Citizen Sampling Simulations: A Method for Involving the Public in Social Planning*

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ABSTRACT
The growth of the planning function of government raises the question of how planning can be accomplished by democratic means. A new technological device—the teaching computer—seems to be ideally suited for disscussions between "experts" and the public on issues of medium and long-range planning. The teaching computer can be thought of as a mass communications system with feedback.

Possibly a New Function of Government

In the past two to five years there has been a marked increase in long-range planning activity in the United States and many other nations. Several developments—the establishment of new institutes, the founding of new journals, and the sharp increase in the number of books concerned with the future—attest to the emergence of a new field of activity in many institutions and particularly in industry, government, and universities.

Most leaders have had a group of advisers, sometimes given a special name like "Brain Trust," which served as auxiliary eyes, ears, brains, feet, or whatever to the chief executive. However, the advisory function seems to be presently undergoing a transformation. Not only are increased efforts being made to discern possible future dangers and opportunities, there is also growing interest in social indicators which would supplement existing economic indicators. Olson [1] has explained that social indicators would give us measures for the quality of life in addition to measures of

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quantity of output, such as the gross national product and total steel production. Better information about where we are now and how well our present programs are working would presumably help us in deciding where we want to go and what actions are required to get us there.

Policy Principles Needed to Coordinate Programs

The demand for changes in existing administrative procedures is in part the result of a need to coordinate the large number of federal programs now on the books. Between 1960 and 1968 the number of federal domestic programs in the United States increased from 45 to 435, according to Daniel P. Moynihan [2], the President's adviser on urban affairs. One attempt to bring coordination to these programs was reported in *The New York Times* on October 29, 1969 by Robert B. Semple, Jr. [3].

> . . . Mr. Nixon has been urged not only to give Mr. Moynihan wider jurisdiction but to give his current apparatus a deeper staff and a broad mandate to design an overall "urban strategy" and to measure all new program proposals that flow from government agencies against this strategy. There is no group in the White House—and there never has been—that performs this function on a continuing basis.

Many people are becoming concerned that our efforts to build a better society do not seem to be producing desirable results. For example, Richard Goodwin [Gelman and Kempton, 4] has said,

> . . . Take New York City or any big city. If you ask who decided that this is the way people are supposed to live, the answer is, "Nobody." If you took the 200 most powerful people in New York or Boston and put them in a room and tried to find out if any of them had decided that this is the way people ought to live, you'd find that none of them had—or at least weren't aware they had. So where are the villains? The villain is the set of values and the structure. That's why I think Marxism is not relevant, because Marxism is based on some kind of exploitation of man by man, and we're now facing the problem of the exploitation of men by the society they built.

Moynihan [2] has written, "The federal establishment must develop a much heightened sensitivity to its 'hidden' urban policies." He contends that few officials habitually display such sensitivity.

> They are, to their minds, simply building highways, guaranteeing mortgages, advancing agriculture or whatever. No one has made clear to them that they are simultaneously redistributing employment opportunities, segregating or desegregating neighborhoods, depopulating the countryside and filling up slums, etc.: all these things as second and third order consequences of nominally unrelated programs.

The effort to deal with interrelated problems is increasing the planning activity in the United States. If, indeed, a new function of government is emerging, the long-term survival of a national commitment to planning will require public support for this activity. A basic assumption of the American system of government is that the best means for achieving long-term public support for decisionmaking procedures is to involve the public in the decisionmaking process.

The preceding discussion raises at least two very important questions.

1. Does the growth in the planning activity of government require new forms of communication between the public and government planning personnel, if a democratic form of government is to be maintained?

2. Through what communications media and institutional structures can the members of a community or a nation discuss and decide how they want to live, assuming that it is not possible to get everyone together in a single room at the same time?

How Things are Done Now

A review of the existing methodologies for public discussion would seem to be instructive.

1. The essay methodology is used by professors and government officials for communicating with each other. The essays may be published in journals or government reports, but they rarely reach a large part of the population.

