Chapter 19

THE EXPRESSION OF OPINIONS THROUGH THE NEW ELECTRONIC MASS MEDIA: AN EXPERIMENTAL AND CYBERNETIC VIEW

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Introduction

The revolutionary changes in communication technologies will allow us for the first time in 25 centuries to bring to life the true Periclean democracy of ancient Greece. Under the rule of Pericles all the citizens had equal votes in the assembly, which was the supreme legislative body. The quorum, at times, reached 6,000 people. In today's Western democracy, due to the tremendous population growth and the geographical distances, citizen involvement is limited primarily to the selection of representatives to the legislative assembly. It has become impossible to convene town meetings for decision making in our modern mass society. The unidirectional nature of the flow of information in today's communication technologies, known as the mass media, (the radio, television and newspapers), enhances the idea of democracy by representation. The citizens absorb the information from the mass media but are unable to respond to it in a meaningful way. Present mass media communication technologies make a dialogue between the political decision makers and the citizens virtually impossible. The drastic changes which are taking place in communication technologies in the last two decades of the 20th century will make it technologically possible for the first time in history for all of the citizens to participate in a real time dialogue with the decision makers. The coming revolution in the communication technologies is a result of the merger between computers, existing telephone networks, cable television, home computers and satellites.

Much has been written about the benefits and dangers of public participation through electronic town meetings. Some see it as a blessed recreation of true democracy, which is based on the basic principle that a collective wisdom is far superior to the wisdom of the few. Others fear that citizen involvement in electronic town meetings could lead to the end of democracy due to the inability of the citizenry to make rational judgments and a tendency to accept the rule of the majority.

However, regardless of the outcome of this debate regarding the benefits or dangers of citizen involvement through the electronic media, the new communications technologies will reach the homes and allow, technically, the creation of electronic meetings on societal level. Western banking institutions for example, realize that those banks which in 5 years at the most, will not allow home banking, will cease to exist. Media institutions such as newspapers, televisions, and international corporations know that unless they provide their services through electronic home shopping, they risk their existence. Electronic

home shopping is becoming one of the most attractive business investments in the last decade of the 20th century. Citizens in Western democracies are being educated that in a true democracy they are expected to participate, to be involved, to allow their talents, values and desires to affect the social process and political decision making. Up until now, the unidirectional mass communication technologies made it virtually impossible. Now with the advance of the total integration of the communication technologies, it will become possible for the first time in history, to have a virtually unlimited number of people involved in a simultaneous two-way communication process with the political decision makers. Computers, tapping the home terminals at the speed of light, can present the public with immediate feedback on the television screens for a continuous dialogue (Lemelshtrich, 1974).

According to modern theories of decision making, a good decision depends on accurate and timely information. This information must accurately describe the state of affairs at the time of the decision making. A distorted picture of reality could lead to wrong decisions. This is especially true in social, political and economical decision making. Social revolutions, economic crises and even wars, have been caused due to the lack of accurate feedback. These ideas are best described by cybernetic theory. According to this theory, the dynamics of decision making in social systems, biological systems or mechanical systems are similar. In a cybernetic decision making process, a decision is made after measuring the deviation of the present state of affairs from the goals set by the system. The purpose of the decision in a cybernetic process is to decrease the deviation from the goals and eventually eliminate such deviations. It is possible to measure a deviation from the goals only if there is accurate information on the state of the system at the time of decision making. Feedback therefore is a crucial element in modern decision making processes.

The present communication mass media make it impossible to receive accurate feedback from the public. The new communication technologies will make it possible for the first time to gather feedback from an unlimited number of people and on a large number of issues. In biological and mechanical systems, the probability that accurate feedback will lead to good decision making depends primarily on the quality of the systems design. However, in social systems, accurate feedback from all of the citizens may not necessarily lead to good decisions and could also lead to the destruction of the system. For example, in a social system which is based on democracy by representation, the decision making process, at the legislative level, is based on the fact that the wishes of the public are not well defined on specific topics. This allows the making of decisions through a process of compromise by the politicians. Once the citizens can define their wishes instantaneously through the television on a specific issue, such a decision becomes visual and well-defined. The politicians could loose their power to compromise and it may become impossible to reach decisions. Inability to make decisions by compromise could lead to the disintegration of the democratic process.

In this paper two important issues will be addressed. Firstly to what extent can the cybernetic model be used in order to analyze the social and political implications of the introduction of new communications technologies into the social system? This will be done on the premise that the integration of the new communication technologies will bring automation into all facets of our lives and will create, eventually, towards the end of this century, a society which will function like a cybernetic organization.

