### STS Roundtable November 6-9 1987: Reflections from Participants

In our second Roundtable, we asked participants to reflect on their experience of the meeting. We heard from 25 participants. Here's the list, followed by scanned copies. The first two pages are Cris Criswell's report to his managers at DEC, which along with SME co-sponsored the meeting. Participants' reflections, though brief, in my view offer valuable insights many of which still ring true.

#### Dave Roitman

- 1: Cris Criswell, Digital Equipment Corporation
- 2: Nancy Bancroft, Digital Equipment Corporation
- 3: Ann Majchrzak, [Ann were you still at Purdue, or at USC?]
- 4: Chuck Bennett, Shell Oil Company
- 5: Chuck Berezin, independent consultant
- 6: Don De Guerre, Ontario Quality of Working Life Centre
- 7: Bruce Dillingham, Digital Equipment Corporation
- 8: Bill Duffy, General Motors
- 9: John Eckblad, independent consultant
- 10: Max Elden, Norwegian Institute of Technology, University of Trondheim
- 11: Roger Ervin, Digital Equipment Corporation
- 12: Mike Keehan, Digital Equipment Corporation
- 13: Ken Knight, Westinghouse Co.
- 14: Harvey Kolodny, University of Toronto
- 15: Dutch Landen, independent consultant
- 16: Tom Rankin, labor consultant
- 17: Joyce Ranney [where was Joyce working in 1987? CSC? With Rosabeth Moss Kanter?]
- 18: Dave Roitman, Industrial Technology Institute
- 19: Manoj Sinha, Industrial Technology Institute
- 20: Steve Stulck, independent consultant
- 21: Gerry Susman, University of Pennsylvania (?)
- 22: Jim Taylor, independent consultant
- 23: Peter Unterweger, UAW Research Department
- 24: Bill Westley, independent consultant (worked with Carolyn Ordowich)
- 25: Bill Lytle, independent consultant

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#### INTEROFFICE MEMORANDUM

TO: Jack Conaway
Al Jones, CRA
John Ardini
Chari Willetts

Cheri Willetts, SME

CC: Ben Fordham
Dave Copeland

DATE: 13 FROM: H.

13 November 1987 H. Cris Criswell

DEPT: CMPD EXT: 291-7607

251-1402 CFO2-1/Q14

NODE: CIMNET::CRISWELL

MET-2/K3

SUBJECT: SOCIO-TECHNICAL SYSTEMS FORUM TRIP REPORT

I am pleased to report that the STS Forum meeting in Detroit on November 6-9 co-sponsored by Digital and SME met and exceeded our goals.

MS:

We (DIGITIAL) had two major objectives: to identify key research issues in the human systems area of planning and implementing customer solutions, and connecting with the network of STS researchers and practioners.

Forty professionals participated in the conference. (See attached roster.) Of those, six were from Digital. Each of us worked informally with the six topic leaders in advance of the meeting. The topic issues were: 1) <a href="Impact of CIM on Work Roles">Impact of CIM on Work Roles</a>, Larry Hirschhorn, Warton School; 2) <a href="Assessing Readiness for STS">Assessing Readiness for STS</a>, Jim Taylor, Consultant; 3) <a href="Procedures for Linking Social and Technical Systems">Procedures for Linking Social and Technical Systems</a>, Harvey Kolodny, U. of Toronto; 4) <a href="Involvement in Multipule Disciplines">Involvement in Multipule Disciplines</a>, Gerry Susman, Penn State; 5) <a href="Orientation to Systems Thinking">Orientation to Systems Thinking</a>, Bill Passmore, Case Western; 6) <a href="Culture of Continuous Improvement">Culture of Continuous Improvement</a>, Bill Duffy, GM.

These sessions went very well and will be reported out in a formal way by the topic leaders. However, I want to make several general observations:

- There is a need to grow the numbers of STS practioners and researchers who are knowledgeable of and experienced with information technology. If computer integration has the impact on organizations and individuals which customers report, then we must recognize that there is a scarce resource which needs to be nurtured through support of training and research. Digital can and should be at the forefront of this effort.
- o It is clear that what is missing in STS is as rigorous a social system analysis methodology as it has on the technical side with variance analysis. This is an important development effort if Human Systems consulting expects to have credibility with business and technical consulting ae we are coming to

view this in information technology contexts. Much of what we have today appears to be a potpourri of tools, techniques, and "products" which lack the synergy required to define in a disciplined way what is going on in the social system. I despair to use the word, but it fits; what's missing is a social system architecture.

o There is a problem best described as a dilemma between organization consulting values and their potential translation into a hidden, or revealed, social agenda for the client customer. There is a wide spectrum between pure process consulting that is informed by values on the one hand, and organization transformation advocacy on the other that already has a vision in mind regarding what the client's organization should look like.

Complicating this is the fact that there seems to be emerging an "information technology imperative" that looks very much like the historic visions of STS, i.e. flatter organizations, cross-functional teams, autonomous work groups, distributed decision-making, etc. This convergance can be extremely powerful and should be studied. However, the dilemma is a significant one: good OD consulting ought not be setting clients up for a social transformation that they are not ready for or interested in. There is the danger that information technology integration projects may be used as a means for implementing a social agenda that may not be appropriate to the customer's culture or business climate.

Digital, as a computer vendor assisting customers with their planning and implementation of information technology solutions to business problems, must be very careful to manage this dilemma. This applies to internal consultants working with customers and partnerships with external consultants.

An additional insight for me at the meeting was understanding for the first time that the original STS work in the British coal mines was an observation, not an intervention. And the lesson of that case was that productivity increased after the work design was reformulated to leverage the strengths of the existing culture, not change the culture to fit the new technology. I think that while cultures certainly change and information technology will have a sure impact on company cultures, it is ludicrous to propose a consulting intervention that sets out to change culture. That seems to me like shoveling sand against the tide. Rather, there is still much wisdom in the original studies: leverage the strengths of the existing culture for joint optomization.

I am pleased that the work of the conference has produced the momentum to form a permanent organization with SME and will do my part as a member of the formation team to bring this to fruition.

Nancy Bancroft
Digital Equipment Corporation
Mail Stop MR03-3/N17
2 Results Way
Marlboro, MA 01752
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#### What Learned

I found the sessions so thought provoking and interesting that I will need some time to integrate my learnings. At present my learnings center around the concept that the social system is <u>always</u> analyzed when looking at the technical system <u>and</u> there is overall demand for a more vigorous analysis of the social system. I also saw how a mixed team (in terms of frames of reference) improved the quality of the output. Not a new learning, of course, but I was impressed with the value of differences even within a given group (i.e., STS people).