2. The committee as a means of communication involves much redundancy and frequently more emotion than information. Certainly emotion is an important indicator of intensity of feeling. The point is that the committee, however useful for purposes such as face-to-face confrontation, is not well suited to exchanging the greatest amount of somewhat abstract information in the shortest amount of time for each person involved.

3. Mass rallies are important for offering the opportunity to express or renew an emotional commitment. Very little information is exchanged. The rally is better suited to solidify attitudes than to change them.

4. Radio talk shows seem to be most useful immediately after a domestic disturbance such as a city-wide strike. In times of relative domestic tranquility, they tend to be banal and irrelevant to the concerns of the majority of listeners.

5. Town meetings with questions from the floor have frequently been praised as the ideal form of government, though an impractical one in a mass society. Town meetings have other disadvantages, however. They are frequently boring and time-consuming and are subject to disruption. The level of discussion tends to be geared low, and visual aids are rarely used.

6. Administrative action tempered by lobbyists such as Ralph Nader permits some but not very extensive public participation. Those who are concerned would probably like to be more involved if a means for greater participation existed.

7. In regard to mass media news reports, television and radio are evanescent. The viewer or listener has no opportunity to go back and examine the logical argument or to check a point he missed while his mind was diverted by an earlier remark. Newspapers, particularly in the United States, concentrate on day-to-day events rather than on analysis and criticism of performance over time.

8. Congress is well suited to legislating programs, but it does not at present systematically review the success or failure of the programs which it enacts. Also, Congress in its current form is not organized to coordinate federal programs. The vast majority of Congressional activity takes place in committees which have specialized interests.

9. Films and phonograph records are usually thought of as cultural or entertainment media. But their use as vehicles for political messages has been growing, not incidentally because they are the media most accessible to young people.

Moynihan [2] has noted that efforts to involve citizens in the planning process at the local level have not had the measure of success which was hoped for. One reason might be that there has been no way both to inform and to poll the public at a reasonable cost in terms of the time required from administrative personnel.

Additional criteria for a good communications system for discussing ideas are that it should be free of boredom, transmit information with little distortion, provide the opporunity to ask questions, and require that background information is understood before an opinion is given.

A New Medium for Communication

I have now asserted that the policymaking processes of major institutions are entering a period of major change and that the governmental institutions are changing in a way which raises issues regarding desirable forms of government. I will now try to show how a new medium for mass communications offers the possibility of increasing the level of citizen information and participation in the formulation of long-range public policy.

The Metamorphosis of the "Teaching Computer"

This new medium for communication has existed in rudimentary form for about ten years. However, the realization of the full range of its implications as a possible tool of the democratic process has been limited by its semantic coding. We have been calling it a "teaching computer." Computer-based education equipment has been compared to the printing press in terms of its importance for education. However, the teaching computer might also be usefully compared to radio and television. Radio and television are technologies for communicating transient verbal and visual information from a central source out to a large population. A teaching computer not only sends information from the center to the periphery, it also brings information back from the individual user to the central source. Thus the teaching computer is a communications system with feedback. Graphic and pictorial information (and in the near future prestored audio messages) are presented to the individual user at a rate which he controls with his keyset.

In addition to its use in conventional educational situations the teaching computer could be used by planning personnel to present policy alternatives, as they see them, to the public. Background information would be available upon the request of the person using the "computer-based exploration of alternative futures." The probable consequences of each alternative could also be a part of the programmed material. During the course of the exploration each individual would indicate his opinion of the desirability of each alternative or could be asked to rank them in order of preference. As he explored the alternatives, background information, and probable consequences,

the "explorer" would be able to use a "comment mode" to suggest (a) additional alternatives, (b) inadequacies in the background information provided, or (c) his own judgments about the probable consequences of an alternative action.

