5. Computer Conference on General Systems Theory: One Year's Experience

Introduction

The computer conference on general systems theory has developed a glossary for the field, begun a history and a genealogy of theorists, reviewed topics of current interest and built ties of informal communication among people in the field. A paradigm debate started in the main conference has sparked controversy and curiosity in addition to confusion. Despite these substantive achievements, a computer conference can be a frustrating experience. Frequent users are disappointed by the slow replies to their messages and comments. Infrequent users are overwhelmed by the massive number of messages and comments waiting for them when they sign on. It is apparent that a computer conference is a unique new form of communication. Effective use requires regular use, but this is currently the exception rather than the rule.

Learning to Fly

Among the principal investigators of EIES groups there seems to be a feeling of disappointment in the results of the exercise so far. Nevertheless these people still believe in the potential of computer conferencing, so they tend to search around for explanations which will put an acceptable face on disappointing results. In this state of mind I came across the following paragraphs in the November, 1978, issue of SCIENTIFIC AMERICAN, p. 167.

Access to the Electronic Information Exchange System (EIES) is provided by the National Science Foundation's Division of Information Science and Technology. The opinions and conclusions are those of the author and do not necessarily represent those of the National Science Foundation.

> Wilbur and Orville Wright invented the controllable airplane. Until they first flew in public in 1908 it was believed a powered aircraft would be similar in its behavior to an airship, a stable vehicle that could be steered right and left by a rudder and up and down by a horizontal rudder, elevator. One could expect to mount such a craft and fly it without previously acquired skills, and that was what was invariably attempted until the Wrights showed how it should be done.
>
> In contrast, the Wrights, who were builders of bicycles, conceived the airplane from the beginning as being a vehicle that like the bicycle depended on its operator not only for its direction but also for its equilibrium. It therefore seemed perfectly natural to them that before one could hope to successfully operate a powered aircraft one needed to develop both the aircraft and the skills necessary for operating it.

There seems to be an analogy here to the operation of a computer conference. I for one began with the assumption that a computer conference should pretty much take care of itself. If a group of people with a common set of interests were given access to EIES, I expected that they could conduct their normal professional communication with enhanced speed and effectiveness. Alas, this was not to be. A few months into the conference, helpful user consultants began referring to previous studies of conferencing behavior which concluded that "strong leadership" was necessary for the success of a computer conference. I strenuously resisted this suggestion. Not only did it offend my democratic sentiments, it implied more work! But the evidence seemed to support the need for strong leadership. Hence I embarked upon a strategy of delegation of authority. Surely several strong leaders were better than one. Asking others to serve as moderators of conferences I had set up was not very successful. But a few people functioned very effectively as moderators of conferences they had initiated, for example Roger Conant, Bill Halal, and Jay Forrester.

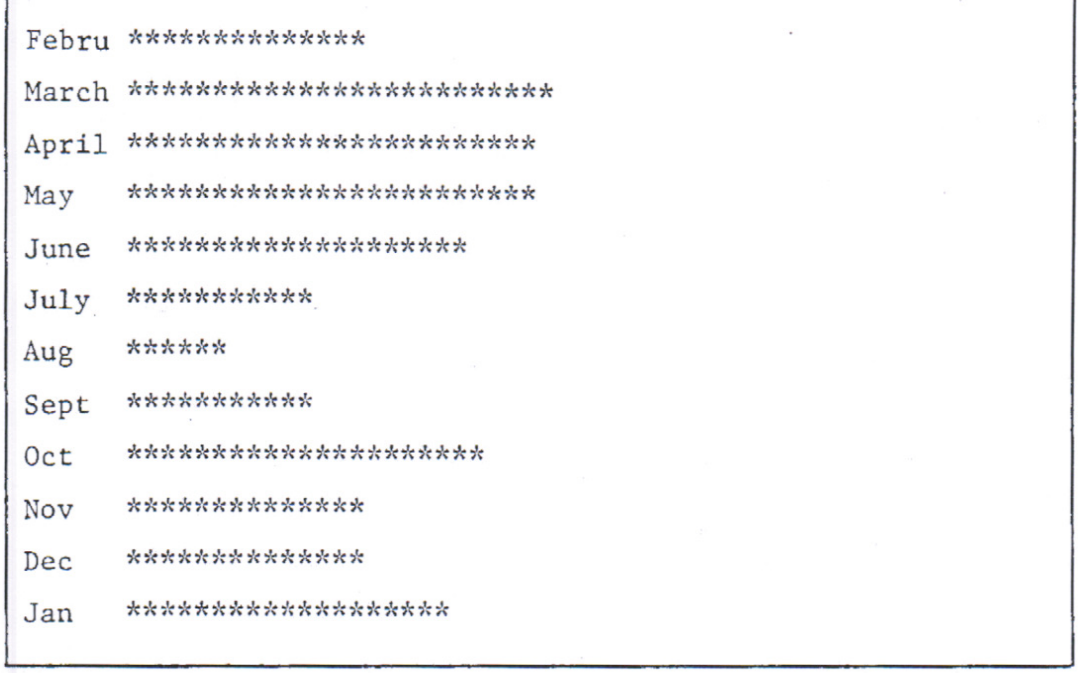
It appears that an active moderator is necessary to keep the conference going but that as people get used to the system and initiate their own projects, several leaders begin to emerge. "Learning to fly" on EIES requires a fair amount of practice. It takes people about 10 hours to learn to use EIES well. In about 100 hours they become skillful communicators and organizers within the EIES community. Perhaps about 1000 hours are required to learn, through EIES, a field not previously intensively studied.

