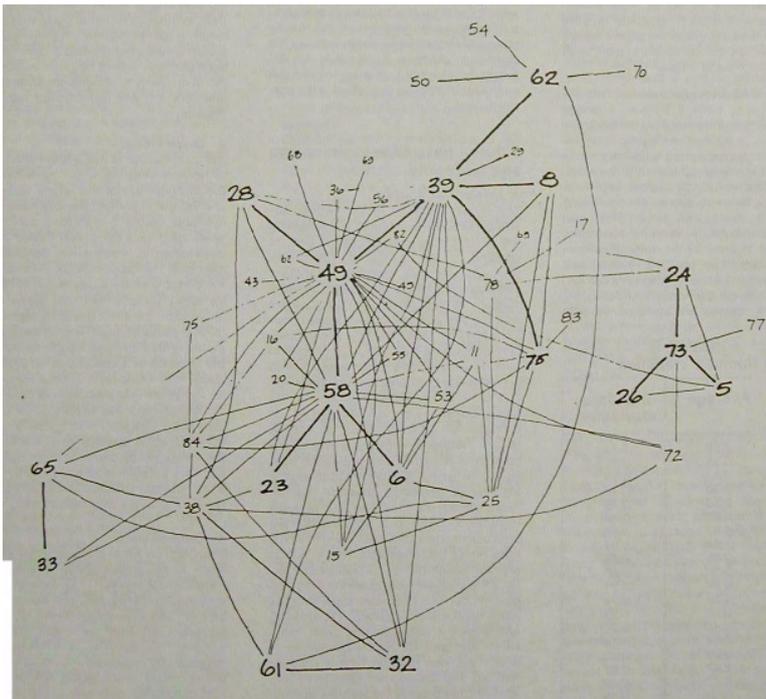
INSERT 7
Partiel network of people from Round 2
(Thick lines : correlation > 0.75; thin
lines : correlation > 0.6 < 0,74)

tained from : International Network for Social Network Analysis, c/o Professor Barry Wellman, Department of Sociology, University of Toronto, 563 Spadina Avenue. Toronto. Ontario M5S 1A1, Canada).

6 : Privacy considerations

Whilst participants may be very interested in how they individually are related to others in the pattern of responses, they may be somewhat reluctant that others should know their position within the pattern. This will depend on the conference and on the individual. The option of anonymity can be preserved by allowing the use of pseudonyms. Individuals can then choose to whom they reveal their identity in discussing the results. This ensures that « isolates » do not feel exposed. There are of course many interesting possibilities whereby participants may use multiple identities to express contrasting or « false » opinions in order to « distort » the dynamics. This is a characteristic of computer conferencing and has advantages as well as creating problems. Ethical problems may also be raised by the use to which the conference secretariat allows the data to be put.

7: Correlation (connectedness) lists

In relation to point 4 (above), a simple computer programme could be designed to presentable of participant names in several columns, sorted as follows :
- col. 1 : name of participant (either sorted alphabetically, by number, or by decreasing average degree of correlation)
- col. 2: names of participants with which the col. 1 name is correlated, sorted in order of decreasing correlation (possibly omitting insignificant correlations, although negative correlations may be especially interesting)
- col. 3: names of participants with which each col. 2 name is correlated, sorted in order of decreasing correlation
- col. 4 : names of participants with which each col. 3 name is correlated, sorted in order of decreasing correlation

Clearly column 4 would tend to have names on every line, whereas column 1 would tend to have only one name per computer page, for example. (The table would be many computer pages in length). The page would then be an interesting document to make available to (he participant named in column 1. One such document could be sold to each such participant to cover the cost of this conference service. Other information could of course be included against each name in the light of point 5 (above), point 8 (below).

8 : Changes in correlations

Although the information is available by tedious visual comparison of the tables arising from each Round, it would be an advantage to be able to use a simple computer programme to compare the results of succeeding Rounds and to indicate the significant changes. Such could, for example, be indicated as extra information on the tabular listing described in the previous point.