Preliminary Work Is Now Under Way

An elementary version of a "computer-based exploration of alternative futures" is already in operation at the Computer-based Education Research Laboratory on the University of Illinois campus. The details have been explained by Umpleby [5]. This "exploration" was originally proposed by Professor Charles E. Osgood [6] as a device for education and social science research. It is now regarded as the forerunner of "citizen sampling simulations," which would use the physical equipment of the teaching computer to exchange information and opinions between experts and a cross-section of the public. The medium and long-range consequences of alternative courses of action would be "simulated" and responses obtained from a "sample" of the population. The results, which would indicate what the public considers to be desirable or undesirable policies, would then be submitted to planning personnel for their consideration. The first experiment, using a local environmental issue, is now being conducted by Valarie Lamont [7].

The distribution of computer-based education equipment to grade schools, high schools, and colleges will probably become widespread during the next two decades. The existence of this equipment will bring about the possibility of conducting citizen sampling simulations on the same equipment. Facilities which are used by children during the day for education could be used by the parents in the evenings both to learn about existing social conditions and future possibilities and to indicate to planning groups their views on goals and priorities. Computer-based citizen participation in planning will, therefore, be possible even before home computer terminals become widely available.

However, there is no reason why these simulations should follow computer-based education. Public participation in the formation of local or national policy could in a few years come to be considered very desirable. It is also possible that resistance to computer-based education will delay its widespread implementation. If these situations were to develop, the necessary physical equipment could be constructed for purposes of public discussion of policy alternatives. Regardless of which comes first on a large scale or which is condered most important, a discussion of the economic viability of either computer-based education or citizen sampling simulations is incomplete unless all possible uses of the equipment are considered.

A Comparison with Other Proposals

Is the idea of citizen sampling simulations really something new? In order to answer this question it is useful to list the basic elements involved in the idea.

A. The physical equipment which is used is the *teaching computer*. This device can be thought of as a new medium of mass communications. It is a communications system with feedback.

B. This new communications medium could be used to permit *citizen involvement* in the formulation of public policy.

C. *The formulation of long-range goals and explicit policy principles* to guide the evaluation and coordination of programs might be considered a new function of government.

Citizen sampling simulations are thus defined as the use of teaching computers for involving the public, not in day-to-day decisionmaking but in the formulation of policy principles. How does this idea differ from other social innovations now being developed? The work with which I am familiar can be listed as follows:

1. The Institute for Policy Studies [8] in Washington, D.C. is using simulations of social situations to involve particular groups of the population in thinking about planning. Teaching computers are not used (B and C, not A). (The letters A, B, and C refer to the three main elements of the idea of citizen sampling simulations, which were outlined above.)

2. Most people who are developing the idea of computer-based education are primarily concerned with teaching material very similar to what is now taught in classrooms. A few simulations are being done, but, as far as I know, no one has suggested using teaching computers to involve large portions of the public in discussions of public policy for purposes of government rather than education (A and B, not C)

3. The suggestion has been made many times in recent years that computers offer the opportunity for people to vote on specific issues rather than simply on candidates and an occasional bond issue. This is essentially a proposal for transforming representative democracy into direct democracy (B, and A perhaps, but not C).

4. Political games and simulations such as Harold Guetzkow's International Simulation [9] and Ithiel de Sola Pool's simulation of public attitudes during the 1960 presidential election [10] are becoming increasingly popular. However, neither of these simulations used a teaching computer and neither was intended to involve a representative sample of the population in the discussion of present policy alternatives (not really A, B, or C).

5. The activity which most closely approaches the idea of citizen sampling simulations is the television program "The Advocates" on educational television on Sunday evenings. The program obtains feedback from its viewers through the telephone system and the mail (B, and perhaps C, but not A).

A combination of media, such as television, telephones, and the mail, is more awkward for the user than a single medium such as the teaching computer. The high cost in terms of a person's time and energy is reflected in the less than 100% responses by people using the combination of media. The teaching computer can record and sort all responses from all its users.

