THE JOURNAL OF COMMUNITY COMMUNICATIONS

For Rentals Only

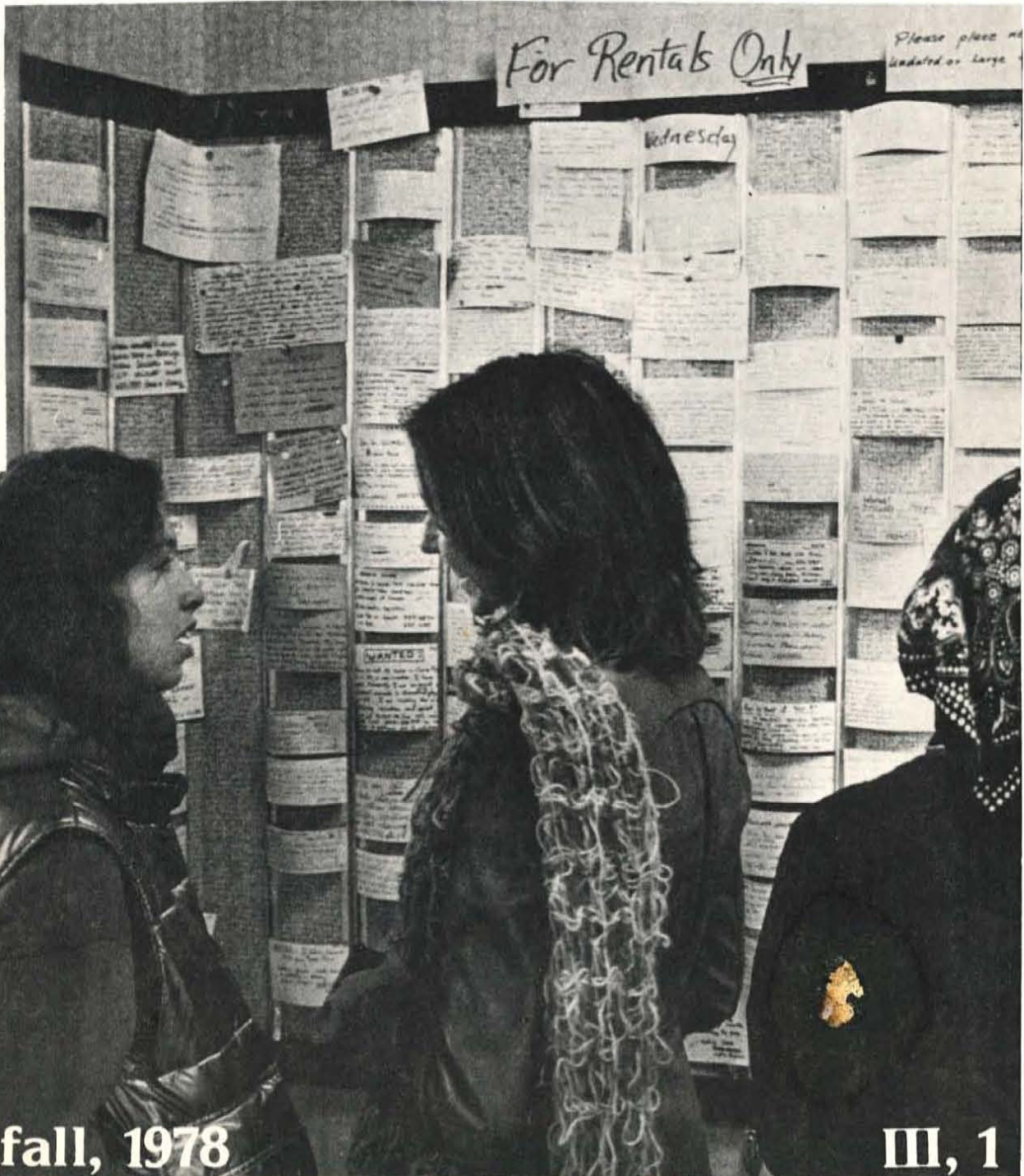fall, 1978   III, 1

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cAN INTRODUCTION...

The Journal of Community Communications represents Village Design's forum for the exchange of notes and theories on community information systems. The kinds of community communications this journal will cover are those which represent people-to-people communication. This style of information sharing can be described as *non-hierarchical*; that is, the information flow is straight across, and on a peer basis. This implies that people's access to information is less monitored, mediated and controlled than when information is disseminated from a "higher" authority. This kind of communication might also be described as "non-broadcast" and interactive, differing from "broadcast" (as in radio and TV) in which communication is primarily one-way and non-interactive. These terms and concepts are further discussed in several of the articles in this issue.

We believe that free-flowing, non-hierarchical and interactive communication is a style of information exchange which may empower people, not by giving them a "vote" on issues not of their choosing, but by giving them direct control over the content of the information they receive. This implies increased ability (and responsibility) for ascertaining the truth and usefulness of the information. By encouraging selfreliance rather than reliance on "experts", this communications style may encourage cooperation and collective effort in and among communities. The communities concerned may be neighborhoods (geographical communities) or communities of interest—groups sharing common goals.

The Journal of Community Communications was first published in June, 1975 by a group of people from The Community Memory Project. The Community Memory Project is developing a new version of their computerized community information exchange system, which will consist of several interlinked public computer terminals where people can store, index, and retrieve information (for more details, see "The Community Memory Project: Description and Current Status"). Being intensely involved in development activities, the group has turned over publication of this Journal to another friendly local non-profit corporation, Village Design.

Village Design has been active in Berkeley since the early 70's, and has sponsored projects on alternative energy, community architecture, and the role of communication in community organizing. Recently, Village Design has been doing research on community information networks, and it sponsors a resource library on appropriate technology, collectives, and the ecology of communities.

The belief that the type of communication we describe does have some liberating potential is part of the "myth," or "image" of a non-hierarchical communications system such as a neighborhood organizing telephone tree or other grass-roots communications. Be it learning exchange or a TV network, part of the analysis of a communications system involves its myth and its traditions. For example, a major network news show peddles the myth that in 30 minutes the viewer will be informed of all major global, national, and local events in concise, objective fashion. That this is obviously NOT the case is well known, but this myth continues to twinkle in the kindly eyes of veteran newscasters. As New Yorker magazine TV critic Michael Arlen once said, "there is no such thing as a neutral authority." For further discussion of the "myth" of a communications system, see "The Importance of Myth in the Development of a Communications System."

The apparent liberating influence of free-flowing, interactive community-based communications has been noted historically as well. For at least the male half of 18th-century London society public coffee houses were places where open access community communications did seem to have a democratizing effect. (See "Coffee Houses in Old London: A Prototype of a Public Information Network.") Today, non-hierarchical communications are exemplified by the peer counseling movement, learning exchanges, "neighborhood power," and so forth. The theory of learning exchanges and the present state of two Bay Area learning exchanges are described in "Communication, Liberation, and Learning Exchanges."

Certain items of technology, such as the telephone, the television camera, and the computer, are playing an increasing role in communication. Technological tools such as these have been described as neutral in themselves, being only biased by the political and social context of their use. However, this is not always true. The Community Memory people believe that small computers can be used to facilitate non-hierarchical communication in communities, but this enabling function must be the result of careful design of the system to be open and non-coercive.

For communications and other functions, computers are now becoming more prevalent at the workplace: in electronic mail systems, computerized payroll and forms processing, and management information systems. In the context of the way corporations and other bureaucracies are most commonly organized, the computer is a far from neutral tool. (See "Computers and the Mechanization of Judgment.") A contrasting style of workplace communication would be that found in a collective, or in a worker-controlled business, in which each worker would have not only the right of response but direct control over the decision-making process.

We do realize that by its nature, this Journal is "broadcast" communication in a form which is not highly or immediately interactive. However, we'd like to present the Journal as an open space, not a closed society. We welcome contributions, and we are particularly interested in project reports on activities which represent and reflect non-hierarchical communications in action. Although many of the articles in this issue deal with the role of computers in communication, the Journal is primarily about self-organizing, community-based information exchange and is not solely concerned with computerized communications.

A special invitation: it is the opinion of the Editor that a public bathroom wall represents a good example of community communications. Readers are therefore invited to send in their favorite graffiti for inclusion in the column, "The Bathroom Wall." Graffiti and other contributions (letters, art, articles, poetry) should be directed to:

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THE COMMUNITY MEMORY PROJECT:

DESCRIPTION AND CURRENT STATUS

Sandy Emerson

From 1973-75, there were two experiments in using public computer terminals to facilitate information exchange among people in the community; one in the San Francisco Bay area and one in Vancouver, B.C. Computer terminals were put in places such as a music store, a community information center, and a public library. The system was essentially self-teaching. After reading a poster (or learning from someone who was already using the terminal), a person would type in a message, and then label it with subject headings (usually) reflecting the content of the message. These labels then became the "keywords" with which the message could be retrieved by others.

As the name suggests, the Community Memory ° system provided a facility which could "remember" any message and keep it around for community use. The outstanding feature of the system was that it was designed for use by anyone who could pick out letters on a keyboard, and there were no restrictions on what kinds of messages could be put in, how they were indexed, or who could retrieve the information. Because of the designers' insistence on freedom of access and ease of use, this information system was essentially self-determining. Since all the data in the system were put in directly by its users, the users not only controlled what information was there but also had responsibility for the ultimate value of this information exchange. By designing a means by which people could manage and maintain their own information needs, the Community Memory project sought to present an alternative to the way that people currently get information in this society.

Information, as such, was only one form of the general communication that the Community Memory system handled. The system carried all types of messages including poetry, graphics,

and miscellaneous comments. However, the system was most significantly different from other communications media in the way people obtained, presented, and handled information: i.e., those substantive bits of knowledge which can affect opinions, actions, and decision-making.

The Politics of Information Flow

Any flow of information may be described as two-way and interactive (as when a person is having a conversation with a friend) or as one-way and non-interactive, as when a radio newscast is listened to by an audience. Between these two extremes are intermediate modes of information flow, such as the town meeting or conference, in which much of the flow is one-way, from the speaker(s) to the audience, but the audience has the right of response, counter-statement and questions. In American society, most of the information flow follows the broadcast, non-interactive model: for example, radio, TV, and newspapers. Accordingly, the information is distributed from its central source, and there is little opportunity for people to reply or to influence the content of what they read and hear and see. The Community Memory project people have called this model of information flow "hierarchical", since information is produced and distributed from the top, or central source, "down" and "out" to an audience.

The attribution of politics to a style of information flow is a crucial part of the design concept of the Community Memory system. The Community Memory system attempted to be NON-hierarchical and to facilitate not only two-way but many-way communication. It differed from conversation in that people communicated to others indirectly (by leaving a phone number for others to call) and at different times rather than synchronously.

However, the content of the information remained under people's control, and any person, regardless of wealth or station, could leave a message for the community.

In the Community Memory system, the production and distribution of information was de-centralized: no central source controlled what information was available or who had access to it. These contrasting models of information flow do not imply an automatic value judgment. Broadcast information is not wholly evil; nor is non-broadcast, community-controlled information necessarily good, useful, and true. However, a broadcast communications system can never be considered representative or democratic when compared to an open-access, interactive communications system in which people generate information by themselves, for themselves.