#### 2. How Use

I intend to use the output from the conference as a teaching aid. The consultants I manage tend to focus heavily on the technical and business systems, but very little on the social system. I believe that the STS approach (theories, methodologies and publications) will taken together have an impact upon the way they work.

3. Future Action Items I'd like to see more emphasis on case studies and presentations of methods used and lessons learned in specific situations.

#### Learnings/Insights from November 1987 STS Workshop Ann Majchrzak

- 1. Whether or not it is meaningful to discuss social and technical systems as independent variables or systems is questionnable. Need new framework for considering the "socio-technical system" as an entire single system with subparts that are purposely-driven and functionally-oriented, such as communication, redundancy, control, etc.
- 2. Need to give sufficient thought to how STS integrates with other techniques and philosophies such as Japanese management, operations research, R&D management, systems dynamics modeling.
- 3. By not making social agenda explicit, may be led by an unexpected agenda.
- 4. Utility of having worker perspective represented at workshop such as through unions.
- 5. Contribution of STS to CIM: identification of which control mechanisms are applicable to which CIM objectives (e.g., flexibility --> self-management vs productivity objectives --> control by procedures); redefine boundaries to explicitly incorporate top-down elaboration of distinguishable groupings of tasks according to purpose of production system, mental models, and people's frames of references, and cultural and institutional imperatives.
- 6. Need substantially more research on TECHNICAL design flexibility, i.e., which design choices lead to which specific organizational implications and under what guidelines should certain design choices be made.
- 7. Consensus on differences between STS and other long-term complex innovations as including focus on boundary-management and work roles, social system recognized as key factor, need for cultural change and expicit inclusion of motivational factors in system performance, participative involvement as requirement, and evolutionary and joint optimization of social and technical subsystems.
- 8. Numerous operational indicators for STS organizational readiness already exist in organizations but aren't used.
- 9. Implications of flexible technology for social system have yet to be thought through: does it imply a need for a stable social system to complement flexible technical system or does it mean that complementarities of flexibilities and stabilities must transcend technical and social boundaries and refer to different dimensions?
- 10. Examining how technology can be used to reduce number of complex interactions rather than increase them (e.g., by keeping group size small, or establishing parameters in software for discussions between team members.
- 11. Differences abound between STS Theory of Design and STS Theory of Practice. These need to be systematically identified to see if natural experiments are occurring.
- 12. Need for research on variations of STS as applied to organizational problems. TOPIC FOR NEXT MEETING???

Charles H. Bennett
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(713) 241-4494

#### I Learned:

- 1. Topic of CIM was <u>all</u> new to me and an important element to consider as a next level of consideration relative to STS. I found this to be the newest and most valuable content issue.
- 2. A close second to the above, was the topic of continuous improvement techniques and methods. Although familiar to me, questioning how these can, or need to interface with U.S. concepts of organization design was most useful and appreciated.
- 3. I developed a <u>richer appreciation</u> for the Union point of view on much of this stuff. A <u>very</u> valuable and unexpected outcome.
- 4. I confirmed a bias I have, that many people, in particular extend consultants, think of all-of-this in a way that is different from any way of reality to it. The "I do STS" comments, and even organizations that advertise themselves as "STS" consultants do not fit with my way of relating to STS as a way of thinking, a philosophy of managing, etc., as well as a process (among others) that is useful for the design and analysis of organizations. The "I do STS" approach strikes me in the same way as someone who says "I do T.A.", or "I do hair transplants", or "I do Hertzberg", to give a range of turn-off examples...(My problem I know.) but one that has impact on how I choose to invest my time.

#### What I will do:

- 1. Seek out, and network informally with a number of people that I met, valued, and would like to share more with.
- 2. Ignore or avoid others that I met, or listened to (this was also very helpful to find out about).
- 3. I see <u>real value</u> in exploring the relationship with SME as an individual, and/or as a member of this sort of network...I think there are important things to contribute and learn from each other.
- 4. I will share a good deal of what I learned (materials, ideas, experience) with Senior Management and my OE colleagues, back home.
- 5. I will send out some materials that I have used or created to some selected others that I think will find them of value.

# Charles H. Bennett (Continued)

## What I appreciate:

- 1. The efforts involved with causing this gathering to take place.
- 2. The efforts on the part of the Topic Chairs.
- The willingness of DEC and SME to back this.
- 4. Being able to attend, after I called up and asked to be included.

#### SUMMARY OF STS WORKSHOP

I found the workshop quite stimulating and enjoyed meeting so many colleagues I hadn't known before. Since we have only one page to comment, I will limit myself to the more significant ways in which my thinking was affected by the workshop.

Of particular interest to me was the discussion surrounding social systems analysis. Most shared my frustrations with the current methods of analyzing social systems and were looking for new ones. The idea that appealed most to me was to expand into the social systems analysis using information already gathered from the technical systems analysis, rather than the usual practice of echoing Monty Python's "and now for something completely different." But I think some important theoretical work needs to be done on the relationship between social and technical systems which will have a direct bearing on whatever analytical tools we develop.

I want to thank Bill Westley for bringing us back to basics during the discussion on continuous improvement. The important question is the values with which these techniqes are implemented. I believe that these techniques are compatible with STS and that STS has an important role in their implementation. Indeed, STS may be the only way to get workers in the north american workplace to accept the greater responsibilities that continuous improvement places on them.





400 University Avenue Toronto, Ontario M7A 1T7

Tel.: 416 965-5958 Telex: 06219730

Dr. Hans Van Beinum Executive Director

January 28, 1988

Ms. Cheri Willetts SME One SME Drive Dearborn, MI 48121 USA

Dear Cheri:

Thank-you for your letter of January 22. It is the catylyst to get me at my PC.(IBM XT) I really haven't had any time since November to write my thoughts down but will share some of them by way of this letter.

My calendar is open in the Spring at this point. It usually fills up one to two months in advance.

The Ontario Ministry of Labour currently has a Digital Vax System under development within the Executive Level of the Ministry. This means that the Centre has an 8530 workstation that is currently being used by our Executive Assistant. I imagine that it is possible to buy a modem and get online but I don't know the technology or Ministry policy. Let me know if you want further information from our Systems Branch.