The second issue which will be addressed in this paper, is what actually happened in simulated democratic group discussions, when all of the group members could participate anonymously through an electronic voting system in a similar way to the participation envisioned by the new two communications technologies, on a societal level.

These unique experiments were conducted under the guidance of Prof. T. B. Sheridan, the head and creator of the Community Dialogue Project at MIT at the beginning of the '70's. Tom Sheridan, with a background in social psychology and engineering, envisioned these tremendous changes in world communications and founded the Community Dialogue Project in order to study the various aspects of citizen participation in political decision making through anonymous voting (Sheridan, 1971). The writer of this article was fortunate to conduct a doctoral research program under the guidance of Tom Sheridan, with special emphasis on how an electronic feedback system affected the various aspects of group discussion dynamics. The research was conducted under the supervision of a unique inter-departmental research project directed by Tom Sheridan from the Engineering Department and Prof. Daniel Lerner and Ithiel de Sola Pool (de Sola Pool, 1968) from the Political Science Department at MIT.

Extensive bibliography on the subject of "The social context of the new information and communication technologies" was published at the end of 1987 (Zureik *et al.*, 1987), covering 6,000 papers which were written on the subject since the early '50's. Out of these 6,000 papers, only 5 papers altogether were written on all of the topics relating to "electronic polling, elections, public opinion, citizen participation." None of these papers were written after 1984.

On the subject of cybernetics, there were about twelve papers out of 6,000, two after 1980, and none after 1984. Only three of the papers dealt with the social relevance of cybernetics.

There were no papers mentioned in the bibliography which described any actual experiments on the subject of the social or political implications of the new communications technologies.

The new cybernetic mass media society

The coming integration between the new communication technologies will change our television at home into a two-way terminal, part of a powerful two-way computerized communications system. The possibility of employing the existing global telephone network as a base for such a modern system, is the principle cause for the expected rapid introduction of a two-way communications system called the videotext system.

France and Great Britain provide excellent examples of the rapid introduction of two-way systems integrating the television and the telephone systems with remote computers owned by government or private institutions. Of most importance is the French Minitel system (Arlen *et al.*, 1986), which is considered to be the most successful example world wide of a two-way system which is based on residential participation. The French system started only at the end of 1982, and had 31,000 subscribers in 1983, 850,000 in 1985, and now has more than 3 million users. The basic idea of the French government was to replace the paper telephone books with an electronic directory service employing existing telephone lines, by providing the homes with low rent home terminals, including a 9" television screen and an alpha-numeric keyboard. Now, over 3,000 different services are provided through more than 2,000 host computers, mostly privately owned. The French government allows involvement of the private videotext host computers, which led to the great success of the system. The corporations which sell these services through the systems, called information providers, include the existing mass media institutions such as the newspapers and television, which sell their stories through the electronic two-way system. The services include electronic mail, telebanking, magazine services, chat lines, etc.

The British Prestel videotext system employs the standard home television as its terminal. The tremendous success of the French system leads many major multi-national corporations today, such as IBM, SEARS, GM, as well as most major conventional television media institutions, to now invest heavily in rapid videotexting of the rest of the Western world (Motavalli, 1987; Behnens, 1988).