There are two principal advantages to having computer-based citizen sampling simulations in addition to debates or testimony on television. First, the point was made earlier that television is by nature evanescent. A more general statement is that each communications system lends itself to the transmission of a particular type of information. With a teaching computer the student or citizen controls the rate at which information is presented to him. He need never be either bored or lost. If he is

familiar with the information being presented, he can jump ahead. If he does not understand a particular point, he can ask for additional information. Thus the teaching computer is very well suited for presenting logically complex material to people at different stages of familiarity with the issues.

Second, a citizen sampling simulation requires a model of the social processes involved in the situation being discussed in order to be able to predict the consequences of alternative actions. The need for an operating model requires experts to state explicitly their notions about how the world works. The ideas held by different people about the probable consequences of actions can then be compared.

Necessary Considerations During Preliminary Testing

Regardless of the *need* for more deliberate long-range policymaking, a careful look at the *feasibility* of citizen sampling simulations is required. In addition, research projects with probable large-scale social consequences must include some consideration of regulation in the public interest.

Economic, Social, and Political Feasibility

1. Some idea of the economic feasibility of citizen sampling simulations can be obtained from estimates by Bitzer and Skaperdas [11] of the cost of a large-scale computer-based education system. Bitzer estimates that the cost of instruction on PLATO IV will be less than fifty cents per hour per student. This figure should apply to either educational or governmental use.

2. The social feasibility of the idea could be tested in a small city such as Champaign-Urbana, or perhaps an even smaller community such as the University of Illinois. Questions that would have to be answered include the following: Will people turn out to "play the game"? How much difficulty will they have understanding and dealing with the rather complex issues? How quickly will they be able to adapt to using the teaching computer? What problems are encountered in trying to obtain a representative sample of the population?

Do planners find the data collected to be useful? Are the problems chosen for presentation redefined as the result of feedback from the public?

Are the attitudes of the public on matters of policy changed as the result of exploring alternatives? Do participants change their opinions about the community, local government, planning, and the judgment of their fellow citizens? Do people feel that decisions made after data from an exploration have been considered are more in keeping with their own desires?

Do people get information through citizen sampling simulations which they would not see otherwise? How much information do people generally look at before making a decision? Is the information presented in more understandable or more useful form than through existing media of communication? Is information presented in a more interesting and enjoyable form than is possible at present? Do other forms of political participation increase as a result of citizen sampling simulations?

3. Citizen sampling simulations will also have to be accepted by present-day

decisionmakers. Their response will be influenced by how they believe it will affect the conduct of their jobs, how they believe the public will react to it, and whether they think it would be in the public interest.

There is reason to doubt that some existing institutions are really interested in eliciting public desires. Some political leaders are more concerned with conducting public relations with the masses. However, there are two reasons why political leaders may not actively oppose this new medium. First, introduction of the equipment will take place over a period of several years. Second, the idea of a communications system which permits the easy flow of information and opinions in both directions has an appearance of lack of bias which makes it difficult to argue against in abstract form. Nevertheless, arguments about control of the medium and the wording of specific programs could become agitated.

Public acceptance of this new social technology may depend initially on whether it is regarded as a new step toward the "computerization of our lives" or as a way of "using technology to control technology." Preliminary research and testing could be conducted like any other research project, and distribution of equipment to communities could be gradual. However, it is also possible that the United States could adopt cheap education for everyone or citizen participation in policy formation as a national goal comparable to landing a man on the moon or building a supersonic transport.

Such a national commitment could be stimulated by the occurrence of one or more of at least three developments:

a. International competition, for example from Japan, could drive the United States to attempt to establish preeminence in a new technology which could have an impact on foreign exchange and the balance of payments. For instance, the balance of payments consideration was a major factor in the debate over whether to proceed with the development of the supersonic transport.

b. If a negative public reaction develops to the formulation of policy by "experts" and "bureaucrats" or by the "most important people" of a city, citizen sampling simulations could become a response to this criticism.

c. Further increases in the complexity and urgency of domestic problems could convince the government that improved communication within society is needed. John Platt [12] has vividly described the "crisis of multiple crises" which mankind is now encountering.