I thouroughly enjoyed the Roundtable. I learned something about the relationship between Organization Design and New Technology. On returning to Toronto, I contacted a local electronics manufacturer to do a small descriptive study of this relationship in the plant. I have currently completed the technical system scan and will soon be interviewing the social system.

I was surprised at the extent to which some of the practical managers in the Roundtable were committed to JIT/TQC. I would like to further explore the relationships between Japanese Manufacturing Systems and STS -- Particulary the implicit social system designs within the Japanese approaches. So far I have had some discussions with local colleagues with regards to this issue.

One perception I had during the Roundtable was that there is not a common understanding and aggreement amongst the participants about the meaning of STS. Some of us have moved toward Participative Redesign and Search approaches and practice traditional SSD in greenfield situations or only as a part of a total systems redesign. Also in white collar office work there are some new approaches. I believe that it would be useful for the Spring meeting to surface and discuss these differences within the field.

I believe that is essential to understand STS as a way of thinking -- to struggle with the origins of the concepts in Europe and Scandanavia in order to arrive at an understanding of the new paradigm of organizing before it is possible to resolve the dilemmas raised by Digital and by Advanced Manufacturing Systems (CIM). Next steps for the network should be to explore in more detail from an International perspective past, present and future developments in the STS field.

The Ontario Quality of Working Centre is very much interested in participating in the continuing development of this network. However, as a policy of the Ontario Government, the Centre will cover all costs of my participation. Since the Centre is also currently interested in the relationship between New Technology and the New Paradigm of Organizing, at some future date the Centre may as well be willing to provide some funds for network meetings.

I hope this short memo is sufficient at present. Please let me know if not.

Sincerely,

D.W. de Guerre Senior Consultant



November 25, 1987

Cheri Willetts
Society of Manufacturing Engineers
One SME Drive, PO Box 930
Dearborn, MI 48121

#### Dear Cheri:

I would again like to thank you and the committee for organizing and making possible the STS Roundtable. It was a valuable experience for me to be among peers in this field, as there is so few. The relationships established were just as valuable as the topic discussions if not more so.

I like the idea of keeping the group small, about the size that attended, and limiting it to people who have experience in STS. This ensures that everyone will have something to share or give as well as receive. I have seen many groups like this expand and end up with a lot of people who want to learn, which results in one way sharing over time. The experienced people don't always get their needs met and tend to drop out. This should not be the place to learn STS, but where it gets evolved and enhanced.

I was struck by the fact that practice seems to be leading theory in this field. There doesn't seem to be many new concepts. More research is needed if STS is to meet the needs of the future. Maybe in future sessions we could encourage and devote some time to new concepts

or theories. In our striving to help others integrate new technologies, we have forgot about our own. The Social side seems to be ahead of the Technology side in our own business. I am interested in changing this, utilizing technology to enhance and make our work more effective and meaningful.

Again, thank you for bringing us together, I hope to see everyone at our next session.

Regards

Bure

Bruce Dillingham

Manager Organization Technology

Digital Equipment Corporation

Continental Blvd.

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603-884-0739

## LEARNINGS - DUFFY

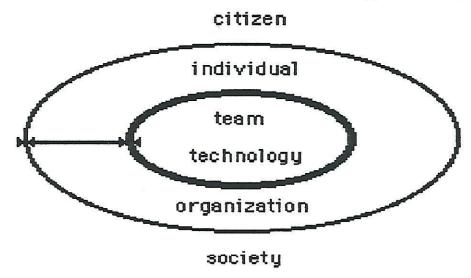
- MORE VARIATION IN BASIC STS CONCEPTS THAN I WOULD HAVE THOUGHT.
- SMALL GROUP DISCUSSIONS WERE PRODUCTIVE.
- NETWORKING WITH PEOPLE WHO ARE DOING STS PROJECTS IS PROVIDING TO BE INTERESTING.
- BASED ON WHAT PEOPLE WERE WILLING TO TALK ABOUT STS HAS NOT DEVELOPED MUCH BEYOND THE ORIGINAL CONCEPTS AND TECHNIQUES.
- UNIONS ARE BECOMING STAKEHOLDERS IN THE DEVELOPMENT OF STS (UAW AND USWA).
- POWERFUL ANALYTICAL AND DESIGN TECHNIQUES HAVE BEEN IMPLEMENTED AND SOME ORIGINATED BY JAPANESE MANUFACTURERS. SOME OF THESE INTEGRATE SOCIAL AND TECHNICAL ASPECTS OF PRODUCT DEVELOPMENT AND MANUFACTURING MORE EFFECTIVELY THAN DO CLASSICAL STS METHODS. TAGUCHI METHODS ARE AN EXAMPLE OF SUCH TECHNIQUES.

## - 515 weekend 11/0-9

The STS Weekend brought me at least two significant learnings.

- The refreshing experience: being a member rather than a consultant, fully participating in the "process" rather than leading it, and renewing a conviction that multi-discipline, multi-experience, and multi-interest teams really do catalyze learning. It was therapeutic to be in an environment where everyone had checked their egos at the door.
- 2. I thought we took some sincere if tentative steps towards specifying what might be thought of as "fifth generation socio-technical engineering". I don't believe it is an accident that we haven't had a very good handle on individual and social variance, or that we haven't paid a great deal of attention to the situation of those displaced by more effective workplace designs. We simply have yet to extend ourselves and our thinking into these areas. It looks to me like fifth generation technology challenges us to do so. Individual psychology, small group and organizational social psychology, systems theory, team-technology interfacing, Taguchi et al methodologies, CIM and son of CIM, population economics and cultural anthropology each bring something to the emerging study and practice.

The notion of "concentric complementarities" appeals to me.



## Concentric Complementarities

I know a lot can be done to increase "readiness" for full blown socio-technical interventions by working issues that surface in the

individual/organization ring. Seeing the socio-technical challenge in this light allows us to deal with the client system where we find it, preceeding from one energy nodal point to the next. If "Joe" had seen things this way he might have spent more time with "George" before throwing all of his energies down the mineshaft. As a social psychologist working in industry I see better after this weekend how those of you working at the team-technology floor can help me move my agenda and I am also clearer about how I can help you with yours.