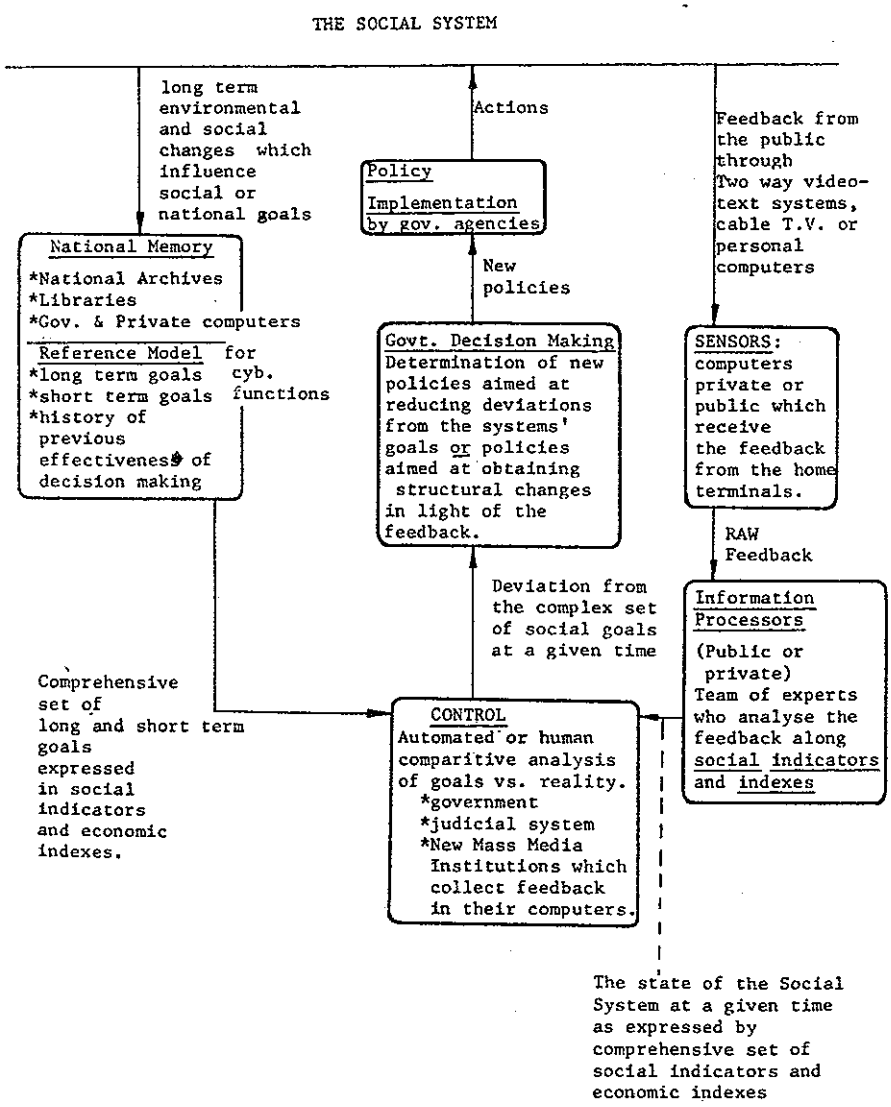
In addition to videotext, the existing high penetration of cable television in the Western world, over 50% of homes in the USA with a two-way communications capacity, the high penetration of personal computers into the homes, and with the compulsory use of computers by almost every pupil in Western elementary schools, make the conversion of our society into the science fiction concept of a cybernetic society inevitable, whether desired or not. In such a cybernetic society, the role of the existing mass media will change drastically. Television, radio and newspapers will become integrated into one complex electronic communications medium, characterized by abundance of information flow to and from the homes, and by virtually unlimited choice of media menus.

According to the cybernetic concept, the ultimate purpose of the media should be to provide the public and government with uncensored information in two directions. The cybernetic concept does not recognize any politically imposed limiting conditions on information flow as legitimate. The free flow of information is a fundamental concept.

The purpose of information flow in a cybernetic system is to provide the decision makers with an accurate description of the state of affairs which is essential for the determination of the magnitude of the deviation from societal goals, for making efficient corrective policies. A society which is constructed according to the cybernetic principles, strives for equilibrium once the societal goals are met. Such a system will automatically strive to restore equilibrium once a deviation is detected through the countless feedback loops which the new communication technologies will create. While this may be desired by those who seek stability, it may be viewed as a threat by those who desire change.

Another fundamental assumption of a cybernetic view of society, is that it is guided by rational decision making on the part of the individual citizen and on the part of the government. It is assumed that the citizen is task oriented, seeks order in his life, dislikes ambiguity and inconsistency. It is assumed that the human being desires to learn and to use his or the social memory, in order to improve his rational decision making.

Figure 1 describes how the new communications technologies will make such a cybernetic society technologically possible. Communications research, now close to celebrating its 50th birthday, focused up until now primarily on studying the effects of the transfer of a message through the mass media on the behavior, attitudes, opinions and values of the individual. It focused on the question of how information flows from the media to the public, and also on the linguistic aspects of communication. Very little research is available on the effects of the mass media on the ability of societies to achieve their goals or on societal decision making. Communication research virtually ignored the potential effects of new communications media and the potential contribution of the cybernetic concept to deal with such effects. The cybernetic theory and the changes in communication technology, provide important new tools for studying the effects of mass media on social behavior and the effects of such new media on the attainment of national goals. The tremendous effects which the new communications media are expected to have on every aspect of our lives, makes the search for new tools of analyses of the effect of such media, crucial and urgent. Tools such as technological forecasting and technological assessment, while important for social attempts to affect the direction of technological change, are definitely not sufficient as they lack scientific basis. Cybernetic theory can serve as an important tool for such analysis, but great refinement is needed before it can be used as a tool for social research.