The Pilot Projects

From the point of view of an individual user, the Community Memory system looked like a funny typewriter with a TV on top. In the Bay area, where the system was designed, a terminal was put in the lobby of a music store, in a back-to-the-land resource store (the Whole Earth Access Store), and in a public library. People were drawn to the terminal by hand-made posters giving instructions on how to find or add information, by the phrase "TOUCH ME" that appeared on the screen whenever the terminal was unoccupied, and occasionally by a Community Memory project person who took someone by the elbow and offered to show off the system. The project was mentioned in most of the local papers, but there was really no advertising other than word of mouth, and no community organizing effort was mounted to bring people in. Eventually, flyers were also available at the terminals giving instructions on how to use the system.

Essentially, the system's designers just put the terminals out in the community and watched to see how people would use them. This casual approach was partly a result of limited staff resources, but it was also a deliberate attempt to set a self-determining context of use for this information system. Although at that time the system was supported by an antique and relatively cranky XDS-940, a roomful of refrigerated central processing unit at the Resource One office in San Francisco, it nonetheless remained functioning most of the time. With very little direct staff attention, people used the terminals about 70% of the time that they were available, and used them well and creatively. People not only entered the expected classified ads and meeting notices but also poetry, art, personal messages and bits of nonsense, apocalyptic visions and utopian dreams, love letters, and reading lists.

In Vancouver, Community Memory
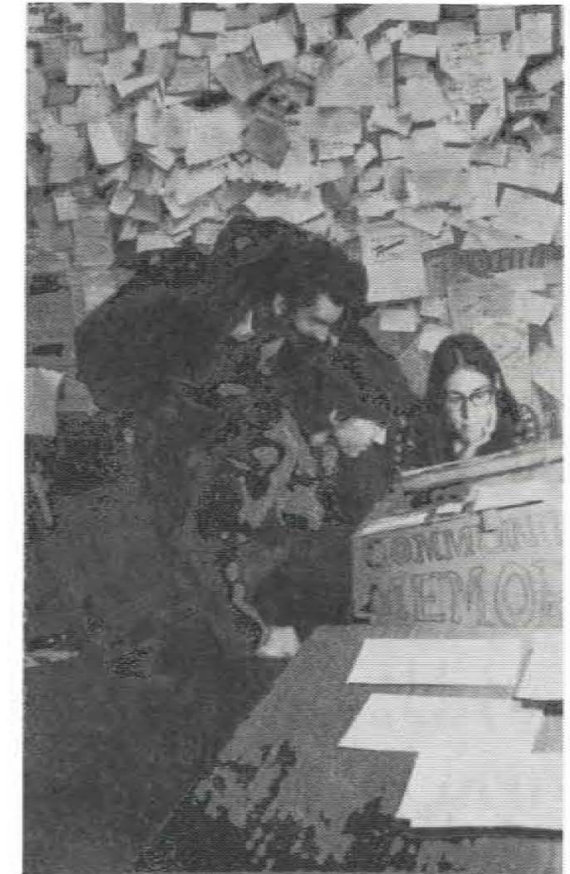
appeared in a public library and in a community information center. Although the Canadian system, supported by donated computer time on a large university computer, did not always function as well as the Bay area experiment, the range and breadth of items entered by the public was similar. Both experiments were terminated because of problems with computer support: in Vancouver, the donated time ran out, and in the Bay area it was felt that the XDS-940 could not support the sort of expandable, modular, and inexpensive system the designers envisioned. The final evaluation of these experiments was that the public at large, without prior training, can use an electronic information exchange system to define and meet their own information needs. The expected fear of machines was not much present. In fact, most people said, "It's about time."

° Community Memory is a service mark of The Community Memory Project.

Current Status

In the years intervening since the original experiments were terminated in 1975, the designers of the Community Memory system have been completely rewriting the software and mounting it on different hardware with a view toward making the system reliable, economical, and portable (usable on different types of hardware). The designers of Community Memory, who have now worked together for some seven years, are: Lee Felsenstein, engineer; Efrem Lipkin, software designer; and Ken Colstad, programmer and social thinker. Lee Felsenstein, who designed the Processor Technology Sol® microcomputer, has supported the project with royalties from the Sol , which has meant that system development has been able to take place without much energy being lost in grant getting and other funding hassles.

In 1979, a new version of Community Memory will appear in the Bay area. The basic philosophy of use of the system remains unchanged. However, the new version will more fully actualize the idea of the distributed data base, since it will involve more terminals and clusters of terminals.

The New System: Structure and Governance

In the new system, each set of about 12 terminals will form a 'node' around a central processing unit. The central computer is the DEC LSI-11, a fairly inexpensive microcomputer, and the terminals are dumb terminals connected to the LSI-11 by high-speed modems. Each node will represent a pool of information accessible from any of its terminals.

The nodes, as they arise in communities, will be linked together, eventually forming a regional network. Each node's pool of information will remain at its home base rather than being subsumed into a central repository. In this way, the data in the system will remain distributed. Of course, other nodes may be searched for information if a search on the local node is not satisfactory, and information may be entered into other nodes as well. Non-local requests would have greater costs associated with them, but in a regional network communications would be cheap enough to allow routine non-local searches. The regional linkages of nodes will in turn be linked into a national network by standard protocols, without interfering with the decentralized nature of the system or local autonomy.

Sol ® is a registered trademark of Processor Technology Corporation.

Each node will be governed by an association of people and organizations from the community where the node is located. These people will agree to be responsible for the well-being of the terminals and to ensure that access to the system is not being restricted in any way. The association will primarily involve people who live or work where terminals are located, as well as some computer hobbyists and community organizers. The terminals will be located in a variety of places, to reach a cross-section of people in a community. Every attempt will be made to prevent the system from being dominated by the interests of any one particular segment of a community's population.

In the pilot project, the terminals were made available free of charge. In the new version of Community Memory, the association governing a node will decide on what user fees (if any) will be charged. It is likely that terminals will have coin boxes attached to them, and that each screenful of information will cost about a nickel. Since the system is being mounted on fairly inexpensive hardware, it should be possible for a coalition of community groups and/or individuals to eventually purchase the system outright, and it is intended that the routine maintenance and communications charges be paid for by the user fees or other income. In other words, this self-determining information exchange should also be self-supporting, so that community control will also mean community ownership of the system.

Details of Use

New features of the system will include: the ability to attach comments to any item, and the opportunity to use a "world tree" (menu selection) for aid in keywording messages. It will still be possible to add any user-generated keywords desired, but the world tree menu should help rationalize keywording without being overly directive. As in the pilot project, the system is best used for the leaving of short messages which stimulate face-to-face or telephone contact. Since only the author of an entry will be allowed to edit that item, on the spot, the system will not be well suited to entering long reports or essays. Anything more than a screenful will be hard to use, since most of the terminals will not have printers attached.

As the data base grows in a given node, there will undoubtedly be a need for various directories and indexes to the data. The system will allow for browsing by first lines and other forms of scanning, but eventually someone will need to fill the role of information shepherd or librarian for the node. In the pilot project, such

organizers arose spontaneously, inserting pointers to collections of items and otherwise tidying the data base with flags and "see also's". In the new system, the governing association may designate one or more of its members to fulfill this role, and to be responsible for the creation of paper directories and indexes to be placed near the terminals along with the current list of keywords.

In this way, Community Memory should seem to the user like a People's Yellow Pages, giving listings of community resources and comments on these resources, and stimulating contact off-line rather than building a dependency on the system. Since storage of items does cost money, the storage of messages will probably be time-limited, and the data base will be periodically purged in the same way that a community bulletin board is periodicially cleared off. The fact that any user, no matter who, can only get thirty characters per second into or out of Community Memory, will tend to reduce the advantage that the wealthy and glib usually have in getting information out to the public. Although the system will eventually have some graphics capability, it certainly will not lend itself to slick advertising accompanied by commercial cheesecake shots, and this may reduce another potential for misuse.

Memory into Dream

As a system designed for use by the untrained public and structured so as to remain a grass-roots information network, it is hoped that Community Memory will encourage the development of cooperative economic and governing forms. Utopian uses of the system might include the development of worker-owned community businesses and the facilitation of non-money exchanges.

The idea of a Community Memory system is far from new. One of the earliest expressions of the concept of a "wired" citizenry was made by the folks at People's Information Exchange in the early 70's. Computer hobbyists have recently developed entities such as the Personal Computer Network (PCNet) which will link hobbyists over a long distance by a series of phone links between neighboring home computer users, and the Community Bulletin Boards, which allow entry of short messages but have no indexing capability and only limited storage space. Many community organizations are now obtaining or discussing the use of small computers for their own use and use by clients. On the commercial front, systems such as QUBE and Prestel (Viewdata) are giving customers a limited amount of choice (mostly from a predetermined "menu")

and voting capability. However, we are not presently aware of any group which is planning a public information utility as determinedly free-form and open-access as Community Memory.

The Community Memory people, who have formed a non-profit corporation, are not peddling a system. Rather, they are pushing the idea that people have the right and the ability to decide for themselves what information is useful and to make the necessary connections in order to get the information they need. The Community Memory system is therefore potentially a means of giving people more control over their own lives and reducing their exposure to commercially generated and corporately controlled information which only perpetuates the status quo.

As the system gets closer to becoming a reality, it will be very important to continue thoughtful discussion of its possibilities and problems. The Community Memory Project particularly welcomes discussion on the potential of the system to empower individuals in the community, and what form of governance might maintain a node without stifling its natural growth and creative use. Your comments are invited.
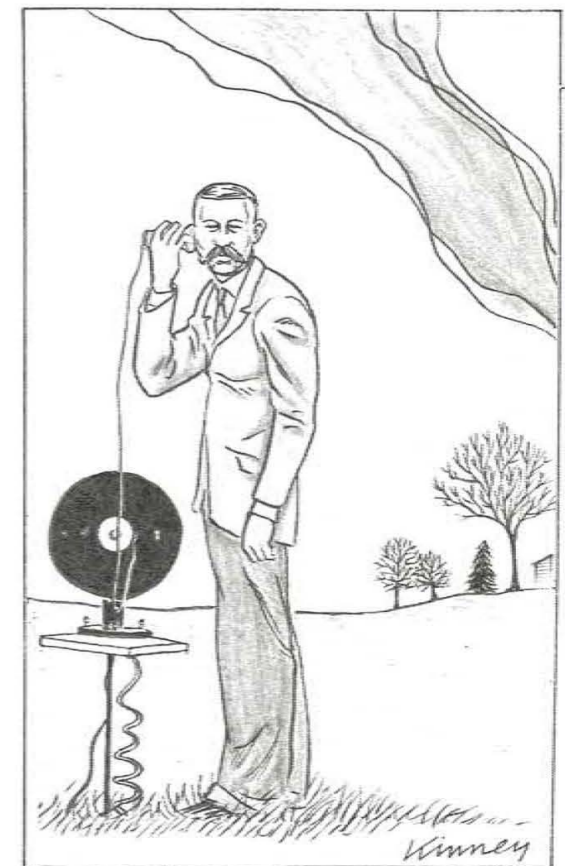
THE IMPORTANCE OF MYTH IN THE DEVELOPMENT OF A COMMUNICATIONS SYSTEM

by Lee Felsenstein

What do we mean, MYTH? In our definition, myth refers to the way something is perceived. For a tool, the myth determines its context of use -- how it is used and by whom. Here, synonyms for myth might be "image" or "reputation".