## An action proposal

Weekends like the one we have just spent I almost never choose to attend, though I am always glad I did if I do. (But then again I never did finish analysis.) I think harvesting our learnings from this weekend and turning them into concrete projects will increase our motivation to continue what we have started. In this vein I would like to see us put together a collection of cases, and commentaries on those cases, that legitimize a fifth generation socio-technical perspective and practice. In the first instance this might take the form of an extended version of Bill Passmore's case followed by 2 to 3 questions from each of five or six perspectives, say, psychology, group and inter group dynamics, systems theory, Taguchi methodology, and CIMification. We might introduce this exercise in our next meeting and if we thought there was something more in it, perhaps we could write, collect, and publish a number of such cases the year after. If there is interest I would be willing to carry some responsibility for such a venture.

John Eckblad 637 Kensington Drive Chapel Hill NC 27514 TO: STS Roundtable Participants 23 Nov 87

FROM: Max Elden

RE: Reactions, learnings, etc from the Roundtable

#### SOME LEARNINGS:

1. Much better idea of some leading edge ideas, problems, and practices such as

- "traditional" STS limited to variance analysis & the 9 or 5 step model too limited. STS = a way of thinking about design & analysis of complex systems
- exciting new ideas in American mfg. about how to organize and manage new complexities generated by new technology
- new ideas about organization and management (eg. production as "staff" to maintenance & marketing ??!)
- how generate locally managed learning?
- 2. STS thinking can help us adapt Japanese mgt techniques to American (and European?) ways of working
- 3. Bill Pasmore's case is a knockout for teaching STS way of thinking --- especially for those who think they know a lot about STS! Generally, the preparation was excellent --- I got a lot to think about from the articles that Larry H., Gerry S., and Bill D. sent out in advance. -copies of these are anow circulating in Norway.
- 4. STS thinking needs more than Japanese quality control techniques to be viable in long term --- better understanding of motivation, culture, power and politics.
- 5. Our mix at the Roundtable of different "frames of reference" (theory/practice, labor/management, high tech/lo tech, consultent/academic) with the good feelings and supportive norms created a super rich learning environment!

#### USE

1. The weekend will  $\underline{\text{substantially}}$  enrich the revision of my Norwegian textbook on org & mgt from a STS view.

NB! I'm very interested in helping with publications!

- 2. I'll be translating Bill's STS case into Norwegian for use next semester.
- 3. Lots of ideas to think about maybe we need a whole new course in STS and circulating copies of articles etc. to collegues in Scandinavia and Europe.
- 4. Idea about "total design" (ie. design not finished until implemented and evaluated), like other ideas I encountered during the weekend not entirely new but got me thinking in new ways. I can use this idea in a new action research for innovation program

I'm in the midst of planning.

#### FURTHER QUESTIONS

- 1. What is our name? Title for an eventual publication?
- 2. What else do we need to think about? What's missing? Where is the power, control, and authority stuff? What kind of social psychological aspects are necessary for effective STS? (eg. what about Hackman Oldham "growth needs" and/or Argyris Schon "organizational learning"?)
- 3. How get these exciting new ideas into teaching modules so they can be diffused as rapidly as they need to be? Need training AND education.
- '4. Are the new ideas something more than Japanese techniques in STS clothes (or the reverse)????

#### NEXT STEPS

- 1. Trondheim, Norway the first week in June? Preliminary response from colleagues in Norway and on the continent is very positive. How about a European version of our Detroit meeting? In any event, I'm preparing a report and making copies of the articles to distribute to collegues in Scandinavia and Europe.
- 2. I'd like to do something at the August meetings of the Academy of Management (in California) that brings together workplace design/democratization people from Europe and America. Anyone out there interested?
- 3. This was such a pleasant and rewarding learning experience that we simply have to continue getting together periodically. Digital seems to have some exciting frontier issues (eg. how organize and lead people who work together through computer networks?). Let's meet with Digital and/or other reflective, leading edge technology producers to work together on the issues new technologies raise for organization and management!

IT WAS A GREAT GET TOGETHER. I'M ALREADY LOOKING FORWARD TO THE NEXT TIME!! THANKS AGAIN TO THE ORGANIZERS !!!!

## MAJOR LEARNING'S FROM THE SME STS CONFERENCE

#### NOV. 6-8, 1987

To begin, I greatly enjoyed having the opportunity to meet and discuss issues related to STS with such a diverse and talented group. The mix of external and internal consultants, academics, union representatives, and diverse businesses added a dynamic tension to many of the discussions which was quite useful. Other additional learning's I gained were:

- The general lack of understanding within the group of the basic dynamics of advanced manufacturing techniques, CIM, and Japanese management may limit the advancement of STS in the near future. Insufficient time and energy seems to have been put toward how STS will deal with the challenges and opportunities for cross pollination they present.
- Specifically I will be focusing more study on the similarities and differences between the Japanese approach and STS theory and practice.
- \* The interface point between the social and technical system, the information system is a fruitful place for much more research and practice.
- The social analysis continues to be problematic due to its lack of perceived rigor as compared to the technical analysis. A more thorough analytical framework which looks at formal organizational issues, as well as, informal is desperately needed. The area of power relationships is poorly covered at this point though it is a salient characteristic in all organizational life and change. Our current process tools are very helpful in this regard, but probably not sufficient.
- I was reinforced in my beliefs that the social and technical subsystems in organizations do not exist separately and must be seen as a whole rather than two fairly separate component subsystems. It is the sociotechnical whole which is the unit of analysis. The attempt to analyze them separately may be the source of some of the difficulties inherent in the current social analysis tools.
- Finally, I learned that STS as a discipline would profit from some sort of professional society as a point of focus. Such a group could not only provide a forum for addressing current technical and research issues, but could also help define a standard body of knowledge for guiding the development of future practioners and the field in general.

look forward to doing so again in the future.

Regards,

Roger A. Ervin

Organization Technology Group Digital Equipment Thoughts/Learning STS Conference November, 1987

- Readiness of an organization for change is in part reflected in the ability of its members to identify with that organization's overall purpose. Further, readiness for <u>permanent</u> change is reflected in the potential for identification with the on-going purpose of the organization, as opposed to enthusiasm for the change process itself or identification with a charismatic leader.
- We are not certain how to (persuasively) communicate what STS can do and why it's important. This is particularly true in communicating with senior managers who tend to be financially-oriented rather than value-oriented. We cannot count on being able to change the values which have driven a successful manager's career. We need to change the ways in which we cast the message; focus more on anticipated results than on the elegance and "rightness" of sociotechnical systems.
- A focus on quality seems to hold great promise in capturing senior management's attention. It also holds the promise of promoting "readiness" as above; that is, it can encourage employee identification with organization purpose. The energies of both management and employees can be mobilized around the creation of quality products and services. Encouraging all employees to take pride in quality might be just the mechanism to link individual motivation to the strategic mission for the organization. It is at once a result and a compelling value.
- Thanks to my friends in the STS community for these and other learnings. I enjoyed getting to know many of you and being part of a nascent community with so much to share, learn and give.