THE SOCIAL SYSTEM
long term environmental and social changes which influence social or national goals
Actions
Feedback from the public through Two way video-text systems, cable T.V. or personal computers
Policy Implementation by gov. agencies
National Memory
*National Archives
*Libraries
*Gov. & Private computers
New policies
Reference Model for cyb. functions
*long term goals
*short term goals
*history of previous effectiveness of decision making
Govt. Decision Making
Determination of new policies aimed at reducing deviations from the systems' goals or policies aimed at obtaining structural changes in light of the feedback.
SENSORS: computers private or public which receive the feedback from the home terminals.
RAW Feedback
Deviation from the complex set of social goals at a given time
Information Processors
(Public or private)
Team of experts who analyse the feedback along social indicators and indexes
Comprehensive set of long and short term goals expressed in social indicators and economic indexes.
CONTROL
Automated or human comparitive analysis of goals vs. reality.
*government
*judicial system
*New Mass Media
Institutions which collect feedback in their computers.
The state of the Social System at a given time as expressed by comprehensive set of social indicators and economic indexes

Refinements necessary in cybernetic elements for adaptation to social systems

The sensors of a cybernetic social system must be able to detect complex aspects of communications content, such as themes, images, stereotypes of all symbolic systems in all fields of social interaction, including religion, arts, processes of socialization, cultural interaction, literature, etc. Meaningful feedback in a social system must be based on all such variables. The sensors must also be able to recognize the sources disfunctions in the social system such as alienation, low political motivation, absence of unifying symbols between the different groups in the system, political apathy, escapism, regression and institutional rigidity. The refinement of the sensors in order to detect such a complex content as expressed through the two-way communications system, calls for a multiple discipline approach involving social scientists, social psychologists, political analysts, anthropologists, artists, and writers, as well as mathematicians, systems analysts, engineers, and computer software designers. The main task of such a group of researchers should be to identify the issues, identify their relevance, and most important, to invent tools for their detection and measurement. In a cybernetic system there will always be a tendency to detect only quantitative feedback. This is the very nature of computerized systems. This is one of the major disadvantages of such a systems approach, and is the main drawback of any computerized decision making process. Such processes do not leave room for ambiguity in the feedback, and as we know, ambiguity can be at times a very strong positive force for reaching social concensus.

Norbert Wiener (1949), founder of cybernetic theory, recognized the applicability of cybernetics to the social sciences already in his first publication on the subject in 1949. However Wiener was concerned with the potential abuse of the subject if applied to complex social systems and limited the use of the concept to those systems which could be described mathematically. This luxury can no longer be afforded in an era when the new communications technologies are converting our homes to becoming an integral part of a global communications network. The great advance made in employing computers for research in the social sciences in the past 20 years, make it now feasible and necessary to refine the cybernetic model to deal with the complex social content of communications which will be received from home through the feedback system. Of special importance here is the major advance made in the development of mathematical models for analyzing the communications content of verbal messages in newspapers (Tufte, 1976). Today, when psychiatrists compose computer software which simulates the minds of the patients, music writers employ computers to create new electronic music, doctors employ computer software to help them in their diagnoses, it is feasible to create measuring units for the complex social feedback, which will give the decision makers a better picture as to the results of their previous policies and provide them with a realistic picture of the state of the system. Such feedback will be essential for the survival and progress of the human civilization towards the end of the 20th century.

The main task of the information processing element in the cybernetic model, is to transform this huge and complex raw feedback received from the sensors, into indexes and social indicators, which can then be compared to long and short term goals of the system expressed in identical units. This comparative role is carried by the element of control in the cybernetic system, which will be composed of government agencies and the judicial system. It could also be part of the new roles which the new communications institutions will assume.

One of the characteristics of the new communications media institutions is that in addition to their traditional role as information providers, they will provide many new

services to the public in light of the fact that they will actually act as independent videotext corporations owning their own computers, and therefore gathering their own feedback directly from the customer. The new communications media institutions will therefore themselves absorb a tremendous amount of complex social feedback, at times in much greater capacity then government agencies. The availability of this new type of information, at times on an exclusive bases, will no doubt encourage the media institutions to assume a new role of social "controllers". The social feedback will provide the communications media with raw materials for excellent stories to tell about the effectiveness of government decision making. Therefore the new mass media institutions can be expected to become an important integral part of the cybernetic social system.

The indexing and the determination of the social indicators for use as a part of the decision making process again, calls for a multiple disciplinary approach as described before. Special attention must be given to the protection of the privacy of the individuals and to the prevention of information overload.

Another important element in the cybernetic system is the memory which records the past history of the system, as well as the experience gained from previous policies. Social memory, in addition to being carried in the minds of all of the members of the society, has been recorded since the dawn of civilization on stones, scrolls and books, and is kept in national archives, museums and libraries. In the 20th century one of the most important contributions of communication technologies is the recording of social memory in an electronic form in computerized memories. The great advantage of the computerized memory aside from its greatly efficient use of space, is the instant accessibility of the information. In a cybernetic society, the social memory serves a very important dynamic function, as it should continuously serve the decision makers with a reference model.