Lee Felsenstein, former Editor of this journal, is an engineer who designs and maintains hardware for The Community Memory Project. Some years ago, Lee designed a small, durable terminal computer (the Sol ®). The Sol design grew out of a design called "The Tom Swift Terminal" and it reflects Lee's concern with myth, which springs from his thinking about the development of The Community Memory project. The Sol is a terminal computer that is made to be fiddled with - it can be easily expanded and modified, and it is quite amenable to even amateur handling in terms of maintenance and repair. These design features contribute to changing some former myths about computers - e.g., that they are internally complex and delicate, requiring repair only by expensive experts, and that "what you see is what you get", i.e. that they are inflexible and not easily customized to individual needs. The design of such a "convivial" terminal exemplifies The Community Memory Project's intent of being accessible to its true owners, the community of users. The association governing a Community Memory node should be able to learn to maintain and reconfigure their own equipment.

"Mythic engineering", or trying to design how the Community Memory communications system will be perceived, is also essential for the success of the project. In the following paragraphs Lee expands our definition of myth, giving examples of various myths and their real world effects.

The myth of a thing, or the commonly-held set of understandings about it, may be true or not true. Its power does not come from its veracity, but rather from the force of the generalization it sets up in people's minds.

The development of myth with regard to communications systems may be illustrated by two examples: classified ads in the Berkeley Barb, and the telephone.

The first issue of the Berkeley Barb to carry classified ads had only three ads, all very run-of-the-mill. Then, a man using the pseudonym SHK began to insert small epigrams in the classified ad section, which opened them up for more 'personal' messages. Personal ads then appeared, some of them soliciting sex partners. In the early days, any such ad even vaguely hinting at prostitution was thrown out. Gradually the sex ads proliferated, and through dozens of anguished editorial conclaves, the Barb's policy with regard to sex ads slowly became extremely permissive, extending space to massage parlors and other sex-for-sale operations. Thus, the Barb's myth was clearly shaped as that of a "dirty paper", even though the bulk of the publication continued to be high-quality investigative reporting on topics of political and social interest.

Recently, the Barb has jettisoned its sex ads entirely, in an attempt to change its myth. The force of the previous myth continues, however, since another publication has picked up the sex ads and publicizes them as "the Barb ads". This publication is a swinging singles mag, and in it for the first time the disjunction between the ads and the content of the rest of the periodical is resolved - but the ads are still associated with the Barb, and it will probably be a long time before the old myth about the Berkeley Barb is laid to rest.

The telephone likewise has its myths. People don't use the telephone to initiate random conversations such as one might start on a bus or street corner. Instead, the phone is considered a private instrument to connect individuals who are already known to each other in some way. Second, people view telephone calls as private - the force of this myth is what creates uneasiness when you realize that the person you're talking to is using a speaker-phone and your responses are being broadcast to - what? possibly a roomful of people, some of whom may have no business with you.

The present controversy over "junk calls" in which a computer telephones your residence and subjects you to a recorded advertising message points up another myth. The fact that people don't complain more than they do implies that they find it hard to get behind that mechanical voice to yell at the people who set it going. This involves the myth that humans are relatively powerless compared to computers.

Despite the fact that the current surge of interest in home computers is changing some myths about these machines, computers still have a relatively poor public image. Some examples of myths about computers are: 1) they are animate. ("the computer made a mistake"). (2) they are central and singular, like God. Anyone who refers to THE computer in this manner is referring to the myth of the computer. The design of computers and their use in this society has heretofore supported their myth by forcing people to conform to machine requirements rather than the reverse. Computers are therefore perceived as large, expensive, complex, and in their effect, dehumanizing.

When we had to come up with a two-second description of the Community Memory ° service, which we had put out in public with no advance publicity, we relied on still another myth -- that of the bulletin board. "Would you like to use our electronic bulletin board?", we said. "We're using a computer." The myth of 'electronic' is one of progress and advantage, with very little negative about it. To this was added the idea of a bulletin board -- clutter, potential usefulness, and oddity. By further splicing in a snippet of the computer myth we created an image that stimulated people's interest rather than intimidating them. The resulting surprise and delight expressed by most of the people who heard our pitch verifies this analysis. If instead we had opened with, "Want to use our computer?" we might have had a near-universal response of suspicion and fear.

The pitch we used to promote the original Community Memory pilot project was built on existing myths. Since we are creating a new system with more capabilities that even we may be able to discern, we should examine the possibilities of creating new myths to go along with the tool. To this end, it will be necessary to cultivate a favorable and flexible myth for the Community Memory system as it is built, so that we do not find ourselves in the position of the Berkeley Barb in having to uncreate an inaccurate myth. To leave the mythic engineering to chance would be irresponsible and wasteful.
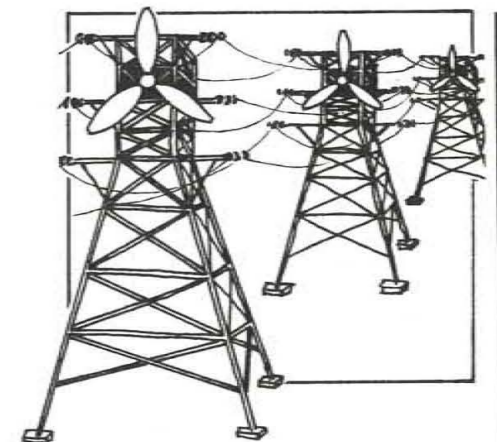
COFFEE HOUSES in OLD LONDON:

A Prototype of a Public Information Network

by Sandy Emerson

The coffee houses of London, which flourished from the late 17th through early 18th centuries, were an early example of a community information exchange. There, people could freely trade news and gossip. They could also find jobs, buy goods, obtain services or meet lovers. The coffee houses even served as an alternative post office.

Coffee had been known in England since 1615, but it did not become a popular beverage until the first public coffee houses opened in London in the 1650's. These coffee houses had their own roasting ovens, and the coffee was ground fresh and brewed Turkish style. The resulting dark and stimulating beverage was believed to have medicinal properties, and coffee was prescribed for many diseases. As it is today, coffee became known as an antidote to drunkenness and gluttony.

Another of coffee's attractions was its price: although it was more expensive at that time than beer, it was cheaper than tea. When Dutch traders began to import more coffee from Arabia and from new plantations in the East Indies and Java, the price of coffee slid down within reach of the growing middle class.

From their inception, coffee houses did far more than initiate and support an urban addiction to caffeine. This was the age of the Restoration of Charles II to the throne of England (in 1660), a time when the English shook off the strictures of Puritanism and began again openly to indulge their favorite vices -- eating, drinking, gambling, plays, loud talk, and lechery. Since Charles II was a rather benevolent monarch who was no stranger to vice himself, the political and social climate became one of relatively free expression, at least for those in the middle and upper class. These citizens directed their lives toward the twin goals of (personal) liberty and property.

Coffeehouses came to function as a public information network not only because of this more relaxed political and social milieu, but also because of their early connection with the popular press. From the beginning, coffee house proprietors encouraged their customers to come more often and to stay longer by keeping on hand a stock of the latest newspapers, pamphlets

and other publications. Periodicals such as *The Tatler* , *The Spectator* , and *The Guardian* were the culmination of a spate of small papers which were able to flourish with greater freedom after the lifting of the restrictive Licensing Act in 1679. The accompanying proliferation of small presses led to the custom of "publish now, pay later", and politicians and poets alike wasted little time committing their latest efforts to print. This increasing output was distributed successfully through coffee houses, and subscriptions were also taken up in coffee houses for the publication of longer works.

The coffee houses even became places for the production of essays and journals as well as for their distribution. For example, Jonathan Swift's *Guardian* was almost entirely written and edited in a coffee house. Coffee houses also served as free libraries -- in a few, a circulating collection of "great books" was kept on hand for the use of the patrons.(1). In most, the weekly papers, pamphlets, and other materials were kept only until they were outdated.

An important side effect of all this "instant" printing of news and comment was the secularization of literary language. The literary style of Addison and Steele was more like the mode of ordinary speech compared to the convoluted, didactic style of such earlier essayists as John Milton. This clarifying of diction might also have been in deference to the wider reading audience, some of whom may have been only newly literate.

The potential power of this coffee house information exchange, by word of mouth and distribution of literature, was recognized early both by enterprising politicians and, with increasing disapproval, by the royal Establishment. Politicians, who frequented coffeehouses in order to be seen and heard by their constituency, would further imprint their points of view on their audiences by circulating hastily printed essays.

Although London coffeehouses were differentiated according to clientele (one favored by soldiers, one by brokers, one by Whigs, etc.), this circulation of political essays led to some networking among coffeehouses. These connections were formalized by the employment of "runners" to distribute the latest handbills and pamphlets among the coffeehouses. Moreover, although many people went to one coffeehouse more than another, there was still a fairly free flow of patrons among the various coffeehouses. The clientele and function of any particular coffee house did not become rigidly fixed until late in the 18th century.

Indeed, the early coffee houses were considered neutral ground where members of opposing political factions could meet. One writer attributed this to the soothing influence of tobacco, which was smoked in clay pipes handed from person to person. As he put it, in the coffee houses "Tobacco soothed, tho' news inflamed".(2).

The freedom of movement in and among coffee houses lowered some social class barriers also. Public coffee houses were places where even lower middle class citizens could test or promote their social mobility. All sorts of tradesmen and craftsmen would stop at a coffee house during the

day to read the papers and discuss political and social issues, right alongside their social superiors.

In this atmosphere of open information exchange, coffee houses naturally became centers for radical political activity. As early as 1675, Charles II got wind of some rumor or other and issued a Proclamation calling for the suppression of all coffee houses in London, as being "places where the disaffected met, and spread scandalous reports concerning the conduct of His Majesty and his Ministers."(3). However, the public uproar which followed this decree caused the order to be withdrawn.

More serious plots and rumors did occasionally come to life in the fertile medium of the coffee house, and the royal Establishment paid close attention. Government spies were known to frequent coffee houses. One Thomas Dangerfield is said to have compiled a list of suspects, and suspect coffee houses (!). This same man and his agents are also credited with using the coffee house network to spread false information in connection with the spurious "Popish Plot" against the King.(3). Since those were the days in which objective reporting was considered bad form, it may have been difficult to differentiate outright lies from ordinary libel.

Another function of the coffee house was as a classified ad center. Most of the working men of that day were self-employed, and they found coffee houses good places to present themselves, in person or by means of business cards, handbills, or advertisements in the papers.

Coffee houses were also places in which new inventions, such as the gas globe lamp, were tested against popular reaction. Since most of the fashionable men of that day frequented coffee houses regularly, inventors and salesmen used them as a forum for promoting the newest gadgets and devices.

Coffee houses also served as an alternative postal service and office building. For the low cover charge of one penny, a person of modest means could set himself up at a table and thus obtain a recognized and respectable business address. Indeed, many such people did not release their

home addresses at all, but simply let it be known that they could be found at such-and-such a coffee house on a regular basis. It may be said that the coffee house in this way functioned like a post office box. In fact, coffee houses came to function as actual post offices for the sending and collection of correspondence, and often performed better in this regard than the official Post. All attempts to suppress this alternative postal service failed, and coffee houses continued to collect and deliver letters until as late as the 19th century. (3).