Questions of Regulation and Control

If the idea of citizen sampling simulations seems workable after preliminary testing, some thought should be given to the following questions before widespread implementation goes very far.

1. Should the physical equipment for these simulations be owned publicly or privately or by some combination of the two?

2. Should the institutions which write the programs and collect the responses be governmental agencies, universities, private corporations, or some new kind of institution?

3. How should this new communications system be regulated—by the Federal Communications Commission, by a new regulatory agency, by Congress, or by direct public criticism and the normal legal process as newspapers now are?

4. The approval of only two more state legislatures is required before a second national constitutional convention is called. If a constitutional convention is called, should citizen sampling simulations be made a part of a new kind of governmental process and thereby become a means not only for discussing goals but also for authoritatively setting goals? The use of computer-based education equipment as a technology for the formal governmental process is not likely to happen until the public is very familiar with the equipment and what can be done with it and is convinced of its usefulness.

Possible Long-Range Social Consequences

The remainder of my remarks will focus on a few of the consequences which might result if citizen sampling simulations become widespread in the next twenty to fifty years. All the consequences taken together would constitute a social transformation of major proportions. However, considering the many communications media now available, society is not likely to rearrange itself around a single newcomer, at least not overnight. Therefore, the following possible consequences should be regarded as indications of the direction in which society may be changed rather than as descriptions of a social system not too far off.

The "National Classroom": A Conception of Government

The fact that both education and government would be using the same physical equipment suggests that these two social activities would be brought closer together. Universities might devote less time to teaching professional skills and more time to developing the skills of defining alternatives and recognizing relevant supporting information. In addition, universities might become more concerned with providing general as opposed to specialized instruction about the physical and social environment, thus enabling citizens to more accurately estimate the probable consequences of alternative courses of action. If universities were to change in this way, they would certainly become more relevant to social problems.

Charles Frankel has suggested that democratic government and education have a lot in common. He believes that democracy is the best form of government because it is the most educational. In this case "best" can be interpreted to mean the most stable and just in the long run. The primary difficulty with the "philosopher-king" approach to government is, what happens when the philosopher-king dies before a new philosopher-king comes along? It is useful to recall that "information" is stored in only one way—in individual human brains in the form of specific skills or social norms. Libraries and data banks contain only symbols which must be interpreted by people. A society run by a brilliant and benevolent elite can be irrevocably set back if the elite is displaced from power without a similarly skilled decisionmaking group taking over. Another important consideration in maintaining a viable society is that people are

more likely to behave in a cooperative manner if they feel that they have been consulted in determining social policies.

During a lifetime an individual's experiences increase his store of knowledge. The same process occurs in a society. The fact that nations learn by their successes and failures is indicated by slogans such as, "Another 1929," "Another Munich," and "No more Viet Nam's." Of course the lessons of history are subject to varying interpretation. Nevertheless, it would seem that a society should be able to learn from its experiences and to improve its decisionmaking procedures, just as the procedures used by individuals have been improved by techniques such as linear programming, game theory, simulation, and systems analysis. One way of improving the learning and decisionmaking processes of a society would seem to be to acquaint more people more thoroughly with the alternatives which decisionmakers are considering and why they choose the alternatives they do. In order to accomplish this it might be helpful to begin thinking of government as an educational activity on a national scale.

Television has already created the "national classroom." The teaching computer offers the possibility of "government seminars" for those who are interested. The United States of America could be thought of as a course in cooperative living with the government, the media, and the universities operating as a sort of aggregate professor to the rest of the population. Of course the "students" frequently talk back to the "instructor," but then, seminars (democracies) tend to be more interesting than lectures (dictatorships). And of course every four years the "students" have the opportunity to become the "professors," which may be a suggestion for the university.