Future possibilities : **mapping and tensegrity**

1. Line-printer graphics

The major handicap in this whole approach lies in the problem of presenting the results in a manner which can be grasped by the uninitiated. The tables produced by the standard statistical packages are totally unsatisfactory as a medium through which to communicate with the average participant. Hand-drawing maps from those tables is a thankless, time-consuming task which is difficult to perform satisfactorily (even when a draft is produced). Unfortunately network maps cannot be satisfactorily generated On the conventional line-printer because of the difficulty of drawing lines at various angles. Before considering plotters (see point 3); it is worth investigating the possibility of using the advantages of the high-speed printer to generate the network without the lines. The main problem in network mapping is working out the best position to locate the nodes to which lines are to be connected. This is a neat problem which can be solved by computer. If the programme in question then simply lists out one computer page with the node numbers appropriately positioned, and follows it with a second page listing which numbers should be connected to which, the map drawing time is reduced ten-fold. The drawing process can be facilitated if the programme lists the approximate grid coordinates for each number indicated on the second page, and prints out that grid as a border to the first page. If the first digit of the correlation coefficient (+ or -), available to the programme for each number pair, is listed on the second page next to the pair then this can be used as a guide for the thickness (or colour) of the line to be draw manually between them.

2. Line-printer graphics
   (individually oriented)

The previous approach might prove satisfactory if only a few maps needed to be draw (as a task of the conference secretariat). It may however be more useful to produce « personalized •> maps for each participant (e.g. in the case of a larger conference). In which case the programme should position node numbers around the specified node number (for the individual) centred in the middle of the page - one such page being produced for each participant, who could then be asked to cover the cost of this service. It would be up to the individual to connect up the nodes according to the instructions on the second page (as under point 1). Obviously the same mapping programme could be used for node numbers signifying statements rather than participants. (N.B. In order to facilitate comparison between maps arising from different Rounds, as discussed under Round 2 Comment 4, consideration should be given to printing the same pattern of numbers so that the numbers are not repositioned between Rounds).

3 : Graph plotters

It is quite incredible that it is the difficulties of network drawing which have held up the development of this whole approach and yet graph plotting devices have been available on the market for a number of years (and as a necessary device in the universities in which many conferences are held). The demand is not yet such that the portable plotters can be easily rented for short periods, but this could soon prove to be the case. It is quite feasible to think in terms of an on-line terminal-plus-plotter rented unit which could be used for the duration of a conference to draw out maps. This could tend to be a substitute for the single map compromise (see point 1). rather than the multi-map situation (see point 2), because of the slow speed at which such plotters work. Aside from the hardware problem, there is also the software problem of determining how the lines between two points should best be drawn. Packages to do this already exist.

4 : Ordered maps

The criterion for the construction of the maps in the points above is simply an « appropriate spread » to facilitate line drawing. The result, although highly desirable for lack of anything better, does not represent all that we might hope to achieve. The question is whether such maps can be organized according to additional criteria which would help to highlight significant patterns. In particular it might be asked why it is assumed that such maps are most satisfactory when they are « flat ». It is possible that greater significance might emerge if they were drawn as projections of a mapping onto some curved surface, or spherical approximation.

INSERT 8
Round 2 statistics

	Average	Standard deviation
1	0.58	0.19
2	0.58	0.75
3	0.22	0.18
4	0.60	0.14
5	0.58	0.15
6	0.28	0.18
7	0.61	0.15
8	0.24	0.21
9	0.35	0.22
0	0.30	0.23
1	0.44	0.21
2	0.38	0.24
3	0.36	0.23
4	0.49	0.21
5	0.54	0.16
6	0.28	0.18
7	0.41	0.21
8	0.42	0.19
9	0.53	0.19
0	0.59	0.15
1	0.52	0.20
2	0.42	0.21
3	0.60	0.13
4	0.45	0.21
5	0.56	0.16