In mechanical and biological systems, the goals are predetermined and the system strives to restore equilibrium when the system is at zero deviation from the pre-set goals. In a social system, the cybernetic structure must allow the goals to change with the times in order to ensure the long term existence of the system. There is an inherent conflict between the structural rigidity which typifies a cybernetic model, and the flexibility required by social organizations in adapting to changes which may occur. The change of deeply rooted societal goals is a slow process, but the desire for changes must be recognized by the sensors and by the decision makers. The multi-disciplinary group which will study the adaptation of the cybernetic concept must give a careful thought as to how such a cybernetic decision making process will recognize such desires for basic structural changes in the system itself. The inability to recognize the signals indicating a desire for structural changes can lead to the total destruction of the social system, which on the surface, may appear to be in equilibrium.

A unique theory developed by two Czechs authors, Arab and Ogly ties cybernetics to social dynamics. This theory describes cybernetics as the heart of social development (Ford and John, 1966). Following are some of the major premises of this important theory:

1. Society strives for systematization, towards increased level of organization. Cybernetics fosters this tendency.
2. According to Arab-Ogly theories, each new stage in social development results in a more complex form of organization, which results in increased orderliness. Social organizations have an inherent striving to increase in complexity, but this coupled with a striving for developing ways to simplify the organization. The tendency of complication is equivalent to the accumulation of information. The simplification process attempts to reduce the information to manageable forms.

3. The increased level of complexity provides the organizations with more tools to adapt to changes in the environment. "Those systems progress which can maintain homeostatic stability in relation to the environment". Therefore at certain levels of complexity or organization, automatic feedback systems must evolve if homeostatsis is to be achieved. This is true for both biological and social systems.
4. The tendency of social activity is towards the transformation of the environment in ways which correspond to human needs. In the process of doing so, two processes take place: Man changes the environment materially to correspond to his needs, but at the same time adapts himself ideologically to conform to the arrangement of nature and its laws.
5. The variety of methods available to society in order to adapt itself to environmental changes, is a direct function of the amount of information available to this system. The organizations which possess a greater variety of strategies, or a greater choice of possible responses in their memory and are able to use this information effectively, have a better chance of survival in changing environmental conditions.
6. No upper limits exist to the level of complexity of a system. However, together with the increase of complexity, the system must develop means to simplify and effectively handle the increased complexity and this is done by automation.

Therefore automation has become a universal law of development. This is true for living organisms as well as social systems. Automation, or in our case, *cybernation*, creates a simplification process without which further development is impossible. Automation and cybernation make up a process of simplification, which in itself represents a complex concept.

This theory of social development considers the introduction of cybernation as a necessary condition for social progress. It explains why cybernation should be regarded as an important framework for the understanding of the social and political implications of the new communication technologies. It sheds an important light on the great importance and relevance of the recognition and introduction of all the social variables as outlined before into the content of communications, which will be fed into the system through the grand communications network from the homes of all of us. Failure to include the social variables and consider them as part of the decision making process in a modern social system, could prevent us from developing crucial strategies for adapting our societies to the great challenges of the new communications revolution itself which is expected to completely alter the environment within which we all live.

The simulation of expression of opinions through an electronic voting system

The ability to communicate from the homes by allowing the entire public to participate in a political dialogue through the home terminal, could drastically change our democratic process. At the beginning of the '70's, under the guidance of Tom Sheridan, the head of the Community Dialogue Project at MIT, an electronic voting system was constructed which allowed a group of up to 100 people to express themselves anonymously during a group discussion. Each participant received a small hand terminal with 10 numbers, allowing the selection from 10 alternatives. A small mini computer, an integral part of the system, read all the hand terminals and displayed the feedback instantly to the groups. (See Figure 2.) This allowed the groups to hold discussions which were based on a

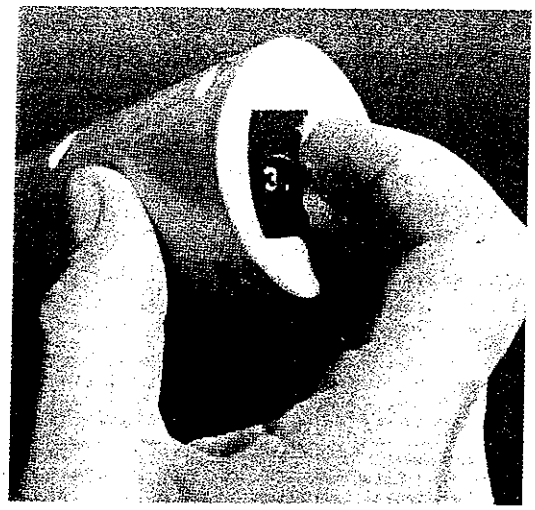
continuous feedback received from every member of the group, an electronic re-creation of the ancient Periclean assembly.