Michael T. Keehan Digital Equipment Corp. 600 Nickerson Rd. Marlboro, MA 01752 (617)490-7608 Dear Colleagues,

First, I must apologize for being so tardy in responding to this commitment. I will do better in the future.

The purpose of this communication is to report my impressions of the Socio-Tech Systems roundtable of November 1987. There were many content items which affected me.

- \* I was pleased to connect with an academic community which continues to develop and test theory in the area of Socio-Technical systems.
- There were times when I felt removed from discussions due to my ignorance of the validity and performance of those theories.
- As a group, we seemed especially strong in technical system analytic tools; IDEF modeling, Variance Analysis, etc.
- I am weak in my awareness of social system analytic tools.
- Social system change process seems to be affected by micro system conditions (the behaviors of individuals).
- I feel that I need an improved connection with the principles of social science and client centered therapy.
- The workshop seemed too long, to full, with not enough time for discussion

I look forward to:

- the strawman mission statement
- our next meeting
- a more relaxed agenda

Respectfully submitted,

Kenneth A. Knight

Socio-Technical Facilitator Westinghouse Harvey F. Kolodny Faculty of Management University of Toronto 246 Bloor Street West Toronto, Ontario CANADA M5S 1V4 (416) 978-2826

I have acquired a much greater project for CIM and a greater need to know and understand it better.

There is a high level of dissatisfaction with social systems analysis.

There is a relatively poor fit between the manufacturing focus of many of the sessions (Hirschhorn, Susman, Duffy) and the experiences of most of the participants at the conference. I believe that misfit had a serious affect on the ability to contribute to learning (given that the Delphi process identified the AMT interest - I guess we had to have more resources who could respond to the interest and free the participants to contribute better).

I like the organization of the workshop around themes - but I think some of the theme leaders didn't pay enough attention to how they were going to organize their session to maximize the "good" experiences for everyone (and I do know that it isn't an easy thing to do).

I learned a bit more about how the need to find like-thinking colleagues to share frustrations and needs can even overcome the reluctance of some consultants to share information.

There is a greater need for more of the participants to work harder at learning.

#### How I Intend to Use What I've Learned

I am going to read, query, experience more about CIM.

I'm going to let the social systems analysis concerns tester. I'm not sure the concern is well placed.

I want to propose more attention to the process of how we as a group come together to learn and I intend to probe the design of the next learning event to see that the processes as well as the content are well attended to.

#### Next Steps

Have some sessions at a future event that will:

- Challenge current conceptions of the boundaries of STS. They are a too limited set. They are too much derived from an inadequate biological model or a no longer relevant control system model.
- 2. Continue to push the integration of CIM and STS to understand whether the two "theories" are complimentary, contradictory, nested, etc.

Harvey F. Kolodny (Continued)

3. Continue to push the integration of JIT/TQC/etc. and STS - as above. This may be a subset of #2 above, and maybe it's an easier way to address the issue, and maybe it's too specific and makes it more difficult.

I'd like to see some clearly stated goals and explicit processes for sharing learning and advancing the state-of-the-art.

Because networking is so important, could we not design explicitly for social system enhancement - e.g., ice-breaking <u>exercises</u>, <u>social</u> integration sessions.

Finally, congratulations Ann, Dave, Bill and Cheri. It was a great workshop!

November 24, 1987

#### STS Roundtable

November 6-8, 1987

Coincidental with the Roundtable, three other related projects are evolving. On September 28, a group of organizations met at the American Productivity Center (APC) in Houston to discuss the objectives and methodology for a national study on organizational re-structuring. A second but expanded meeting is scheduled for December 4 at APC. On this occasion about a dozen and one-half organizations will be joined by representatives from the Conference Board and APC to design the first stages of the national study intended to examine an array of issues dealing with organizational re-structuring.

Recently, Work in America Institute (WAI) established an STS Manager's Network. Presently there are about a dozen organizations signed up. It is quite likely that Volvo and others from overseas will become involved.

The purpose of the STS Manager's Network is to understand better the designs and applications of STS principles, the processes for governing STS organizations and to continue to stay at the cutting-edge of organizational innovations.

The third development is a national survey undertaken by the General Accounting Office of the Fortune 1000 companies and of twenty major agencies of the Federal Government. While the major focus of the study was on EI and its derivatives, STS principles and techniques were touched upon, since so many of them apply to all organizational forms. The survey results show that most American corporations are doing something in the area of EI; but it is not very profound nor is it likely to have much of an enduring impact upon organizations, their structures, processes, cultures or their performance.

With this brief preface and my involvement in these activities, the STS Roundtable took on a particular perspective for me:

- I learned that the different participants hold widely different views as to STS concepts and principles and to the processes through which they may be applied.
- The rather narrow views expressed by some lead to very limited applications of STS.

- Several participants appeared to limit their view of STS only to new plant start-ups. Some reorientation of thinking should enable both theoritains and practitioners to accept a much wider range of applicable possibilities for both concepts and techniques.
- The highlight of the time together was the small group discussions. They were not only informative but were much more animated then were the plenary sessions. During the session on linking social and technical systems, I cited seven principles in a summary statement, which are repeated here at the request of several of the participants.
  - 1. Mutuality of purpose: Both systems must be directed toward mutual purposes the goals of people, the roles of products and the objectives of the enterprise must share a common mission.
  - 2. Joint optimization: Organizational actions should consistently balance the requirements of both systems by optimizing their interrelationships and maximizing their composite outcomes.
  - 3. Dynamic equilibrium: Since all systems exist in continuous states of change, improvement strategies must encompass the dynamic nature of each system, the nature of their interrelationship and the rate and direction of their joint development.
  - 4. Simultaneity: While goals define direction, strategies must define process. The process of planned change must be sufficiently comprehensive to evoke and sustain parallel developments in both systems simultaneously.
  - 5. Synergy: The intelligent combination of the energy of two systems their simultaneous development toward common purposes produces new sources of energy and momentum.
  - 6. Symmetry: Each system must foster and sustain in the other system direction and growth while balancing change and stability and equality of outcomes.
  - 7. Parsimony: The thoughtful application of the preceding principles should be orchestrated to achieve and sustain maximal joint outcomes through the optimal utilization of resources.