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Thus, the early London coffee houses functioned in many ways like a community information exchange system. They provided a forum for the open exchange of information, which quickly led to many other functions. They were places of information production, distribution, and storage. The 'classified ad' function of the coffee house provided a means for people to become or continue to be self-employed, and this marketplace was accessible for a low entry fee. The uses of coffee houses multiplied up to and including political organizing, and they functioned as a viable alternative to the official postal system. And, most of the time, the information and communication flow in and among coffee houses was non-hierarchical: any one who paid his penny could stay and talk and listen as long as he liked.

There are also some glaring differences between the early coffee houses and a community information system. The most obvious difference is discrimination by gender. Nice ladies didn't sit in coffee houses -- but their men did, often from late afternoon until the wee hours of the morning. The prolonged absences of husbands and lovers after coffee houses came into fashion may have been what really inspired a 1674 pamphlet, purportedly written by women, which complained that coffee made men impotent, and called for the banishment of this "Drying, Enfeebling Liquor". A counter-pamphlet came quickly in reply, supposedly written by men "Vindicating their own Performances, and the Virtues of their Liquor , from the Undeserved Aspersions lately Cast upon them."(4).

Unfortunately, the free and democratic atmosphere of the early coffee houses was soon replaced by the development of elite circles of regulars. These circles usually clustered around a literary or political figure and tended to become more and more exclusive. By Dryden's day (about 1680), Wills' Coffee House in Russell Street had three more or less distinct circles: the "Grave Club" (politicians); the "Witty Club" (Dryden et. al.); and the "Rabble". The division of a single coffeehouse into separate sects was the precursor of an increasing tendency toward the specialization of clientele in different coffee houses. The initial free flow of patrons and topics of discussion gradually dried up, and by about 1750, coffee houses were mostly specialized. For example, men who dealt in insurance policies frequented a coffee house called Lloyd's, which is now known as Lloyd's of London.

This increased specialization of coffee houses changed them from a prototype of a public information network into exclusive private societies. First, the literary and political circles withdrew into private rooms and established regular meetings, for members only. Later, some coffee houses actually became private clubs; whereupon talk stilled, and the flow of information ceased. In the posh clubs of London where gentlemen sit isolated behind their separate newspapers, the term "coffee room" is still used to refer to the dining room -- but there the resemblance ends.(5).

Finally, the coffee house network, even at its most free-flowing, was strictly an urban phenomenon. They flourished best in urban centers, and in London most of all. At no time was there any movement for coffee houses to take root in smaller towns, and in this the English coffee house differs markedly from its relative, the Continental cafe. In Europe, cafes sprang up everywhere, and became and continue to be places of community information exchange.

While a public information utility may display some of the best features of the early London coffee houses, it may also share some of their problems -- such as government interference, the spreading of false information, and the tendency for heavy users of the system to turn a public information network into a private club.

The influence of the political and social climate upon the ultimate success or failure of a public information network is also important. As noted, English coffee houses began in a fairly open political atmosphere, which began to thicken with the rise to power of Sir Robert Walpole, who became Prime Minister in 1717. Walpole, who may be considered the Kissinger of his day, sought to accrue power through personal magnetism and shrewd maneuvering behind the scenes. Not all of Walpole's schemes met with success, and by 1735 pro- and anti-Walpole factions were clearly delineated. To strengthen his defense, Walpole forced several of the smaller papers to combine and form one large daily paper, the Daily Gazeteer.(2).

With this act, the press once again began to come under political and Establishment control, and it was at this time that coffee house society also began to become less free-flowing and inclusive. While the initial exuberance of the Restoration seems to have provided a milieu in which coffee houses functioned as prototypes of a public information network, the more repressive political climate of Walpole's reign seems to have hastened the transformation of coffee houses into businesses and private clubs.

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COMMUNICATION, LIBERATION, AND LEARNING EXCHANGES

by Ljuba Zharska

The dynamics of learning exchanges may be analyzed as a form of human communication. Learning exchanges are, broadly speaking, services which connect people who want to learn with people who want to teach. Such services, although they share the common goal of connecting people with similar learning interests, can have widely differing structures, ranging from the completely free-form to the rather restrictive. The structural differences of learning exchanges are reflected in the dynamics of the communications that take place in them.

In any learning transaction, the first "message" is that one party in the transaction wants some information that the other has. Traditionally, this inequity of knowledge has put the teacher in a position of authority. However, the width of the gap between teacher and learner depends on how the transaction was set up, and what the assumptions are that govern the communication therein.

If teacher and learner feel that they are equals, their communication can be two-way, interactive, and on a peer basis. The student feels no inferiority as a learner, and the teacher views teaching as sharing rather than as indoctrination. If, however, the teacher assumes a position of authority, the communication is one-way, from the higher authority down to the relatively passive learner, and has more the quality of inoculation: "hold still, this is good for you."

Most learning exchange services have as their motive the desire to provide an alternative to traditional education. The degree to which a learning exchange is alternative, however, depends on the way teacher and learner are linked together, as well as on the philosophy of the learning exchange initiators. Unless the teaching happens totally spontaneously, as when one person volunteers to teach a friend, learning exchanges are initiated and/or facilitated by some person or group who starts the communication and primes the information flow.

In a spontaneous learning transaction, there has been some pre-existing linkage between participants, such as friendship, blood relationship, work, neighborhood or whatever. This pre-existing connection, although it can influence the learning transaction, does not structure the learning situation in the same way as a more formal link made through a learning exchange service. What happens in a learning exchange between friends is totally up to them. They alone decide what is taught and how, and payment is usually not asked. This type of learning exchange brings about a communication that can be described as non-hierarchical, or on a peer basis.

An outside means of linking teachers and learners who have no previous connection can influence the commmunications of the learning exchange to a greater or lesser degree. Where the linking mechanism is passive and neutral, like a notice on a bulletin board, the teacher and learner remain autonomous and can determine the nature of the learning exchange for themselves. The bulletin board does not charge money or demand feedback and course evaluation,

check the teacher's credentials, or in any other way mediate the learning exchange.

Linking mechanisms other than bulletin boards may include a telephone service, publications, or a formal organization with full-time staff. In these, part of the influence of the linking mechanism depends on how much continuing presence the learning exchange administration has. A learning exchange service which makes the connection and then steps out of the picture sets up a communication which has the potential for being non-hierarchical. By contrast, a learning exchange service which not only provides a way to link but also sets up a definite structure for classes, courses, number of class meetings, fees, feedback, etc. is mediating and monitoring the communication between teacher and learner in a way reminiscent of the Administration in 'regular school'. In such a system, even if the teacher chooses not to be authoritarian, the learning exchange administration still holds the reins, thus reducing the potential for an interactive, self-determining learning transaction.

In the following paragraphs, two Bay area learning exchanges will be described. The two learning exchange services represent two distinct types which influence the communication between teacher and learner in very different ways.

The concept of the "learning exchange" grew out of the loud clamoring for educational and social change in the late 60's and early 70's. Teachers, students, and parents around the country organized to pressure for reform within their schools or to create their own alternatives to existing schools. Though not always unified in their analysis of the root of the problem or the solution to it, they agreed that schools were failing to provide the kind of learning which can be the basis for a truly democratic society: that is, the "basic skills" of language and critical thinking; the training for making creative individual day-to-day and life decisions; and the skills of social/environmental cooperation and responsibility.

Instead, the institution of education

seemed to be aimed at turning out trained human material for the use of the larger society. WHAT schools taught was often irrelevant to the needs and desires of individuals and communities; and HOW they taught stifled creativity and cooperation. Bureaucratic hierarchy, rigid schedules, compulsory classes, grades, tests, entrance exams - all seemed to indicate a psychology of isolation and domination of students. Education, argued its critics, served primarily economic functions. It trained individuals according to the work-needs of corporations and bureaucracies, and it kept people off the streets and out of the labor market. By training individuals to take orders and to hold only themselves accountable for "success" or "failure", it prevented serious examination of American social and economic relationships: that is, the very sort of intellectual inquiry that higher education was supposed to encourage.

In addition to what schools taught and how they taught it, critics of higher education had an additional complaint: the isolation of the university from the rest of the world. Resources within the university were not easily accessible to the public; and, conversely, community resources were seldom used in students' study programs. The fact that the university was such a closed system harmed the public, by cutting it off from what should be public information subject to public accountability; and it harmed students, whose lack of "real world" interaction gave them a highly unrealistic perspective on why they went to college in the first place. Indeed, some found life so frightening outside the ivy-covered walls that they were unable to leave academia, and moved either into university teaching or into being perpetual graduate students.

The desire to change these three aspects of education -- what is taught, how it is taught and for what purpose -- led to the creation in Berkeley of the Free University, in the mid- 1960's. The Free U was basically a linking-mechanism for anyone in the community who wanted to teach, learn or come together around a project. Times and places of class or other meetings were posted in its office and circulated by means

of a free catalogue. There were no fees; no restrictions on curricula or teachers; no grades; and no tests. It was a way for people to meet; since Berkeley in those days was in a state of such political ferment, many used the Free U to organize around issues of community concern. The idea was that people, through communication which was unmediated by the restrictions of a bureaucratic institution, could organize their own learning and their own communities. In place of domination and isolation the Free U sought to build a sense of egalitarian, and friendly, community.

The Free U was successful for several years, though it operated only on volunteer labor. It died out with the dying out of political protest at the end of the Vietnam War in the early 70's. Another type of learning exchange, The Open Education Exchange, was started in nearby Oakland in 1974.

OPEN EDUCATION EXCHANGE

In 1974, Bart Brodsky, then a Political Science student at U.C. Berkeley, wanted to teach ecology. Since he lacked the appropriate credentials and wanted to teach a subject which was barely "legitimate" at that time, the whole formal institution of education was closed to him. Recognizing that his plight was not singular, he decided to start the Open Education Exchange (OEE). It was to be an alternative to existing educational institutions for both teachers and learners.

The Exchange may best be described as a hybrid born of mating the idea and structure of a (private) school and that of a linking-mechanism such as the Free U. Leaving behind the Free U. idea that learning should not cost money, the OEE sought from the first to pay its teachers and to sustain itself. Indeed, its central focus seems to be, as Brodsky says, "providing teachers with a job environment which is under their control."

Here's how it works:

A teacher lists her/his prospective class with the Exchange for a fee of $20. The

Exchange publishes a free, bi-monthly newsprint directory which lists all class offerings and which has an estimated circulation of 1/3 million Bay Area residents. Students must register with the Exchange and pay their fees in advance in order to find out the exact location of classes. Teachers determine where, when, and how often the class will meet in the two-month period, and how much it will cost. Half of student fees goes to the teacher; the other half goes to the Exchange.

OEE makes no restrictions on the content of any class save one: that it sell (and that it is legal and not physically dangerous). Any class that does not draw at least three people after 2 listings is dropped. Likewise, the search for new teachers is done on the basis of what has been popular in the past or what the consumers (students) have asked for.