Before discussing the important findings of these experiments (Lemelshtrich, 1973a) it is important to identify the relevance of such electronic aided group discussions to the use of two-way communications on a societal level. We know from great numbers of experiments in social psychology that in most group discussions, there are strong psychological forces pressuring the group members to conform to the group norms. We also know that in every group discussion, only a small minority of approximately 5%, who are usually considered to be the dominant members, take advantage of the ability to express themselves vocally. The great majority in such group discussions usually say nothing and have little effect on the results. These are the so-called silent majority. When an electronic feedback is introduced into such group discussions, it allows every member to vote anonymously, thus affecting the actual dynamics of the dialogue without the need to voice opinions and allowing the participants to affect the discussions through electronic voting, similar to allowing people to participate in a political dialogue through the home terminals. Many technologies are available for easy conversion of our television from a one way to a two-way communications terminal. While only a very few dominant members can voice their opinions in the TV studio, the rest of the public can participate only through voting, and thus strongly affect the discussion content and outcome. It is of course recognized that there are many factors which differ when comparing a group discussion to a public discussion involving a great number of people through the television screen. But there is a high probability that conflicts which arose in small groups, could also occur on a societal level.

People's attitude towards being limited to expressing their opinions only through electronic means in small group discussions without voicing their opinions, could shed light as to their attitude towards participating in a similar dialogue on a large scale through television. It is also reasonable to assume that difficulties which the group dominant members faced due to the intervention of the electronic media, could shed light as to the difficulties which the politicians will face due to the intervention of the new two-way communications mass media.

The discussion process

Of most interest to us was the study of the effect of the electronic feedback system on a democratic group dialogue. Therefore a democratic procedure was chosen which assigned as much power to the participants as possible. The group members were allowed to choose the topics of the discussions through the feedback system. Even though the group discussion moderators were encouraged to refer questions to the groups frequently, the groups were allowed periodically to assess the discussion content and change direction if the majority so wished. The groups took about 20 single votes per session, each of about 45 to 60 minutes long. The experiments took place in high schools, in industry and with community groups. About 60 sessions took place during which some of the groups used the electronic voting device between 12 to 16 sessions.



Participant's response switch

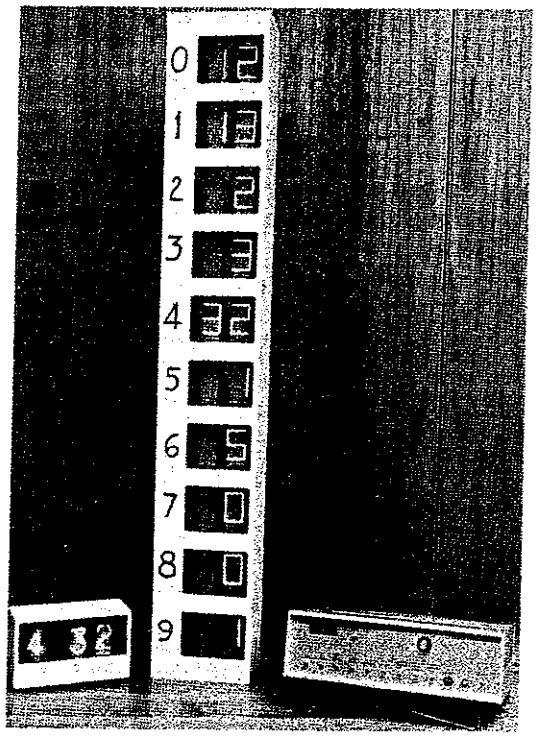


Figure 2 Central display and control equipment. The small display at left indicates in sequence each category number and corresponding votes. The tall display indicates votes for all categories simultaneously. The larger display is normally used but has the disadvantage of size (6 ft. high). The moderator's control box is at right.

The main objects of the experiments

The main object of the experiments was to study how people react to expressing their opinions through an electronic voting hand terminal. Of particular interest was the question as to how the participants with social inhibitions and who fear to express their opinions vocally, will react to the use of the electronic voting as compared with the more dominant members of the groups.

The second objective was to study the dynamics which develop when the silent majority could dictate to the dominant minority what issues to address, or in other words, how this new power sharing worked.

The third objective was the study of how people reacted towards being able to express themselves anonymously. Was this feature more desirable for the more inhibited group members? The research findings along these objectives could have great relevance as will be discussed, to the use of the videotext and cable television for two-way political communications.