• The greatest use I see from the Roundtable is the continuing possibilities for discussion and the development of a research agenda which would foster more thoughtful analyses and yield a fuller understanding of STS theory and its applications.

I hope these discussions can be continued. I am confident that the Roundtable in conjunction with all of the parallel initiatives cited at in the preface will add to an accumulating body of knowledge and extend our understanding about the design and structuring of effective organizations well beyond its present limits.

Dutch Landen

Reflections on the S.T.S. Roundtable
Detroit
Nov 6-8, 1987
Tom Rankin

These are interesting times for the s.t.s. community. Thanks to new technologies, the growing demand for s.t.s. skills (and the success of the Japanese) there may well be some major advances in s.t.s. concepts and methods on the horizon. Following are some preliminary thoughts on the roundtable; I plan to follow up part 4 as part of a larger action research project on the organization design and human resources issues and choices associated with advanced manufacturing technology.

\* Since the 1940's, making the case (conceptually and methodologically) for organizational choice has been the primary task of the s.t.s. community. However, like most social science endeavours (and knowledge) it is a task which is bounded by time and space. Today, the concept of organizational (as well as technological) choice is no longer controversial and is shared by a great number of people representing a variety of communities. If organization choice is no longer the core issue in the s.t.s. field, what is?

From a Scandinavian perspective Bjorn Gustavsen, based on an analysis of the problems involved in diffusing s.t.s. ideas, argues that the main challenge facing social scientists in the field of working life today is how to

develop the concept and practise of "discourse formation" as the prime vehicle in change and reconstruction.

\* Related to the above is my view that Taylorism and its limitations, as a point of departure for s.t.s. design/redesign is of little, if any, value. In the current wave of work organization projects in Sweden, for example, the problem is not how to overcome the social and organizational problems of Taylorism but how to meet the "demands" of new technologies and changing product markets. Being able to resolve the former is often of little use in addressing the latter. Larry Hirschhorn makes a similar point when he suggests that "...sociotechnical principles based on the image of the blue collar worker may no longer suffice". It would appear that breaking with Taylorism and dealing with a post taylorist world are two different challenges.

\* As illustrated in Jaikumar's article in H.B.R.,

flexible manufacturing technology enables operations to play
a staff role to product and process development. However,
the flexible work organization implied in such a role runs
counter to the rule based approach to regulation
characteristic of North American industrial relations and
the job control form of industrial unionism. A challenge
for the s.t.s. community, therefore, is how to support the
development of innovative and change oriented enterprizes
where unions take care of the interests of their members

through influence over complex processes rather than through fixed procedures.

\* It strikes me that it would be a fruitful exercise to compare, at the level of philosophy, concepts and methods, s.t.s. thinking and so called Japanese production strategies.

# JOYCE M. RANNEY 39 INGLESIDE ROAD LEXINGTON, MASSACHUSETTS 02173

#### LEXINGTON (617) 863-5035

November 16, 1987

Dr. Ann Majchrzak University of Southern California Institute of Safety and Systems Management University Park - MC0021 Room 205 Los Angeles, CA 90089-0021

#### Dear Ann:

This letter summarizes key learnings from the recent STS conference. Thank you very much for your support.

#### Key Learnings:

- A review of fact that original coal mine culture was one of self-management.
- More fully understanding of social to technical as a dimension not two variables.
- An initial understanding of simultaneous engineering as a complex but interesting/exciting way to help time to market.
- An affirmation of the importance of culture a part of social analysis.

## How Will Use Learnings:

- Will need to find methods to help clients study their culture, and I'm not sure where I'll go for these methods.
   All ideas appreciated.
- I will start to talk more articulately with clients about social to technical as a dimension and the implications to their business and change process.

#### Next Steps:

- I would like to meet again with the group -- I got a tremendous amount out of the interactions (both socially and in sessions).
- I would like to meet individually with specific people as it seems fit, either in work context or to pursue ideas.
- I think the smallness of the group and our focusing on one topic at a time as a total group helped to make this one of the most stimulating conferences I've been to in a long time.

Sincerely,

Joyce M. Ranney

Thoughts and Feelings from Community-Formation-Weekend by Dave Roitman (re. STS Round Table co-sponsored by SME & DEC, 11/6/87-11/8/87)

Unexpectedly, the dominant set of learnings I experienced (totally useless to others I'm sure!) concerned the nuances of group formation which occured during the weekend. Useless? Well, they can't be put into concepts, only images...do you recall the tone of Bill Duffy's session; how the group gracefully transitioned from an excellent lecture through decision-making on the process to use for the next three hours to a wonderful and exciting sharing of ideas and experience...This was the ONLY successful large "leadlerless group" I can recall ever participating in, and I learned more (on a visceral level) about how to be a part of a group from this experience than practically any I can recall.

Several "large" learnings which come to mind are the following:

1) The importance and difficulty of maintaining focus on organizational purpose throughout organizational change; the learning was not conceptual but orientational...I found it easier and easier to recognize organizational purpose as a ground for much of the weekend's discussions.

2) The importance of of good organizational development practice to

achieving STS change.

3) The recognized need for more rigorous methods to assess social systems, and the realization that striving for consensus on principles, from which a variety of rigorous methods can flow, is the wisest course of action.

- 4) Social and technical systems are not really "seperate" in reality; separating them is a convenient technique to accomplish useful analysis, to win the hearts of technical-minded folks by focusing first on the technical system, then gently showing how control points are controlled (or not controlled) by people, etc...but if we look with "soft eyes" we can see the social system manifest within the technical system (as programs requiring actions and skills of people) and vice yersa
- 5) The language of many U.S. STS writers seems to have abandoned consciousness of societal reality, e.g. the effects of technological change on family, community, and culture...this consciousness needs renewing.

Many "little learnings," occured, such as:

1) To measure organizational readiness, look to a) the ability of key managers to delegate, and b) a history of previous change, including reasons why previous projects failed, capacity of organization to change roles, etc.

2) Mapping power (influence) relationships is an essential social

system analysis step, one I have "forgotten" at times.

3) Having a pilot plant report directly to the plant mgr. is an option worth considering.