OEE screens all prospective teachers to determine: 1) if they have some expertise in their field; and 2) if they can communicate it effectively. Teachers are required to submit a resume, references, course description and course outline and to be personally interviewed by the OEE staff. All students are given class evaluation forms which are carefully studied by the staff. Complaints could lead to a teacher's being dropped from the listings.

Between 12 and 15 hundred people take classes through the Exchange. Many of them are older people, and many have sought out OEE as an alternative to the UC Extension program. Many use the Exchange as a pleasant way to meet others who share their interests or hobbies.

The spectrum of classes tends to focus on practical and pleasurable day-to-day concerns: from fixing your own car, doing your own divorce, or starting your own business to learning how to juggle, play a harmonica or be more orgasmic. The "psychology trend" has subsided a bit, though many "growth" classes are still offered. What is most noticeably lacking are any classes with rigorous intellectual or political content. Brodsky himself would like to see more

such classes offered but claims that such classes do not draw people: that is, market concerns prevent the Exchange from regularly listing them. (He stopped teaching after the first few months as his time got swallowed up by administrative duties).

There is no doubt that the OEE has taken a different turn than its historical predecessor, the Free U. What is interesting to question is to what extent the OEE, "consumer sponsored" as it is, accurately reflects general community interests and consciousness, and to what extent it reflects and feeds the consciousness of only a certain part of the community.

The OEE's "myth" -- how people perceive what it is and therefore whom it attracts and for what reasons -- must first be understood through its own descriptive language. The concept and structure of learning as a "consumer activity" excludes poorer people and those who are turned off to consumerism. Though few would argue that a teacher should not be paid, a different myth surrounds the language of "community" or "student" rather than "consumer" sponsorship.

But the myth of the OEE is not only created linguistically. Its consumerist form defines the very landscape of its possibilities. It might be said that packaging education in such a readily saleable form (popular topics, short-term classes) insures that no serious or challenging teaching or learning can take place. In addition, since the OEE is subject to consumer trends which are in turn influenced by mass media, it tends not to be innovative, or to provide community leadership.

However, there is no doubt that the Exchange provides a real service to the community, even if only in terms of furnishing supplemental or total incomes to approximately 200 people, and students often give high ratings to their classes. It also makes a contribution by providing ways for people to meet. The OEE has aided other community groups in ways such as printing and circulating the Free Clinic's Resource Directory and also by donating "public service announce-

ment" space in its own catalogue.

As the Exchange has grown, however, it has become more and more mainstream and tends toward serving the same old stuff to the same people. Pehaps changes in mainstream attitudes will spark changes in the structure and content of the OEE. For now, it provides a somewhat limited vehicle for creative communication and self-organization.

LAVENDAR U.

Across the Bay, another learning exchange was also started in 1974, specifically to serve San Francisco's growing gay community. A small group of gay people, including several psychologists, met to consider their personal and community needs. They quickly identified isolation as a main problem. Even in the "gayest" city in the U.S., gays often had difficulty connecting with other gays socially, professionally, or politically. The group felt that the best way to attack this problem was to start a community center, but they lacked the money to do so. The next idea was to start a means of communication -- a way to link up gays around concerns which they themselves defined. Lavendar U. was born.

The four year history of the U. has been stormy. At first the entire collective worked on a volunteer basis to solicit listings for the directory and to publish and circulate it. Listings cost $5 per month and anyone who charged for a class or group was asked, but not required, to contribute 20% of class fees to the U. There was frequent struggle between those who wanted to raise the fees and make the U. more solvent, versus those who feared that raising fees would make the U. middle- class and consumeristic.

After two years, the volunteer system stopped working. During these same two years, the political direction of Lavendar U. had shifted towards the center, which was reflected in the course offerings (fewer "heavy" political courses, more classes dealing with gays' social and professional concerns). A decision was made to pay someone $225 to put out the next issue of the

directory. The listing fee was raised to $10, with a special stipulation that women, Third World, and young people be especially encouraged to join by receiving three free listings.

Lavendar U. has never restricted course content and will list anything taught by a gay teacher. Recently, it has opened its doors to non-gay teachers as well. Many of the courses have been in psychology, used by gay therapists to build their practices. Others have served as meeting places for people with mutual interests, such as chess or back-packing. Finally, many have sought out support groups to help them deal with their particular life situation (for example black gays, gays under 21). In addition, there are free service listings in the directory, which makes it a sort of gay community bulletin board. However, there are no classes with serious intellectual/political content, and few offering instruction in practical skills.

Although the format of Lavendar U resembles that of the Open Education Exchange, they differ in some essential ways. Both offer individuals the opportunity to make some money by sharing their knowledge or skills. Unlike the OEE, however, Lavendar U's primary purpose is not job creation, and it sees itself as being community rather than consumer oriented. It is defined not by what people are willing to buy but by what they want and think. Membership in the Lavendar U collective has always been open to anyone provided no other collective member objected. There has been much internal controversy, but this perhaps reflects responsiveness to a community which is indeed trying to evolve its own culture and direction. Perhaps because it is less commercial, Lavendar U seems to have offered the community a more creative vehicle for self- organization than the OEE, an offer that has not always been taken up.

Unfortunately, Lavendar U. has suffered from its constant poverty, the most obvious symptom being the burnout syndrome. At present, Don Jacob, the last of the original collective members (who has often supported the project out of his own pocket) has switched his primary commitment to the

Gay Rap Center. Lavendar U. will continue, but either a new group will take on the catalogue or it will become part of the Gay Rap Center's newsletter. Don is convinced that Lavendar U. will continue to exist, although its character may change with changes in the gay community.

There are several other learning exchanges in the Bay area, and many have come and gone. They vary in structure and in philosophy, although all aspire to community service and being responsive to community needs. In general, they tend to offer much the same menu: how to make daily life healthier, cheaper, less boring, less lonely. The vitality, and some would say, naivete, of the earlier education counterculture has been replaced by the quiet concerns of "survival". While earlier critics promoted education for making a truly democratic society, learning exchanges now tend to offer only aid for individual decision-making. Typically, learning exchanges fail to emphasize skills in language or thought, and they hardly encourage greater social responsibility and cooperation.

The possibility of present-day learning exchanges' developing into genuine educational alternatives is doubtful, at least in the near future. If, as some would argue, they accurately represent the consciousness of the community, they will only go beyond a narrow, individualistic direction when the community which supports them does.

For now, if you're mad as hell and you can't take it any more, why not take a "stress reduction" class? Or how about running, cooking, massage, astrology, assertiveness training, biofeedback. . .

COMPUTERS AND THE MECHANIZATION OF JUDGMENT

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Computer-based information systems are playing an increasingly important role in organizational decision-making. Although high level managers are not in imminent danger of extinction, many managerial functions have been substantially altered or replaced by computer systems. These developments are viewed here as an extension of bureaucratic rationalism, the peculiar innovative spirit of large-scale enterprise. Advanced information technology in large organizations appears to promote the elaboration of hierarchically structured control mechanisms, and to further the resolution of complex decision tasks into routine procedures. Since the technology could in principle be used to support radically different modes of organization, an explanation must be sought in the evolution of bureaucracy.

Efforts to improve productivity and efficiency affect the distribution of power and authority, so that technical innovation in management raises serious ethical and political problems. Historical observations and empirical results point to a contradiction between bureaucratic rationalism and individual autonomy. This contradiction is revealed in the impact of computer applications on the conduct of certain classes of decision-makers. Policy issues are transformed into technical questions, and opportunities for exercising independent judgment are diminished as analysis of means displaces exploration of ends. I will attempt to show how this transformation is accomplished in the rationalization of functions which typically accompanies the introduction of computer systems.

Introduction

The vitality of democratic political institutions depends on the citizen's ability to make and register informed judgments on policy issues. This is one of the pieties of the American system of government: it is embodied in the Constitution and has guided much of our concrete political experience. Although the principle is very much alive today, it has undergone major modifications. The growth of large-scale enterprises and the increase in social complexity have generated new mechanisms of coordination and control. Elected officials have followed the lead of entrepreneurs in delegating authority to professional managers, and the conduct of our economic and political affairs is increasingly left to technical experts.

The consequences of these changes in social organization are strikingly evident in

events of the past decade. Policy questions of vital concern to the general public have been transformed into technical matters to be resolved by allegedly unbiased and dispassionate specialists. At the height of the Vietnam War controversy, the American public was told that the complexities of foreign policy require specialized knowledge and skills, and hence that the average citizen could not be expected to make intelligent judgments. The formation of political policy was presented as an exercise in rational decision-making, thus shifting debate from ends to means. This pattern has been repeated on countless issues of local, national, and international significance.

The effects of the managerial revolution on the citizen's ability to exercise judgment are difficult to assess. But there can be little doubt that the coupling of power and technique is

intimidating. Surely this coupling has had something to do with the disposition to defer to experts on questions of public policy. Although dystopia may not be around the corner, this kind of abdication of responsibility is a serious problem. It is serious because it points to a contradiction between bureaucratic rationalism and the principle of popular sovereignty.

Computer technology with its satellite techniques is yet another instrument in the inventory of bureaucracy. The principal use of computers is administrative whether in large corporations, schools, hospitals, or government agencies. According to the conventional view, computer-based information systems are indispensable to the mass society. The technology itself is pictured as a deus ex machina introduced just in time to save us from being crushed by the staggering demands of our record-keeping institutions. Although the impetus for developing computers is linked to growing social complexity, the computer is regarded as a neutral instrument - one which may be adapted to serve any social purpose.

This view does not stand up to careful scrutiny. Computers are instruments, but they are not neutral; their instrumentality is contingent on social and historical possibility. Information technology is an extension of the tools of bureaucratic rationalism, and as such it is embedded in an ideological matrix. It is purely wishful thinking to suppose that computers can be used to achieve genuine power sharing just as easily as they are being used to consolidate power in the hands of elite managers. What I propose to examine is the way in which computer-based systems impinge on the activities of decision- makers, and contribute to the transformation of policy issues into questions of technique.

Computers and Decision-Making

The success of computer applications in automating routine administrative tasks suggested the feasibility of harnessing the computer as a decision-making tool. Although high-level managers are not in imminent danger of being replaced by machines, important changes in administrative practices have been brought about by the introduction of computers. Accounting functions such as billing and payroll have been computerized in most large organizations; inventory control systems are commonplace; and conventional record-keeping operations as well as a variety of other functions have yielded to computerization. The dividing line between what can and cannot be automated is not clearly drawn. As Herbert

Simon (1965) has observed, there is a continuum of decision-making activities ranging from programmed - routine, highly structured, repetitive - to non- programmed - unstructured, ill-defined, unique. As new innovations enter the scene, we are forced to revise our notions of the indispensability of the human manager.

Despite the singular importance of information technology, it is misleading to view the computer as the spearhead of revolutionary organizational change. The euphoric literature of the 1960's depicting computer-based management information systems as the ultimate in administrative achievement treated the new technology as a historically isolated phenomenon. This point of view detaches technical innovation from the social environment in which it unfolds. As a result it becomes intellectually respectable to ignore or minimize the tendency of computer applications to centralize authority within organizations. Such a tendency can be dismissed as a transient response or as an accidental feature of early experimentation with new methods. Since, one may argue, the computer is simply an instrument which can be used to centralize or decentralize control mechanisms, there is no reason to believe that the authoritarian model will prevail. I submit that this reasoning is specious precisely because the effects of technical innovation cannot be understood apart from the social forces articulated by innovation.