The research method

An attempt was made to meet with as many groups as possible for as many meetings as possible per group. The purpose of meeting many times with a specific group was to eliminate the effect of the change. Each participant answered a questionnaire at the end of each meeting, composed of multiple choice and open questions. In the questions the participants were asked were questions which helped us define a personal participation profile for each person. Other questions dealt with the participants' reaction to using the feedback system. The responses to the open questions were analyzed by three independent objective coders along predetermined criteria employing content analyses techniques. The research results were then analyzed using the SPSS computer programmed in order to identify statistically significant links. In some of the groups a non-democratic procedure was employed which did not allow the participants to have any effect on the discussion procedure. In this non-democratic discussion the participants were only asked to respond to the questions set by the moderator but were not allowed to affect the direction of the discussion.

Results

A major finding was that those participants who indicated that they were inhibited in expressing themselves vocally, indicated that being able to participate by voting, made them pay more attention to the process. Being able to participate by voting also increased their motivation to listen. This supports one of the study hypotheses that those who had difficulties in expressing themselves in conventional group discussions, would choose not to pay attention to the discussion rather than confront the anxiety of not being able to have an effect. The group members who had no problem expressing themselves vocally, expressed no change in their level of attentiveness. This finding suggests that if the mass media would allow the citizens to participate even only through voting, being able to vote from the homes can be expected to increase political awareness and motivation.

In an attempt to study the general reaction of the participants to the electronic medium, they were divided into 3 subgroups: A non-dominant group which included those people who described themselves as speaking less than others and feeling uncomfortable in

expressing themselves in group discussions. The size of this group was 30.8% of all of the groups, which is almost 1/3 of all of the participants.

To a second sub group called the middle dominant group, belonged all the participants who described themselves as either speaking less than others but feeling comfortable in doing so. The size of this group was 62.6%.

To the third sub group, called the dominant group, belonged all the group members who described themselves as speaking more than others and feeling very comfortable doing so. The size of this group was 6.6%. This division is in agreement with findings in small group research in social physchology.

The division into these sub groups revealed an interesting and unpredicted finding. The majority of the middle dominant sub group showed a positive interest to continue using the feedback technology in statistically significant higher frequencies as compared with the participants who belonged to the other two extreme categories of domination and non-domination. They claimed that the feedback devices helped them identify more with the discussion output. The majority of the non-dominant sub group expressed either indifference or a negative feeling towards the use of the electronic voting medium. These findings suggest that for the more inhibited group members, technological devices alone cannot be expected to solve the problems of alienation, and that a more personal humanistic approach is probably what is required.

The dominant members also showed negative feelings towards the use of the feedback system, probably because they had to share the floor with the rest of the group members - a new phenomenon for them.

On the whole however, grouping together all those who expressed that they felt inhibited or somewhat inhibited in expressing themselves vocally, this sub group showed statistically significant higher frequency of positive interest in continuing to use the electronic feedback medium as it made it easier for them to participate.

Another interesting finding showed that when the participants were divided according to sex, women showed a statistically significant higher interest in the use of the electronic devices, as compared to men.

Effect of the electronic voting system on the dynamics of group discussion

The introduction of the electronic voting system into group discussions had a marked effect on the content of the discussions and created power conflicts between the discussion leaders and the silent majority, due to the democratic nature of the discussion process.

When the participants in the discussions were allowed to periodically assess the discussion with the possibility of deciding to end discussion on the current issue and choose a new topic, the silent majority in most of the groups dictated a change in the discussion direction almost at every opportunity, given a chance.

The dominant members became frustrated due to this intervention and refusal of the silent majority to cooperate, as the silent majority remained silent, limiting itself to expression only through the voting devices. The voting system made the silent majority more aware, more attentive, desiring to express themselves through votes only but continue to refuse to express themselves by voice, (except for a small group). The dominant members in some groups voiced their anger, claiming that those who are silent have no right to express themselves even through voting. In some situations this conflict was resolved only after the silent majority explained by voting along categories suggested by the dominant members, as to why they do not participate vocally. More than 50% of

the participants in three of the groups indicated through the electronic means, that they did not express themselves vocally because of peer pressures, and because they felt embarrassed to make themselves heard. This finding is definitely alarming to anyone who cherishes the democratic idea that all members of society must contribute of their experience and values to the collective wisdom. The electronic voting system definitely bypasses these psychological barriers of peer group and embarrassment. This is especially important since we know from experiments in social psychology that there is no significant correlation whatsoever between intelligence and vocal participation.