5 ; Negative correlations and map cuvature

It is fairly obvious that a conference based on the pattern of agreements between people which ignores, or suppresses, any pattern of disagreements would be a rather insipid and uninteresting event. There are limits to the dynamics of mutual appreciation and to the number of people who can sustain it for any length of time. Conferences thrive on disagreements and responding to them is what much of conferencing is all about. It is therefore interesting that the spread of statements described above in Beer's experiment gave rise to very little negative correlation. Namely the participants tended to agree about their disagreement with certain statements.

The results seem to indicate an insufficient pattern of basic disagreement. And maybe this is what helps to make conferences so boring - disagreement is rarely expressed adequately. Those who disagree most violently tend not to attend, making the event into an exchange amongst those who basically agree on matters most important to them, and only disagree on matters of less importance to them. This contributes to the « flabbiness » of many conferences (a concept discussed elsewhere in relation to networks, see (4). The challenge is to find ways of « tensing » conferences, or « tuning » up the conferences to a greater level of dynamism. It is possible that this could be achieved by seeking ways to balance the patterns of agreement and disagreement in new kinds of configurations (as has been argued elsewhere in relation to organizations, see (5.6).

The key to thinking about this is to consider « agreement » correlations linking nodes to be represented by strings (possibly of different thickness according to the strength of the correlation). Such a network of strings could be pushed into any shape without affecting its topology. But if the negative (« disagreement ») correlations are now represented by sticks separating nodes, the network can no longer be freely manipulated. There are constraints of course. If there were only disagreements (sticks) between people, it would be very difficult to modify the relationships between them - the conference would be blocked, or blown apart (as an « impossible » configuration of relationships determined by the sticks). Fortunately there is a very interesting range of configurations in which the number of sticks and strings can be balanced. These are known as « tensegrities » (from tensional integrity) and are characterized by patterns of spherical symmetry (5.7). Briefly the strings form an approximation to a spherical network which is prevented from collapsing (like a net shopping bag) by the pattern of sticks which separate the nodes. Conversely, the pattern of sticks is prevented from disintegrating into an unconnected jumble by the network of connecting strings. The centre of the spherical configuration tends not to be crossed by sticks or strings in the more dynamically stable configurations. There

seems to be no obvious reason why the configurations of agreement and disagreement in a conference should not give rise to equivalent balanced patterns. In which case we could expect to move beyond the kinds of maps indicated here (Inserts 4. 5, 7), in which the thicker lines of higher correlation « end » at the « edge » of the map.

6: Towards engendering thematic tensegrities and geodesic conferences

We can now start to think how the above approach might be used to move beyond the idea of participating in a conference to discuss some predefined question or theme. How can we elaborate procedures which help to elucidate the integrated configuration of themes which are partially shared by a corresponding configuration of participants, in such a way that :

- the majority of participants perceive themselves each to be sufficiently « wellconnected » to a limited number of others
- the pattern of connections around each participant partially overlaps that around more distant other participants (i.e. minimizing total isolates - unless mutually acceptable as a stimulus - conference « roughage »), where distance effectively signifies distinct perspectives.
- the total pattern of connections is not planar with a periphery of outlying isolated participants, but rather it is an unbounded curve so that the pattern of connections is continuous in all directions (namely as on an approximately spherical surface).
- the pattern of positive correlation (local agreement) connections is counterblanced by a pattern of negative correlation (local disagreement) connections so that the maximum range of contrasting perspectives (variety) is deployed without tearing apart the pattern of agreement associated with the network as a whole.