4) Joint optimization requires "symmetry", ie. not letting change in the technical system get "too far ahead of" change in the social

system, and vice versa.

5) Simultaneous engineering requires communicating incomplete information ("here's a sketch," "here's how I'm thinking") rather than signed-off prints, among individuals with different professional socializations, status, etc...a recipe for trouble!... and a challenge for our organizational development practice.

6) The new requirements simultaneous engineering places on project management leadership, to enable this type of communication... as well

as to protect the project from functional management, to make tough decisions without clear authority, and to be in tune with the strategy behind the product to guide these semi-autonomous decisions (an example of how organizational purpose winked at me throughout the weekend!);

7) The marvelously designed system of Quality Function Deployment;

8) Continuous improvement frees up human resources, and in organized as well as non-union companies, labor as well as management is challenged to use them;

management is challenged to use them;

9) The importance of "checking" in Japanese quality management, and the question, "how can checking be reinforced in the U.S.?"

A self-observation after concluding this list is that my professional orientation is clearly as a practitioner now rather than a researcher. However, there are many interesting research issues woven throughout the above (e.g., how can an organization maintain focus on purpose; how can engineers learn to communicate tentative information between design and manufacturing)...and that's for another day!

## Lessons Learned from STS Roundtable

- 1. There are many interpretations of Socio-technical Systems Design, even among practitioners and researchers. This must be very confusing to people in organizations and industry who wish to use STS methods;
- 2. The field of STS has not seen any significant conceptual development in the last ten years; all the theory is old and outdated (eg. variance analysis). A new set of methods is needed, especially in areas of social system analysis and design;
- 3. STS is a powerful method to implement and understand technology;
- 4. Roundtable participants need to develop linkages so that STS as a discipline can be strengthened;
- 5. A corporate sponsor is needed to structure and foster developmental work in STS;
- 6. The STS roundtable was long on discussion, but short on next steps. Instructors to participants re: feedback and input were unclear. I was expecting some communication enabling me to provide some structured feedback and response from the group of 3 or 4 people that were selected (or volunteered) to keep the STS link going.

MANOJ SINHA ITI 313-769-4188 ANN ARBOR, MI FROM: Steve Stulck--Learnings from STS Conference

There were lots of learnings, but I'll highlight the major ones:

- A deeper understanding of the political and social agendas
  associated with continuous improvement. I valued this discussion
  for raising issues of power, culture, and purpose. The context in
  which "tools" are used always need to be assessed, and the intent
  of their application.
- A renewed interest in applying STS principles to the challenge of product and process design teams.
- 3. The power of "Directive Correlation" as a way to argue for the inclusion of a social analysis in conjunction with a technical one. The whole issue of linking the technical and social perspective in our work is so central to the STS perspective that its always a source of useful reflection. I also recognize my ambivalence towards more "efficient" social analysis tools.
- 4. The ability to use a case study to understand systems thinking was a good experience. Typically, I use either an experimental approach or a lecture to engage clients in systems thinking. This provided another avenue.
- 5. The ability to meet with colleagues was wonderful. I gained respect and admiration for the community as the workshop proceeded. I learned from them as practitioners and theorists, but also as colleagues and friends. The short discussion we had in one group on readings was great.

#### Intended uses:

I am writing a paper for a presentation in December and intend to incorporate thoughts from this meeting. I am also going to renew my efforts at teaching my colleagues at work (Mechanical and Information

Systems Engineers) about STS. They are a good laboratory for working out ways of communicating ideas to line and staff engineers.

Date: December 29, 1987

From: Gerry Susman

Re: Personal reflections on STS Workshop

I may have been able to relay more thoroughly my reflections on the workshop if I had written this statement soon after the workshop ended. However, it may be that the thoughts that I find easiest to recall now are the ones that are most worth reporting.

The workshop reaffirmed my belief that analysis of social systems is still the weakest part of the sociotechnical systems framework. There has been little advance in the last two decades. In fact, there has been regression. The methods used by the original developers of STS were firmly based in anthropology, sociology, and psychoanalysis. The methods that are used currently are superficial at best. Social systems analysis is stagnant because little guidance is sought from the fields where this type of analysis originated. A renewal of research on social systems that is based on methodologies from these fields needs to be encouraged and supported.

There is a blurring between sociotechnical system analysis as a participatory method for facilitating change versus a research method for analyzing systems and generating specific design proposals. The distinction is worth making because progress on one does not necessarily mean progress on the other. One of the reasons for occasional miscommunication among workshop members was different priorities and interest in these two methods.

There is undue optimism about being able to achieve complementarity between social and technical systems by changing the social system. We need more study about the invariant properties of social systems (in specific concrete settings) in order to know what can be changed and what can't be changed. In some cases, it may be easier to achieve complementarity between social and technical systems by changing the technical system. CIM may provide more flexibility in this regard than do traditional manufacturing technologies. Also, if we take the "equifinality principle" of STS seriously, there are many alternative designs that can lead to the same outcome. Research that demonstrates this principle should be encouraged.

#### Jim Taylor 240-30A 70th Avenue Douglaston, NY 11363-1948

#### PERSONAL SUMMARY OF THE STS WORKSHOP November 9, 1987

#### WHAT LEARNED?

In retrospect much of my learning had to do with sharing sentiments and views with other participants at the workshop—that is, learning what we as a community know, believe, and practice. I have been operating in isolation as I suspect many of us have. It was useful for me to hear the reactions of colleagues in the workshop. In some aspects my own views were confirmed while in others they were challenged. It was a very useful event for me!

#### SPECIFIC ITEMS

CIM: I learned more about CIM--the extent and organizational impact of CIM, and its potential to be a stimulus for STS and organizational improvement. Its increasing presence.

Change: I learned that there is a high degree of agreement on the importance of purpose-driven design.

Technical Systems: Somewhere in the meeting I gained the insight that the rigor we apply to the technical systems analysis, based as it is on the biological model of general systems theory, actually is a "softening" of a purely engineering view of technology. Perhaps soft is not the right concept, but making it more human is. The unit operations/key variance notions permit us to "wrap our minds around" our business as members of a STS--to put it into human perspective.

Social Systems: It was interesting, if not disconcerting, to hear what appears to be a widespread sentiment that we don't have a useful and/or appropriate way of analyzing social systems (I thought we did, and I still do). It was a learning for me to hear that the stated discomfort (expressed by some and not challenged by the rest of us in plenary) with any social systems analysis "method" is because of a reluctance to apply rigor to this aspect of STS.