The inadequacy of the conventional analysis of the so- called computer impact is not entirely innocent. There is an ideological motive in attempts to disguise the authoritarian control functions of information technology. This of course does not imply the existence of a conspiracy to keep us in ignorance. Rather it points to the inclination of elite groups to legitimate the foundations of their power and privilege. A notable case in point is the argument that hierarchical organization in society is the result of natural evolutionary processes. Hierarchy is seen to be built into the structure of a universe in which the achievement of economical and efficient production - for what and for whom we are never told - is a central purpose. The beneficiaries of current social arrangements seek to reassure themselves by creating cosmic myths.

Information technology is closely associated with rational decision-making. Management information systems are conceived for the purpose of assisting administrators in making decisions. The design and intended functions of

such systems issue from a model of decision-making based on a formal analogy with scientific practice. In this model the activities of the manager parallel those of the scientist. Decision-making processes are resolved into three kinds of activities which Simon (1965) terms intelligence, design, and choice. The intelligence phase is characterized by a search for conditions requiring decision. Once a problem has been identified, the decision-maker embarks on the design of a solution by exploring courses of action. Finally, a particular course of action is chosen.

The formal analogy between idealized decision-making and idealized scientific practice is straightforward. Intelligence activities correspond to making observations on the state of affairs. The design of solutions encompasses two aspects of scientific investigation: hypothesis formation and testing. Exploring the consequences of different courses of action calls for the construction of models or the formation of hypotheses which allow the decision-maker to study the effects of alternative policy choices. Evaluation or ranking of policy choices is effected by comparing desired outcomes with hypothetical outcomes derived from the models. The final step of choosing a course of action is analogous to the scientist's selection of the best hypothesis warranted by the evidence.

The main justification for this formal analogy rests with the model building activities of rational decision-making. Although the idea of scientific management antedates the computer, this characterization of decision-making has been elaborated and extended under the influence of computer applications. The operational methods developed during World War II to solve logistical problems merged with the general purpose digital computer to furnish powerful management tools. Complex systems could be simulated by means of computer programs, and optimization schemes became practicable. Decisions involving resource allocation and scheduling, for example, proved amenable to these techniques. Instead of relying on the judgment of an experienced manager, it was now possible to simulate an entire production process and to formulate optimal scheduling strategies.

The success of these computer applications and recognition of the growing importance of information processing led to the concept of the management information system. Apart from the general observation that such systems are intended as management aids, the concept is not very well-defined. In practice, applica-

tions identified as management information systems vary in sophistication from computerized document retrieval to the fully automated decision-making characteristic of process control in oil refining or chemical production. In the former case, a human manager might use the information system to obtain reports on organizational activity which bear on a particular decision task. Computerized process control virtually eliminates the human element except for maintenance.

Theory and practical applications exhibit reciprocal influences. Analysis of decision processes in terms of scientific practice reflects an attempt to shape the reality of organizational decision-making. At one and the same time the scientific practice paradigm is an explanation and a force for change. The objective of the new management methods is rational decision-making patterned after the rational activity of the scientist. Stated thus abstractly the the goal seems sensible and beneficent. Closer inspection reveals blemishes.

Decision-making is not isomorphic to scientific practice. The ideal scientist pursues knowledge or truth either for its own sake or for the sake of mankind collectively; the ideal decision-maker pursues knowledge in order to advance personal or organizational ends. Truth for the decision-maker is contingent on goals which are ultimately subordinate to the pursuit of profit. The analogy between decision-making and scientific practice forces a strict separation of means from ends. Goals are assumed as given and then suppressed in the scramble to represent contingent problem-solving activity as pursuit of knowledge. By focusing exclusively on the rationality of the methods, we fall prey to the delusion that limited organizational objectives represent collective social aims.

In addition to obscuring the contingent aspect of decision- making, the scientific paradigm sanctifies particular goals. Considerations of efficiency, economy and productivity formulated within the pseudo-scientific framework give the appearance of universal values. Although these concepts are defined strictly in terms of organizational costs and benefits, it is virtually heretical to question the appropriateness of the definitions. The decision-making paradigm is an ideology posing as a theory. Consequently, attempts to extend the basis of cost-benefit analysis by introducing broad social issues are viewed as utopian nonsense.

Power and Rational Organization

Notwithstanding the claims of apologists, the principal function of management is control. The hierarchical structure of modern organizations did not spring from the logical demands of efficient production. Power and status are determined by relative position in society's system of production and hierarchical organization places a premium on control functions. Doubtless it is true that economies of scale often result from large-scale enterprise. But it is equally true that bigness is not an absolute good. When an entity exceeds a certain threshold size, economies of scale quickly turn into diseconomies. The very fact that determination of threshold values has not received much attention suggests the operation of evolutionary forces which have nothing to do with efficiency. Large enterprises represent enormous concentrations of social power and require ever more elaborate and refined control mechanisms. The pervasive belief that rational management in gigantic, hierarchical organizations provides the most efficient form of production is a myth that serves to underwrite a particular distribution of power.

An example from the automotive industry may help to clarify the relationship between size and economy. Writing in the 1920's, Henry Ford pointed proudly to the achievements of mass production. At that time a Ford car cost about one-third of an assembly line worker's annual wages. After a half century of expansion and consolidation, the price of a Ford car still represents the same proportion of a worker's wages. Moreover, the products of today are not appreciably different in function, durability and reliability from those of fifty years ago. Even on the basis of conventional criteria of efficiency and economy, very little if anything has been gained by the increased scale of automotive production.

The ideological nature of managerial rationalism becomes apparent when one examines those social effects of production normally excluded from organizational cost-benefit analysis. Organizations which produce goods or provide services cannot operate without supporting facilities external to themselves. Manufacturing enterprises require communication and transportation networks for acquisition of raw materials and distribution of finished products. As the scale of manufacturing increases, so does dependence on such facilities. Large-scale, centralized operations incur social costs which are not reckoned among production costs. Although some of these external social costs are indirectly representd on balance sheets through taxes and other payments, they cannot be adequately represented in this form. While profits accrue exclusively to the organization, costs are borne by society as a whole.

Consider the implications of a decision to consolidate scattered manufacturing operations into a central facility. Surely such a decision would take into account capital investment for plant, and the costs of distribution, packaging, control, etc. However, there are additional factors which would not enter the assessment. Transportation of raw materials and finished products requires energy, and increased demand must eventually reduce finite supplies. Packaging for distribution requires materials, and energy to produce the materials; in addition, waste products are generated whose disposal further taxes energy supplies and degrades the environment. These are tangible social costs which must be weighed against the economies of scale expected from centralized production.

Changes in our social arrangements also contribute to the price we pay for these alleged economies. Concentration of capital and resources creates vulnerabilities which increase the need for social control. Huge investments in plant and equipment must be protected. What is more, transportation and communication facilities become indispensable, and the potential havoc of disruptions in service necessitates increased security. As both Napoleon and Hitler found in their Russian campaigns, the logistics of supply is at least as important as technical superiority in arms. Over extended supply lines amplified the effects of partisan activity and reduced the effectiveness of combat troops. The power blackouts, airplane hijackings, and the Arab Oil Embargo testify to the growing vulnerability of contemporary American society. New initiatives currently being contemplated in the financial sphere pose yet further risks. An electronic funds transfer system designed to support payments transfer and point of sale transactions could lead to theft and fraud on a colossal scale. Proponents of such a computer-based system are not unaware of the security problems, but the costs - both monetary and human - will be borne by society as a whole.

Beyond the costs of vulnerability that can be measured, however crudely, in dollars and cents there are imponderables which may in the long run prove to be far more significant. Bureaucratic rationalism makes no allowance for the effects of centralization of power on democratic institutions or community affairs.

We have yet to advance beyond the identification of quality of life with crude materialistic measures of living standards. Computer applications which widen the gap between elite management and the ordinary worker or citizen are introduced with impunity. Under such conditions the concepts of genuine power sharing and citizen participation in decision- making are empty slogans.

The observed effects of computers on decision-making are tied to historical forces which continue to shape our society. Those who are caught between enthusiasm for information technology and dismay over how the technology is actually used are simply whistling in the dark when expressing the belief that computers can be put to any use we choose. The fundamental changes in the system of production accomplished during the industrial revolution created new forms of organization with their own peculiar requirements. In particular, the factory system has become the dominant model of organization. Although factory production was in turn made possible by prior economic, social, and cultural developments, let us focus on those features of early capitalist production which bear directly on computers in decision-making.

The factory's monumental achievement was the rationalization of production methods. Traditional practices were subordinated to the rational requirements of incresed productivity and efficiency. The story is a familiar one but warrants repeating. Several ingredients went into the making of the new mode of production. The steam engine furnished a reliable source of power with which to drive many machines under one roof. But efficient use of concentrated capital resources required new manufacturing methods. In response to these requirements work underwent radical changes. Complex tasks were resolved into simple component steps which could be performed by machinery. Thus the craftsman was replaced by the unskilled or semi-skilled machine operator. As Adam Smith showed so graphically with his pin making illustration, the skilled craftsman could not compete with the factory.

The rationalization of production within the factory facilitated further concentration of capital. Standardization and interchangeability of parts made it possible to achieve economies of scale through increased production runs. Later the assembly line gave birth to mass production as we know it today. There are two basic components in the process of rationalization: mechanization of task perfor- mance and the automation of control. The first phase of the industrial revolution addressed the problem of mechanization. Although this problem has not been solved completely, a pattern for reducing complex tasks to sequences of elementary mechanical operations has been established. Since the early part of this century, the focus has been shifting to the automation of control. Computerized decision-making is but the latest extension of this component of factory rationalism.

The development of the computer itself reflects the dual facets of this impulse. Babbage's singular accomplishment was the fusion of two streams of innovation: the mechanization of arithmetic and the automation of logical control. Mechanical computation in the modern sense was launched in the early seventeenth century. After much experimentation practical devices were being produced on a commercial basis two centuries later. Babbage himself credited the control mechanism of the Jacquard loom as the inspiration for the punch card control system envisioned for his Analytical Engine. Needless to say there were other influences on Babbage's design - most notably the work of nineteenth century mathematicians in symbolic logic. His machine was of course never built, but in conception it embodied the essential features of a general purpose digital computer. The two streams of development and their synthesis show that the peculiar notion of rationality reflected in factory organization is deeply rooted in Western Culture.

Whatever the origin of the rationalizing impulse, it has enforced its discipline on the whole of modern society. From the corporation to the university, in government and virtually all major enterprises, factory rationalism prevails; and wherever it appears one also finds a concentration of wealth and power. The large organizations which dominate the production of goods and services and furnish the administrative apparatus of the state continue to grow and become more centralized. Hierarchical structure, reductionism, and automation are the guiding principles of this evolutionary process. The computer's role in this scheme cannot be neutral.

Automation of decision-making will proceed according to the needs of organizational control. What we are witnessing today is the resolution of management functions into tasks which can be implemented in computer programs. The middle manager is now suffering the fate of the skilled craftsman before him. With the disappearance of another link in the

rigid chain of command, the gap between top and bottom widens.