This has the advantage of reflecting the widest possible spectrum of perspectives within the consensual network - without attempting simplistically to arrive at total consensus on particular issues (which would distort the network or rip it apart). Such an unbounded curved network does not have an «occupied centre ». The « centre » of the sphere is inaccessible to the surface network which defines it. It is this centre which is effectively the unstateable common reference point for the network - unstateable because no formulation from any particular local surface position would lead to a « agreement around the whole surface ». It is the « emptiness » of the spherical network which effectively defines (or is an indication of) its utility to its participants and to the external world. It is a viable pattern which has defined itself in relation to other patterns in society (by having insideness and outsideness in Buchminster Fuller's terms, see (7)). Areas of the surface of the sphere then indicate possible common interest groups (i.e. at a conference). But as the specified area is increased, the probability of the

common interest group being « viable » decreases, because of the increasing disparity of interests thus » unbalanced - by the complementary part of the spherical network. In other words, once the « horizon effect » becomes signifiant, communication based on external referents, becomes a problem (because each area of the sphere is effectively exposed to a different data base).

The patterning of such thematic tensegrities could open up the possibility of non-linear agendas which could reflect more adequately the complexity of the social conditions which conferences attempt to encompass. This has been discussed elsewhere (8.9).

Moving away from « resolutions » based on unanimity or the « democratic majority » towards such variegated consensual outcomes is highly realistic, providing a stabilized (spherical) « platform » on which new forms of organized action can then be based. We can no longer depend upon managing action based on agreement (and the associated variety reduction), we have to find solutions to the more challenging problem of the self-management of (partially ordered) configurations of disagreement - and benefitting from the variety of perspectives thus encompassed.

« Resolutions » necessarily tend to give rise to simplistic hierarchical structures to implement them. By contrast, this approach delineates the pattern of the decentralized organizational network needed to operationalize the complex range of tasks reflected in the contrasting participant perspectives - whilst still maintaining its integrity.

Appropriate maps are required before we can start to explore the art of « maturing » the pattern arising from participant response to any particular set of statements. With such maps we can move beyond the dominant « fiat earth » conceptuality into a more appropriate « spherical » mode (10).

Conclusions

The experiment launched by Stafford Beer with the connivance of the outgoing President of the Society for General Systems Research, Richard Ericson, was a pioneering effort. Some of the results were of obvious interest to participants, but the experiment was judged a « failure » in that it did not significantly effect the conclusions of the conference or generate a breakthrough in response to its theme - as was the ambitious expectation. The experiment was a « success » however in that it showed that appropriate resources could be assembled and that the various steps could be meaningfully carried out under real (non-laboratory) conditions in real-time by real people. It is possible to criticize the methodology, particularly when compared to the sophisticated social network analysis techniques now available. But it is the fact that those responsible for the latter have never applied them to the reality of an international conference that makes Beer's experiment so

Thirty spokes share the wheel's hub:

It is the centre the that makes it
useful.
Cut doors and windows for a room;
It is the holes which make it useful.
Therefore profit comes from what is

Tensegrity
conferences

- Zeto and the concept of emptiness, too, are compar-
atively late inventions (clearly because they too leave
nothing to hold onto in explaining them). *Even* now we
find it hard to conceive of emptiness as such : we only
manage to think of it as the absence of something pos-
itive (*). Yet in many metaphysical systems, notably
those of the East, emptiness and absence are regarded

than presence. This is also connected with the fact, now
acknowledged by most biologists, that symmetry, being
the natural condition of an unstressed situation, does
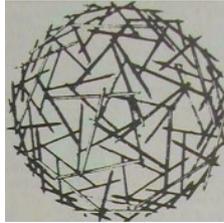
asymmetry which needs to be explained.
- Christopher Alexander. Notes on the Synthesis of
Form. Harvard University Press, 1971, p. 197.