Group Process

As shown in Figure 1, the usage of the system follows the academic year, with August being the least active month. It appears that the moderator has to "restart" the conference at the beginning of each semester or the level of usage drops off. This is another hard-to-delegate task for the moderator.

Figure 1

HOURS USED BY GROUP 40



The distribution of personal activity has been highly skewed. Figure 2 shows the activity of individuals in conference 40, the most active discussion conference of group 40. The numbers down the left hand side indicate people. The moderator is number 001. It may be that the activity of the moderator determines the activity of the group in a manner that is fairly predictable.

It should also be noted that during the fourteen month period, November 1977 through December 1978, the medium rate users of group 40 entered less than one comment per month in conference 40. Although conference 40 was not the only conference the group was using, it was by far the most active conference. Only four people entered an average of one comment per month or more.

The activity in a conference over a period of months is more skewed than the activity during a single month. Figure 3 shows the activity in conference 40 during a typical month.

Figure 2

INDIVIDUAL ACTIVITY IN CONFERENCE 40
November 1977 to December 1978

NUMBER OF COMMENTS PER PERSON

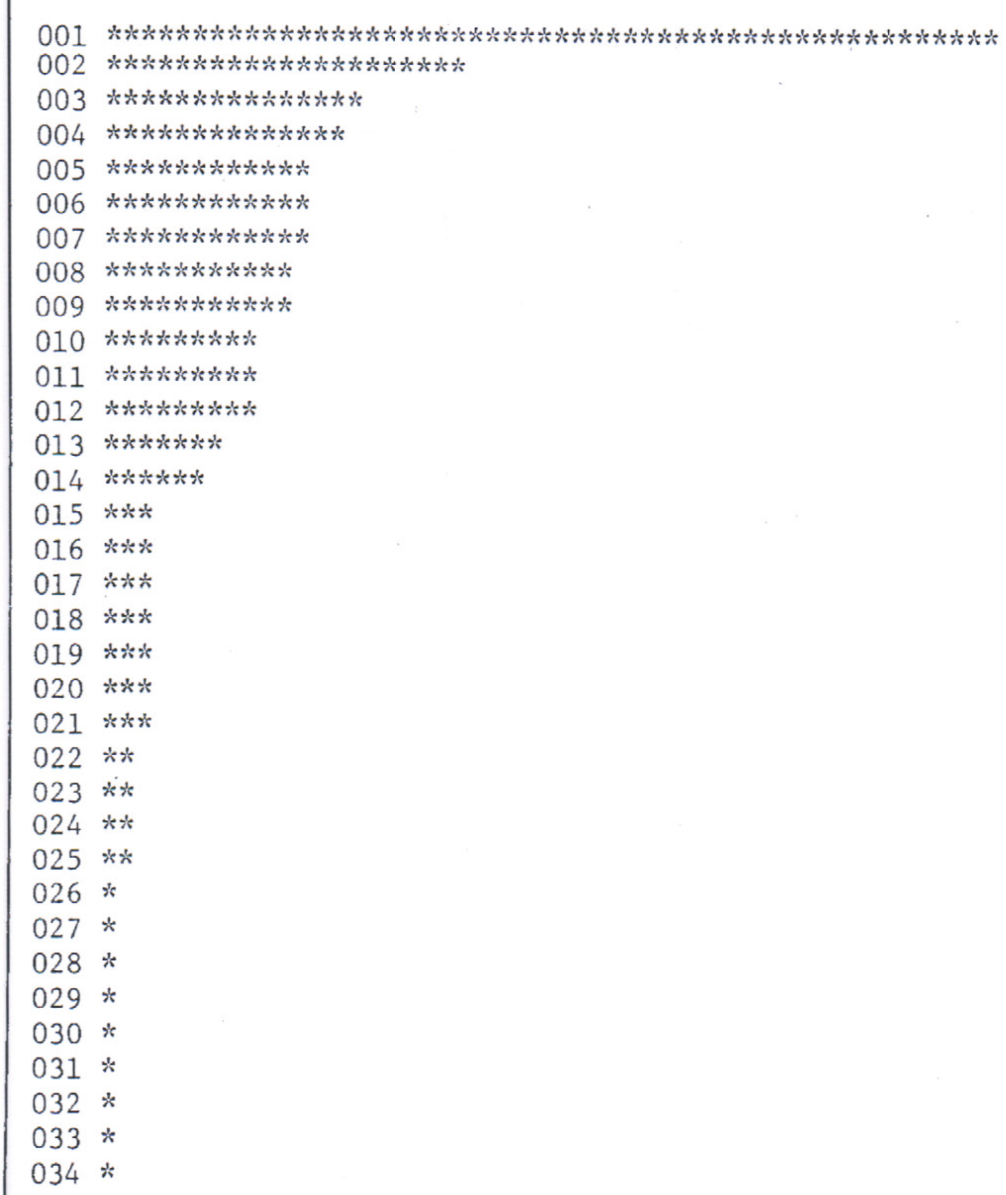
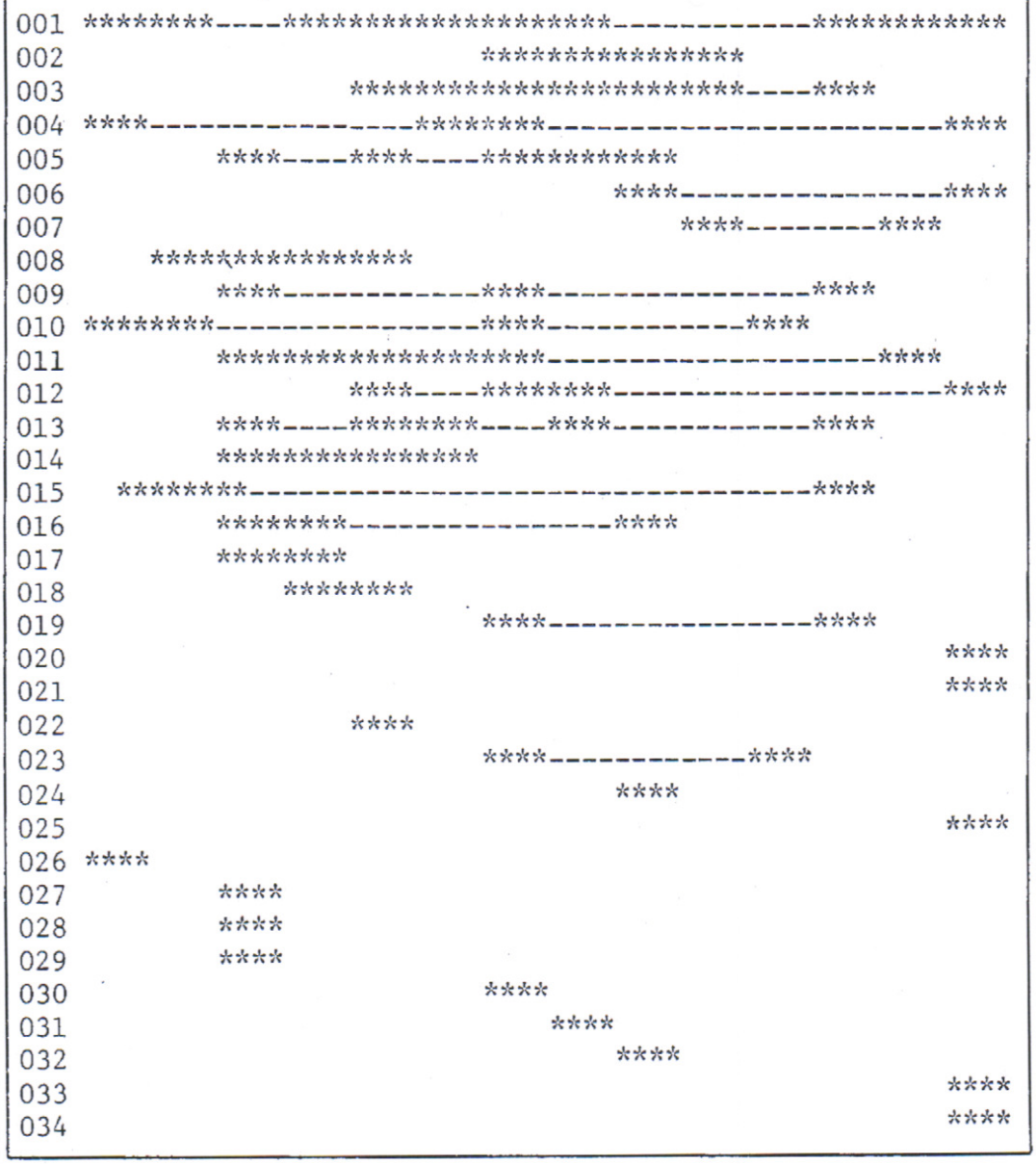