I wonder to myself if more rigorous and focused models such as the "GAIL Grid" don't serve us by "hardening" and specifying a limited role set and limited activities directed to the success and survival of a human organization, and if this more rigorous view isn't an appropriate counterpoint to the softer view of technology referred to above in creating a different and useful

alternative (more structured and self-administered) to the traditional conceptualization of organization. Why should we resist rigor in social system analysis? In my experience structure helps organization members to understand, and to undertake their own social systems analysis. If we're in the business of working ourselves "out of a job" specifiable, structured methods of analysis better permits client system participation and subsequent STS independence.

Another interesting item about social systems for me had to do with learning that other participants also had difficulties in helping create appropriate and effective social system designs for engineers and cross-discipline groups.

#### NEXT STEPS?

This meeting was good! It was the first fresh breath for the STS community in many years, and it's about time. We shall see what sort of research agenda emerges from this past meeting, but I will not be disappointed if it is not up to our expectations. We'll have time for that if we are able to "jell" and I think we will succeed on both counts.

I would like to see this group meet again, and I would like to include additional members. My preference is for a maximum of 75-100 people at meetings, but our numbers should be appropriate to our purpose. Thus I await the dialogue on mission to guide our size.

Over and above the inclusion of the specific individuals who joined us from Digital (all of whom I welcome), I would like to continue our relationship with DEC as a company interested in promoting STS in its market. What form such a relationship would take is not clear to me, but I would be willing to carry on further discussion of this.

Finally, I believe our membership in the SME Technical Activities Network is useful. I hope it becomes reality, and I look forward to the benefits of this.

#### LEARNINGS FROM THE STS ROUNDTABLE

# Peter Unterweger UAW Research Department

Insofar as I have no formal training in, or practical experience with, STS there was a great deal for me to learn at this workshop. I had observed some STS-based designs in Swedish auto plants, but I was not familiar with the theoretical concepts that underlie these designs. As a result I found the papers (eg. Harvey Kolodny's) and discussions that dealt with basic concepts very informative.

The roundtable also allowed me to make contact with students and practitioners in this field. Much of work organization innovation in the auto industry, which I am most familiar with, appears to be either simply empiricism or eclectic borrowing from various models. It was very useful to meet a group that had a more coherent approach to work organization design.

It was particularly helpful to meet people that had an interest in, or knowledge of, STS implementations in a union setting. Given the recognition that STS gives to the social system and the important role that unions can play in the social aspects of a production system, there is a basis for a strong and symbiotic relationship between unionism and STS work design — in fact, as I argued in one of the final session, it may be impossible to arrive at an adequate design without having formal and organized representation of the workers in the system. In any event, unions should be of greater concern to STS practice than they currently are and vice versa.

I also found the workshop format to be very helpful. Having passed through the "normal" educational process and being accustomed to meetings and conferences where one is talked at for hours, the amount of participation that the STS workshops allowed was a pleasant surprise. Unfortunately, the plenary discussions which followed the group reports were too brief because the reports usually ran over their allotted time. Because these discussion are, in my view, the most important part of the workshop, better planning and more discipline would seem essential.

Finally, I found the workshop which tried to address the relationship between STS and Japanese production concepts very interesting. As I mentioned above, the work organization field abounds with eclectic borrowing, and at this point U.S. manufacturing executives are virtually mesmerized with the success of the Japanese model. A closer examination of this model from an STS viewpoint is as necessary as it would be timely.

DD5 2/16/88 opeiu494



February 10, 1988

245 Victoria Avenue Suite 600 Westmount, Québec H3Z 2M5 (514)

Miss Cheri Willets
Senior Administrator
Technical Committee
Projects Dept.
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1 S.M.E. Drive
P.O. Box 930
Dearborn, Michigan
48121

#### Dear Cheri:

The main lesson I learned in the November STS Roundtable was about the <u>increasing</u> tension between social and technical systems with recent advances in manufacturing technology. The perfect example is J.I.T. which in my estimation tends to break down teams and restore rather Tayloristic approaches to the design of jobs.

This led me to listen carefully, almost between the lines, to what people were saying and from this I came to the conclusion that many people at the meeting were exploring quite new dimensions of socio-technical design; dimensions which emphasized the purposive character of organizations, and ways in which the purpose and strategy might be developed as a frame of reference for individual job holders. With this frame of reference, they could make their own decisions and support the strategy and objectives of the larger system. Making their own decisions would enable them to deal with boundary transaction uncertainties, either for their team or job and adjust their work to the uncertainties so that it retained the direction of the larger system.

Finally, I saw emerging or implicit in many of what people said or many of the questions they asked a sort of holistic approach to organizational design. This of course is implied in sociotechnical systems but rarely clarified. What it implies is that each unit of the system shall essentially replicate the larger system in being able to recapitulate its major concerns and decisions. Of course all this must be within a framework of an internal variety requisite to dealing with complex environments.

Page 2 Miss Cheri Willets February 10, 1988

Last, but not least, I was impressed by the number of people who were excited and concerned about this and found this an enormously stimulating meeting and look forward to the next one.

Yours sincerely,

William A. Westley

Partner

WAW/eel

P.S. Please note that if the next meeting is held during April, I will not be able to attend but would appreciate it if one of my partners, Audrey Bean or Carolyn Ordowich were invited in my place.

#### LEARNINGS FROM THE STS ROUNDTABLE

# Peter Unterweger UAW Research Department

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#### Comments on the Detroit STS Roundtable

- I found the meeting to be invigorating, stretching, and worth spending a weekend away from home; I felt positively about the content, the people and our ability to sustain a good level of energy.
- I particularly enjoyed the contact with the other participants. I renewed some old relationships and met interesting new people. It was fun experiencing the various working styles and the humor, but I wish there had been more opportunity to hear about what people are doing. One very positive outcome for me is the possible opportunity to work jointly with some new acquaintances.
- The short educational inputs, e.g., Japanese management methods, were useful to me. I appreciated the way the presenters linked this with the mainstream STS concepts. I'd like to see more such sessions in the future. In fact, I wish we had used a panel for the CIMS session.
- I gained some immediately useful ideas and tools from the discussions that I can use with clients, e.g., Bill Parmore's case.
- I support the idea of an ongoing network and would like to play some role in this. I'm optimistic that this association can be of considerable value. My perception is that the acceptance of the STS approach to organization design in the business world is just starting up the S-curve.