Another very important finding was that the frequent use of anonymous voting with instant results created pressures which brought to the surface the most sensitive topics. This phenomenon occurred almost without fail. The surfacing of sensitive topics often embarrassed the discussion moderators and leaders, who at times had great difficulty in maneuvering around these embarrassing situations. A vivid example of this occurred when a group of blacks and whites, senior high school students in Roxbury in Boston, used the feedback medium at a time when racial tensions were extremely high, including the murders of blacks and whites in the area in the same week. When the participants of that group were asked to choose topics for discussion, the first series of topics did not relate to racism at all, but when one student dared to suggest the topic of racism, it immediately received an overwhelming anonymous majority. Since the group decision is instantly visual -- as will be a vote on cable television or videotext -- it became impossible for the group not to address the topic chosen. The discussion moderator wrote later:

> "when the issue of racism surfaced, I was stymied. Not only because I was totally unprepared for it, I was somewhat frightened as the prospect of dealing with it ..... the vote has delivered us to a very intense and emotional point ..... Such a sensitive issue would have never been exposed were it not for the electronic devices"

The device forced the sensitive issues of racism to the surface, and the group was forced to deal with it.

Strong cohesive groups can deal with such sensitive topics. Weak groups could fall apart. The issue of racism is only one example. Topics such as racial relations, forbidden sex, the use of drugs, sensitive political issues, power relations, physchological fears, always surfaced. In the case of the black and white group, the devices seemed to have contributed to ease racial tension, allowing the black sub group to make a statement as a collective. According to the moderator:

> "in my brief encounter with the black students before the class, they said they were really interested in using the voting devices again to resume the topic of racism .....
> We spent most of the remainder of the school year discussing the problem of racism. Prior to the use of the devices this problem remained unattended".

The group met regularly for 3 1/2 years prior to the introduction of the devices.

Allowing the general public to vote anonymously on issues through the videotext system or cable television, could be expected to bring to the surface the most sensitive issues on the national agenda. Here the question of scale is of great relevance. Dealing with sensitive issues on a group level is much easier and less risky than on a national

level. A small group can risk its being unable to deal with sensitive issues. Nations cannot afford such risks.

Another major objective of this research project was the study of how the participants responded to be able to express themselves anonymously. In all of the questionnaires, there was no mention of the word anonymity directly or indirectly. The participants volunteered comments regarding the anonymity in their replies to open questions only. The content of the replies were analyzed by three objective coders according to the rules of content analyses. Forty-five percent of all of the participants made positive comments re the use of anonymity. There were virtually no negative statements. The most interesting finding here was that when different dominance profiles were compared statistically re positive reference to anonymity, no statistically significant relationships were found. This means that the anonymity was desired by all, even by the group "politicians". This finding suggests that most people, regardless of how free they say they feel expressing themselves vocally, still hide their true emotions and opinions.

This finding has great relevance to using cable television and videotext for a two-way communication dialogue on a grand scale. The social pressures which exist today in open discussions, allow groups and nations to achieve the so-called public consensus, due to the pressures to conform to group norms. The dynamic participation in public dialogues through the frequent use of anonymous voting therefore, could destroy the existing social concensus and could drastically change the political face of nations.

The writer of this paper has taught communications in Tel Aviv and Jerusalem Universities in Israel for the past 13 years. The question of a divided - but open - Jerusalem in the case of peace between Israel and the Palestinians, is an issue which is completely taboo in Israel. No one dares suggest it even as a remote possibility. As part of a long-term experiment, my students are being asked each year to vote on whether, for real peace with the Palestinians, they would agree to allow Jerusalem to become a capitol of two states. Vocally no one spoke in favor of this. However, through the anonymous voting, about 50% of all the student groups, without fail, voted in the affirmative. Needless to say, students at university are by no means representative of society, but most Israeli students are veterans of the Israeli army, and therefore these results taken over 10 years, suggest that when the pressures of conforming to group norms are neutralized, the results are quite different from what was expected. It suggests that allowing the public in other nations to express themselves anonymously on sensitive issues, could alter the face of politics, as could an anonymous vote on the question of Jerusalem alter the face of the Middle East.

Finally, before a two-way communication system can be used for political participation, a great number of important issues must be resolved such as the risk of the invasion of privacy of the citizens, the possible manipulation of the citizenry by those who compose the questions for the votes, the risk of tyranny by the majority against the minority, and how to limit the votes to those who have the right to do so. However, as indicated in the introduction of this paper, once the technology will be in our homes due to primarily economic reasons, it may not be possible to prevent the citizens from political participation since the citizens in the western world are being educated that such participation is their born right. Explanations by politicians and social scientists as to dangers of such participation may fall then on deaf ears.

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