Values and Responsibility in Decision-Making

The organizational model embodied in the factory has become second nature to the modern manager. Factory rationalism has become managerial or bureaucratic rationalism - the difference being no more than a shift of emphasis from the techniques of production to the techniques of control. The spirit of innovation that gave us the assembly line now informs the attack on decision-making. Industrialization has turned labor into a commodity and the manager is just as much subject to this fact as the unskilled worker. As automation proceeds the context of decision-making is radically altered, and the manager is confronted with conditions which begin to resemble those of the craftsman in the early stages of the industrial revolution. One's relationship to work, to the organization, to society, and to one's self are all changing; and a new dispensation is evidenced by constraints on the exercise of moral judgment.

Although the public officials and corporate managers of the present day certainly have no monopoly on corruption and moral laxity, the widespread concern about misconduct suggests the operation of something more than pure chance. At the very least one must admit that the daily newspaper accounts of white collar crime, the business community's attempts at self-examination, and the recent FBI initiative aimed at halting corporate fraud all tend to support the hypothesis linking irresponsible conduct to structural change. There is a curious paradox in bureaucratic organization. Hierarchical arrangements promote the concentration of power at the top levels of management; but they also diffuse technical responsibilities. Rational organization requires a division of labor into functionally specialized subunits. As the decision-making activities of a given subunit become more well-defined and amenable to automation, autonomy and authority evaporate. What remains is a technical responsibility which may ultimately be incorporated into a computer program. Thus the diffusion of technical responsibilities does not entail a corresponding diffusion of moral responsibilities.

The fluid boundary between programmed and non-programmed decision-making processes seems to divide the management hierarchy into two qualitatively different groups. On one side are the wielders of power and authority who set organizational goals and broad strategy; on the other, are the specialized technocrats with very limited policy-making authority. For an individual in the latter group, it must be exceedingly difficult to maintain strong organizational loyalty, and virtually impossible to relate personal actions to the impact of organizational policy on society. This may account for the attitudes of the white collar criminal who claims that his actions hurt no one but the corporation, and are therefore justifiable - an attitude that Donn Parker has found in his research on computer crime to be quite common.

Values are shaped by experience and articulated through the exercise of judgment. If opportunities for making moral judgments are limited, the ability may atrophy; on the other hand, unlimited opportunities are no guarantee against the distortions which come from operating in an isolated environment. The conduct of both upper and lower level managers is thus affected by automation. Information systems act as a buffer between top and middle management. Attempts to rationalize information flow lead to formalized, unidirectional reporting procedures - information on the state of affairs flows up the hierarchy while commands flow down. Direct, personal interaction is diminished, and as a result the likelihood of distortion increases. This phenomenon was demonstrated quite clearly in the reports issued by the Pentagon during the Vietnam War. As many observers noted at the time, more bridges were destroyed in air strikes than could possibly have existed in the region, and the number of Viet Cong troops killed exceeded the total population.

Studies of the impact of computers on management show that the middle ranks have been most dramatically affected by the introduction of information systems. Some positions have been eliminated, others redefined. The net effect appears to be a decline in autonomy and responsibility at this level in the hierarchy. Work becomes more routine and subject to tighter controls. Although operating management is affected in similar ways, the effect seems less dramatic because expectations are different - the functions of the lower echelons had succumbed to mechanization before the advent of computers. Only top management seems to have escaped the computer's influence. This is due partly to the failure of management information systems to live up to their promise. No one is yet able to run a corporation from a computer terminal. However, the apparent lack of impact also suggests that investigators have not been asking the right questions.

If one views the computer as an isolated instrument having no connection with the process of bureaucratic rationalization, one is not likely to look beneath the surface of the technology's impact. Such a view contents itself with noting the growing sophistication of top management - no longer is the computer salesman's pitch swallowed uncritically. Nevertheless, promotion of the computer has not been in vain. Despite the deflation of outrageous claims, the management information system is a viable decision-making aid, and its limited success reinforces expectation of further advances. This outcome follows from a commitment to bureaucratic rationalism, not from a chance encounter with innovative computer applications.

The questions we must raise concern the constraints imposed on decision-makers by organizational structure. Bureaucracy seeks to substitute objective, technical procedures for subjective human choice wherever possible. In a hierarchical organization this works to diminish direct human interaction. Information becomes an abstract commodity which must conform to specific record formats and satisfy the requirements of reporting methods. Clearly not all species of observations can be accommodated. This constrains the decision-maker's perception of problems, and restricts the field of possible solutions. The danger herein does not stem from the mere fact of limited choice or perspective - all social arrangements impose limits; it comes from wholesale rejection of vital areas of human experience that do not fit into the bureaucrat's construction of the world. What is more, the rejection preserves the power of elite groups. By prescribing the criteria for admissible evidence and establishing the rules of inference bureaucracy predetermines the conclusions that may be drawn.

Cryptonormative technique is a dangerously authoritarian feature of bureaucratic organization. It inhibits social and political initiatives, and stifles dissent. One manifestation of this phenomenon is datamania - the compulsion to gather data whether appropriate or not. A recent example concerns certain anomalies in the dietary habits of Americans. The Privacy Journal of January 1976 reported that sociologist Edward Peeples, Jr. compiled anecdotal evidence showing that thousands of impoverished Americans rely on pet food for a significant portion of their diet. Peeples rejected the inexorable call for a national survey citing the obvious fact that no one is likely to volunteer information on a practice that reflects failure and degradation. He observed further

"Those who deny the reality of poverty, hunger and malnutrition in America have always had an insatiable appetite for 'hard data' from those of us who have witnessed or experienced these misfortunes first hand." Since large bureaucracies concentrate tremendous power in the hands of high level managers, the alleged requirements of rational decision-making serve ideological purposes and partisan interests. Insistence on "hard data" is not always motivated by a disinterested search for knowledge.

The conditions that demand and support automated decision-making carry liabilities which are incomprehensible to the bureaucratic rationalizer. Herbert Simon's argument that hierarchy is a natural evolutionary principle provides a case in point. Hierarchy is represented as nature's way of achieving stable and efficiently productive units. Since centralization of control is beneficial for biological organisms, it should also be so for social organizations. To secure the benefits of hierarchical systems we have only to experiment with the relative sizes and interrelations of the subunits. The possibility that the conventional goal of productive efficiency may be inappropriate for certain kinds of social enterprises is not admitted. Nor is the historical fact of centralization of power taken into account. The need for wider participation in decision-making is discounted. Large-scale enterprises surely have their place in human affairs, and in principle rational methods of organization are desirable. But in our own society, the drive toward rationalization issues from the will to power, and distorts the priorities of human community.

The Imperialism of Technique

Our dependence on technique goes far beyond the habitual use of tools. The problems we deem important, and the approaches we are willing to entertain for their solution are determined in large measure by the instruments at our disposal. Technological success has dulled our critical faculties, and obscured our vision of the historical coupling of power and technique. Thus we are duped by arguments which insist that to act rationally we must avail ourselves of the peculiar tools and methods placed before us by this or that neutral and benign technology. Rationality is equated with the use of specific techniques; to deny this facile equation is to compromise one's credibility, and to be dismissed as a crank who wants to turn back the clock on progress. Obviously the challenge to conventional wisdom is not merely a philosophical quibble. The so-called rational approach to decision-making

materially affects social policy, and it does so in ways that have nothing to do with objective problem solving methods.

Technique is imperialistic when the use of particular methods leads to de facto modifications of priorities and goals. Proponents of management science methods would have us believe that such an idea is utter nonsense because tools are neutral. Unfortunately there are all too many instances of imperialistic technique in organizational decision-making. Policy issues are transformed into technical problems by design or by default. In either case the technical apparatus manipulated by the decision- maker plays a major role in the formation of policy.

Consider the development of systems for administering welfare programs. Since such programs are very costly, they are natural targets for the application of rational decision-making methods. Moreover, heavy information processing requirements suggest the desirability of introducing computers. Now as everyone knows computers are very good for keeping track of transactions. So, despite an expressed desire for genuine reform, efforts to rationalize welfare schemes focus on controlling fraud and formalizing reporting practices. Neither initiative is likely to achieve basic reform, and both of them emphasize the surveillance component of the welfare system. The needs of welfare recipients and the community at large are subordinated to what is technologically feasible. This comes about not primarily because of the opportunism of individual administrators, but as a consequence of the technical apparatus of bureaucracy.

The role of technology in shaping or redefining policy objectives is especially insidious because of the pretended neutrality and objectivity of the instruments employed. As Ida Hoos (1967) showed in her assessment of the abortive attempt to apply systems analysis to the welfare problem in California during the 1960's, the analysts were not objective but rather ignorant of the problem. The methods employed placed constraints on the model which led to arbitrary decisions about assumptions to be made, data selected as significant, objectives to be defined, and values assigned. Administrative information requirements were modeled in terms of the capabilities of computer systems rather than in relation to the functions of welfare. The presumption of the systems analyst, who is largely ignorant of the substantive problems, is only partly to blame for this. Inappropriate models are inevitable under the influence of the drive toward rationalization. The structure

of the decision-making process calls for the transformation of policy issues into technical problems. This is clearly evident in the self-perpetuating myths which promote the development of information systems, namely the belief in the efficacy of ever greater quantities of information processed by ever more powerful computers and managed by systems experts.

The effects of burgeoning computer applications on the conduct of social workers can only be surmised. Here as elsewhere the momentum of technical innovation reduces the public to passive observer of events. Unfortunately there will be no hard data available until it is too late to do much about the current movement toward computerization. Hence the need for informed speculation. Professional social workers occupy positions analogous to the lower levels of management. There is no reason to doubt that information systems will affect them just as such systems have affected their counterparts in other large organizations. Computerized record-keeping systems which provide statistical information for managers and permit client- tracking will require standardized reporting procedures. Standardization is of course necessary to facilitate information processing. Some supervisory positions might be eliminated, but the greatest impact is likely to be on the relationship between case worker and client.

The global objectives of the welfare system are at stake in this relationship. Welfare policy, like criminal justice, may aim for economic and social rehabilitation, or it may settle for custodial maintenance. It is hard to imagine how the present push for computerization could serve anything but the latter objective. The requirements of computer-based record-keeping systems combined with the lure of increased productivity will turn the caseworker into a data gathering policeman - that is, if the position survives at all. Standardized, formal reports, suitable for machine processing, of client-caseworker interactions will pave the way for heavier case loads, and guarantee minimal human contact. Some short term benefits might accrue to welfare agencies and to clients. If the information systems are properly designed, it is conceivable that paperwork costs could be reduced and that clients might stand a better chance of receiving benefits for which they are eligible. Nevertheless, long term effects would be harmful to clients as well as to the larger community.

Rationalization means mechanization of the treatment of a dependent population. It

also means that we abandon any expectation of economic and political reforms which might lessen the dependence of that population on government welfare programs. The introduction of computer-based information systems is a response to purely administrative problems, but the existence of such systems will have a decisive influence on welfare policy. Once the costly apparatus is in place, it will not be dismantled without a struggle. Moreover there will be a growing incentive for administrators to convince politicians that bigger and better computer systems are needed to deal with the inexorable increase in costs. Of course this abstract refrain says nothing about the human costs of rationalization.