Figure 4

ACTIVITY IN CONFERENCE 40 BY PERSON AND BY MONTH



The fact that regularity of use is the principal cause of the skewed distribution of participation is further illustrated by Figure 4. Four asterisks under a particular month indicate merely that one or more comments were entered that month. Dashes mean that due to subsequent comments, the person is assumed to have read the intervening comments and not dropped out. The moderator, 001, was active during the entire period. Person 002 was very active from May to August but then broke his arm and has not yet returned to the conference. Person 004 is active primarily between semesters. Person 008 was active for a while but then encountered telephone difficulties at his university and dropped out. He has since returned. Many people entered one or a few comments and then were not heard from again.

Topics Being Discussed

Below is a list of conferences used by group 40 and the number of comments entered in each one by the end of January 1979.

Conference	Comments
40, general systems theory	273
41, glossary	282
42, genealogy and history	20
43, science policy	10
44, communication networks	68
400, disciplinary matrix	21
401, talk about talk	37
402, instructional tv	36
403, requisite variety	32
404, schemas and category theory	17
410, information	39
415, evolution	35
416, SGSR task force	25
418, system formation	77
426, conference panel	26
428, hierarchy theory	15
437, educational programs	257
438, course outlines	10
439, annotated bibliography	4
448, rural telenet users	5
449, test questions	62

European Participation

Early in the project I tried to get a number of people in Europe to join us. Unlike the U.S. and Canadian users they would have to pay their own communications charges. This effort has been more difficult than expected. European users face a number of difficulties ranging from unreliable hardware to institutional impediments. However by far the most serious difficulty is the price of communications services. In Europe government monopolies control the Post, Telephone and Telegraph (PTT). Needless to say these companies do not want their telephone systems to undermine their telegraph business. Hence they charge by the character, thereby eliminating any incentive to get more messages through the same equipment. The importance of these tariffs in stifling innovation is beginning to be recognized. The issue may come up at the UN conference on Science and Technology for Development in Vienna in August 1979.

In Britain, the use of EIES may be illegal. Apparently it is legal to use a computer network to access a data base but not to send messages. It was argued that EIES users were accessing a data base of verbal material. However, the British Post Office decided EIES was more a message system than a data base.

Writing a Handbook

During the first year of operation on EIES the group primarily engaged in open-ended discussion on topics of general interest. Several tasks were undertaken such as developing a glossary, history, and "disciplinary matrix" for the field. However, it was never clear what would be done with this material. During our second year we plan to begin work on a handbook of general systems theory. I am hoping that many of the members of the group will want to contribute to this undertaking. It will be interesting to see how the shift from open-ended discussion to concentration on a task affects the group's use of EIES.

Acknowledgments

The members of the EIES group on general systems theory are: Stewart Bainbridge, Jay Forrester, Barry Clemson, Roger Conant, Tom Wickenden, Joseph Goguen, Bill Halal, George Klir, Roger Cavallo, Klaus Krippendorff, Bill Gray, Irwin Marin, Terry Oliva, Larry Richards, Tom Simon, John Sutherland, George Tracz, Len Troncale, Francisco Varela, Crayton Walker, Zavis Zeman, Martin Zwick, Michael Arbib, Barry Hughes, Manfred Kochen, Bill Reckmeyer, Rolf Wigand, Steven Rogers, Anders Sandberg, Lucien Gerardin, Joe Martino, Murray Turoff.

References

Ashby, W. Ross. An introduction to cybernetics. London: Chapman and Hall; 1956.

Hiltz, Starr Roxanne; Turoff, Murray. The network nation: human communication via computer. Reading, Mass.: Addison-Wesley Publishing Company; 1978.

Kochen, Manfred, ed. Information for action. New York: Academic Press; 1975.

Umpleby, Stuart A.; Umpleby, Karen Thomas. Applying systems theory to the conduct of systems research. Paper prepared for the International Conference on Cybernetics and Systems, Amsterdam; 1978 August.