**Conference networks
(associative network
of topics or informal
network of people)**

Conference hierarchies
(agenda topic subdivision of formal
organization of people)

The wise man therefore... sees that on both sides of
every argument there is both right and wrong. He also

thing, once they are related to the pivot of Tao. When the
wise man grasps this pivot, he is the center of the circle,
and there he stands white « Yes » and « No » pursue

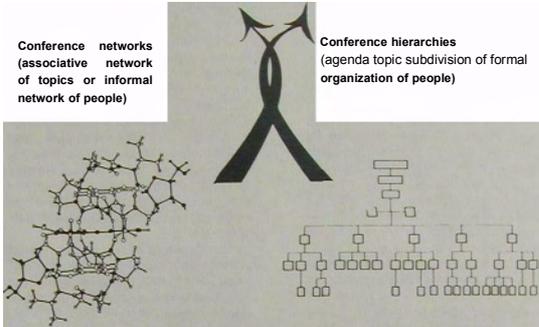each other around the circumference »
- The Way of Chuang Tzu, interpreted by Thomas Mer-

**Towards a new recipe for conferences : blending networks and hierarchies
by weaving together patterns of agreement and disagreement around an
« empty » centre (")**

significant by comparison. Like it or not, we depend upon conferences to improve the social condition. So we need to look for ways to improve them - considerably. Now that Beer has shown the way, it is fairly easy to see how the technique itself might be improved, although further experiment is of course desirable. The main barrier to further advance is in fact the trivial one of « tidying up» the relationship between the non-financial resources required and reducing the dependence on scarce skills.

As indicated in the various « future possibilities » (above), conference groups could themselves « experiment » in many interesting ways, moving « as outlined » towards the development of totally new viable structures. This would considerably increase the value of conferences for all concerned. We are not yet out of the sterile wilderness of present-day conferences, but at least we now have a worthwhile direction in which to move.   •

References

1. Stafford Beer. Conferences; a call to experiment. Transnational Associations, 32. 1980, 1, pp. 94-97.

2. Participant interaction messaging; improving the conference process. Transnational Associations, 32, 1980, 1, pp. 27-35.

3. Peter and Trudy Johnson-Lenz. Conference facilitation by computer-aided sharing. **Transnational Associations,** 29. 1977, 10, pp. 441-5.

4. Tensed networks; balancing and focusing network dynamics in response to networking diseases. **Transnational Associations,** 30, 1978. 11, pp. 480-5.

5. Groupware configurations of challenge and harmony. **Transnational Associations,** 31. 1979, 10. pp 467-475.

8. Implementing principles by balancing configurations of functions: a tensegrity organization approach. **Transnational Associations,** 31, 12, 1979. pp. 587-591.

7. Transcending duality through tensional integrity. **Transnational Associations,** 30, 1978, 5, pp. 248-257.

8. Interrelating viewpoints in complex meetings. **Transnational Associations,** 30. 1978. 12, pp. 542-548.

9. Non-linear agendas and linear thinking. In : Large-group Conferences (Preliminary document for Commission IV. World Forum of International Associations. Brussels. **1980).** Brussels. Union of International Associations, 1980. Sheet 92.

10. The future of comprehension; conceptual birdcages and functional basket-weaving, (forthcoming).

During the World Forum of Transnational Associations (Brussels, June 1980). these techniques were further developed using a computer to construct the « maps » of people relationships. This has been described, with further possibilities, in a paper titled : « Metaconferencing possibilities », which may be printed in a forthcoming issuue of *Transnational Associations.*

(*) The innovation m the 10th century whereby zero was incorporated as a symbol into the number system is considered one of the most important achievements of the human intellect. It eliminated the need for cumbersome systems (e.g. the Greek or Roman) which severely impeded logical manipulation of numbers. is it possible that the next quantum leap in organizational innovation is concealed by widespread irrational abhorrence of any apparent « organizational vacuum » ? This might be the « zero » in the progression in organizational complexity. Does the « emptiness » of the tensegrity represent such a zero - the beginning of the linear progression 0, 1, 2. 3. 9 or in combination, the start of a new cycle from 10, 11 ? Perhaps current organization is trapped in an analogue to «

thinking » : I, II, III, IX...

L.XII...