Computer applications in health care are more extensive than they are in welfare. There are more opportunities for using computers in medicine and much exploratory work has already been done. The importance of medical computing may be gauged by the growing literature in the field - for example, nearly two thousand pages of proceedings were generated by the First World Conference on Medical Informatics held in 1974. Despite the obvious differences between health care and welfare, the motives for developing computer systems are very much the same in both cases. Rising costs, increasing volumes of transactions, and growth in demand for services have led professionals and administrators to turn to computer technology for help. The contributions expected from the computer are increased productivity of service professionals and greater efficiency in the allocation of resources.

As one might expect the bulk of computer applications in health care are in the hospital environment. Administratively, hospitals resemble other large organizations and computer use in health care facilities has followed the common pattern. Accounting, inventory control, routine record keeping, and other administrative functions have been computerized in many hospitals. Innovations peculiar to medical institutions are physiological monitoring and automated clinical laboratories. Although these computer applications are important, the most far reaching changes are likely to be elicited by computer assisted diagnosis and automated medical records systems, both of which are still in the early stages of development. Not only will the hospital be affected, but the entire structure of health care.

The direction of change can be inferred from the role of information technology in promoting bureaucratic rationalism. Consider the vision of the future commonly held by

medical administrators, computer professionals, and some physicians. Increased productivity of medical personnel will be achieved by turning the physician into a manager. Efficient processing of large numbers of patients will be facilitated by a hierarchical arrangement in which medical managers orchestrate the activities of paramedical personnel who treat patients with the aid of computer-based diagnostic systems. The enormous technical difficulties standing in the way of automated diagnosis may prompt one to dismiss this possibility as an idle boast. However, even if the optimistic assessment is grossly exaggerated, substantial progress will be made, and a technological foundation for the medical manager scheme will be created. Again we see the rationalizing impulse seize an opportunity for using technique to resolve a question of policy.

The policy issue is of course the quality and availability of medical services. Clearly there are alternatives to the medical manager approach to health care delivery; it is equally clear that these alternatives have not been adequately explored. Development of the facilities required for the managerial system will require the commitment of substantial social resources, yet the medical establishment makes little effort to compare the costs and benefits of this proposal with other radical initiatives. Surely we should investigate the possibility of reducing demand for health care services by means of public health measures designed to prevent illness. Programs that encourage the individual to become better informed about health problems and to cultivate better health habits is another alternative that should be considered. The compelling nature of technique in the service of rationalism blinds us to other ideas.

Apart from the possibility of better alternatives, there are serious drawbacks to the factory model of health care. Evidence of the computer's impact on other institutions strongly suggests that the technological approach to health care will not result in an equitable distribution of services. Vast medical centers will develop in response to the computer's promise to effect economies of scale. Resources will naturally gravitate toward large cities thus aggravating existing imbalances between urban and rural areas. In addition it is unlikely that the urban poor will reap the benefits of increased productivity of medical personnel. These concerns are only the most obvious ones. The impact of a system designed to process human beings as factory made objects, and to further our dependence on the health care establishment is probably a much more critical issue. In view of the potential problems, one must marvel at the

Panglossian fervor revealed in the headlong rush toward computerized health care.

The Managerial Nexus

The ability of citizens to exercise independent judgment is a sine qua non for democratic society. Formal political systems, no matter how cleverly designed, cannot be expected to insure adequate representation of the diverse interests of the community. There is no substitute for universal participation in public affairs; but such participation is impossible unless individuals are able and willing to come to grips with the economic, political, moral, and intellectual issues that define the business of a self-governing community. Although this observation is commonplace, its invocation is too often purely rhetorical. To the public officials, entrepreneurs, managers, and technical specialists concerned with the pressing problems of practical administration, the issues raised by social philosophers seem remote and irrelevant. The subtle effects of bureaucratic rationalism on people and institutions receive scant attention. At best these are regarded as mere niceties to be grafted onto the cost-benefit equation after the real issues have been resolved.

The idea that society is evolving according to some inner necessity into ever more complex forms furnishes the justification for the factory model of social organization. Necessity is used as a club to guarantee acceptance. That the creation of large-scale enterprises along rigid, hierarchical lines has been elicited by peculiar historical conditions is blithely discounted. The ideological basis of centralized power is conveniently found in the workings of the natural world. Armed with such a rationale, the bureaucrat and his retainers are immune to criticism. Bureaucratic rationalism is perceived not as a social response to a particular set of conditions, but rather as the realization of a cosmic plan. This kind of belief is not easily dislodged. We are thus compelled to probe the historical and social causes of the impact of technological innovation. Computerized decision-making has causes and consequences reaching well beyond the managerial context in which it is being elaborated. An effective critique must illuminate the world-view which sustains the faith underlying this development.

Contemporary management represents the latest stage in the mechanization of judgment. The computer is instrumental in this process, but it is only one of several ingredients. As discussed earlier, the factory system of production embodies the basic developmental para-

digm. The changes taking place in management today parallel earlier changes in production. Instead of manufactured goods we are now concerned with control decisions. First, complex decision-making tasks are resolved into simpler component elements; next the skilled human decision-maker is replaced by man-machine systems under the direction of high-level managers; finally, human functions are eliminated entirely in a fully programmed operation. Some observers believe that further progress awaits major breakthroughs in artificial intelligence research. Of course some contributions may be expected from that quarter, but automated decision-making is no more dependent on artificial intelligence than mechanized production was on any one engineering discipline. It is more to the point to suppose that research in computer science is dependent on the continued vigor of the rationalizing impulse.

The managerial nexus of modern society is not congenial to the exercise of independent judgment. Therein lies the threat to democratic institutions. Like motor skills, judgment is a capacity that must be cultivated. We are moving in the direction of limited opportunities, not only for those directly affected by mechanization but also for the client populations whose interests are represented by large organizations. Virtually all major social services are feeling the impact of the managerial revolution. Physicians are becoming medical managers; teachers, educational managers; social workers, welfare managers. The professional becomes a manager by separating the control of activities from their performance. This gives rise to further division of labor and specialization of function. The only internal limit to the process is the complete mechanization of human task performance; and the price we pay is the alienation of labor and ultimately of judgment.

Those who believe that the dehumanizing and depersonalizing effects of technology are attributable simply to poorly designed systems whose defects can be corrected by the application of cosmetic surgery are laboring under a delusion. Humane systems are incompatible with technological innovation in the service of bureaucratic rationalism. There is no reason to suppose that the managerial scheme will enable physicians to spend more time looking after their patients' psychic or spiritual needs; that social workers will pay closer attention to their clients' personal problems; or that teachers will treat their students as individuals. Quite the opposite is more likely. These desiderata are possible only in theory. In fact, the
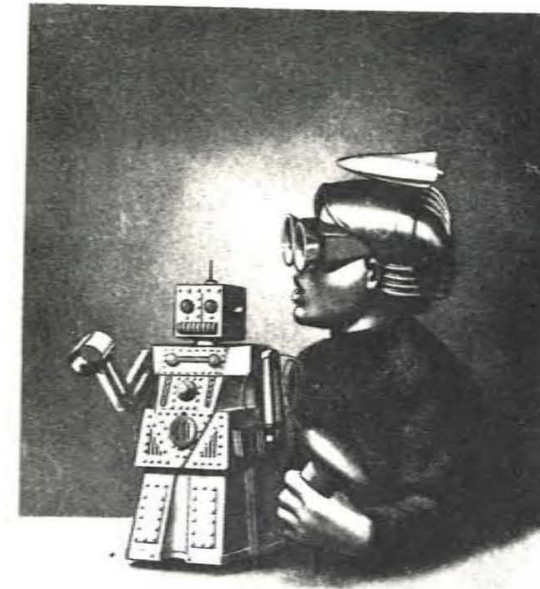
motives underlying the managerial concept rule out the possibility. Productivity gains are not conservative. The advantages achieved will be used to process more patients per physician, more clients per caseworker, and more students per teacher. Reduction of experience into mechanized checklists of procedures generates ever increasing demands for greater productivity, thus providing a rationale for the legitimacy of reductionism.

The expected social benefits of the managerial division of labor are reminiscent of the benefits claimed for the factory system by nineteenth century utopian writers. Mechanized production was to free mankind from the burdens of toil and open up limitless possibilities for human fulfillment. Unfortunately, the way in which the former promise was kept eliminated any realistic hope for the latter. The dichotomy between work and leisure promotes the acceptance of alienating work and unsatisfying leisure; the mechanization of the one trivializes the other. This is precisely what will happen in the service professions. The interaction between the professional-turned-manager and his client will be equally as impoverished as the relationship between the craftsman-turned-worker and his products.

Looking beyond the class of professionals whose work will be affected directly, we see the continued subsitution of social accountability for

individual responsibility. As opportunities for exercising judgment diminish, and large organizations assume more control over individual behavior, autonomous action must decline or become aberrant. Initiative will reduce to technical innovation. Our compulsive pursuit of productivity and efficiency has created a self-sustaining ideology which is embedded in the organization of the technical instruments of production. This ideology is an inescapable fact of modern life. The highest ranking managers and controllers are no less subject to its influence than the lowest level workers. Despite the concentration of power, responsibility is everywhere and nowhere. Herein lies the greatest paradox of technological society, a symptom of which is the decline of the individual.

It is not technology or the motive of self- preservation that in itself accounts for the decline of the individual; it is not production per se, but the forms in which it takes place - the interrelationships of human beings within the specific framework of industrialism. ... The decline of the individual must be charged not to the technical achievements of man or even to man himself ... but rather to the present structure and content of the in all its branches. The patterns of thought and action that people accept ready-made from the agencies of mass culture act in their turn to influence mass culture as though they were the ideas of the people themselves. The objective mind in our era worships industry, technology, and rationality without a principle that could give sense to these categories; it mirrors the pressure of an economic system that admits of no reprieve or escape. (Horkheimer, 1947; pp. 153-154).

The legacy of bureaucratic rationalism is abstract man. Ultimately, the idolization of progress must transform all of human experience into a commodity. Labor and knowledge are already commodities, and affection is rapidly becoming one. Just as the division of labor in production distanced man from his work, its logical extention to control functions places the human being outside of the realm of direct knowledge, and substitutes the formal rules of double entry bookkeeping for human interaction. Camus expressed the prospect quite succinctly. "A single sentence will suffice for modern man: he fornicated and read the papers."

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THE BATHROOM WALL ★ ★ ★ ★

Graffiti have been known since the days of Pompeii, and they may represent one of the oldest forms of community communications. Graffiti often reflect current community issues and may display telling wit and even philosophical depth, in addition to the traditional obscenities and other sophomoric sentiments.

This space is devoted to graffiti. Here is a brief sampling of some favorites:

— "Karnap Can't Count"

— "I'd rather have a bottle in front of me than a frontal lobotomy."

— "Shut Up and Buy"

— "Can't Do the Time? Escalate the Crime"

— "Sous la pave, le plage" ("Under the street, the beach" — written on the walls of Paris during the 1968 demonstrations.)

— "Be Content with Form"

— "A Woman without a Man is like a Fish without a Bicycle"

(This feminist graffiti is seen in almost every women's bathroom in Berkeley. One coffeehouse wall gave a Scandinavian rendition:

"En Kvinna Utan Man Är Som En Fisk Utan Cykel.")

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Henry is working in a cancer research institute
He is living in a collective with very interesting people.
Kate many interested in "womans lib" and