Coercion vs. Persuasion

Every organization uses some combination of coercion and persuasion to enforce group norms. The United States is now employing coercion on a very broad range of problems. Overt force is being used in Southeast Asia far more than diplomacy; coercion is being used to enforce integration in the South; and even the universities feel driven to resort to force in order to continue functioning. All this is occurring in one of the world's most literate nations, a nation having the most advanced communications technologies. Perhaps it would be useful to think of persuasion as an alternative to coercion. Technology continues to lower the cost of producing social change by means of persuasion rather than coercion. Yet there has still not been a widespread recognition of the fact that our strategies for bringing about social change could be substantially altered by making use of communications equipment now available and additional equipment which will become available in the next few decades.

Electronic Town Meetings

The impact which computer-based explorations of alternative policies will have on the distribution of public concern with federal, state, and local governments will be partly determined by the scale of the networks built. A national computer-based communications system would most likely consist of a network linking "teaching computers" in local communities. Each local computer would have its numerous

remote terminals. Local computer-terminal systems will be available in some communities before a national network of "teaching computers" is operating. Consequently it seems probable that this new communications medium will have a noticeable effect on local government before it begins to affect national government. By providing a means for citizens to become involved in urban planning and policy formation at the local level, these simulations might well increase interest and involvement in local government.

The University as a Stage for Political Conflict

Any major social innovation will produce a shift in the relative importance of existing social and political institutions. If the computer-based communications centers, which write the programs and channel reponses to the government, are located at universities, the role of the university in society would grow. Also, the function of the university as a platform for social controversy would doubtless increase due to disagreements over what alternatives should be presented and what the probable consequences of actions actually are. The public, when disagreeing with the programmed relationships between developments, should be presented with an argument supported by observations made in a similar situation. The relationships between developments would probably represent the judgment of a group of experts, at least initially, and they would be expected to justify their decisions about probable secondary effects.

The Federation of Feudal Disciplines

Dealing with complex, real-world problems will require using the knowledge of many disciplines and coordinating specialized knowledge, not only for presentation to the public, but also in building the models used in the programs. Thus, there would be a tendency toward the amalgamation of social theory and indeed toward the building of a model, and presumably in time, a theory describing the relationships between all parts of the physical, biological, and social environment. The present trend toward interdisciplinary research would certainly be accelerated. The expanded use of computer simulations would increase interest within the social sciences for building mathematical models.

Collective Bargaining and "Industrial Democracy"

If industrial corporations were to use "employee sampling simulations" the union-management dichotomy could become less pronounced. Collective bargaining might have to be rethought. Workers and managers could explore the consequences of higher wages and prices, such as higher consumer prices and lower real income. They could consider together issues such as whether to manufacture napalm and what percentage of black employees would be both socially just and in the best interests of the present employees. Greater information about the social context and experience in playing the role of the opposing party, might help to reduce conflict. However, it is possible that differences of opinion would only be made more clear and that nothing would be resolved.

Social Indicators Will Have an Impact on Lobbies

Inequalities among different groups in the population would be repeatedly pointed out by citizen sampling simulations using social indicators. Consequently, the bringing of group grievances to public attention could become a function of government or the universities just as the resolving of conflicts is now a function of government. "Interest articulation" could become an activity of professionally trained people and therefore less of an additional burden on the individuals to whom injustice is being done. The "comment mode" used in these explorations could help to restore the right of the individual to "petition the king." People who read the comments could be charged to act as ombudsmen.

Social indicators should also help to locate emerging social problems before they reach the critical stage. It is not likely, however, that muckrakers using present media would be put out of business. They will have a whole new social activity to criticize.

Increased use of social indicators for articulating group demands could help to keep lobbyists honest. Indicators of the existing situation would probably hurt well-mobilized minorities such as the American Medical Association and help poorly mobilized minorities such as Mexican-Americans and migrant workers.

Political Parties May Become Less Important

If one assumes that political parties are a social technology for aggregating interests, which is required by the fact that there are a large number of interests and a small number of candidates, then the importance of political parties could be reduced by a technology which would allow people to register their opinions on separate issues. With citizen sampling simulations, a substantial part of a citizen's time spent on political questions would be devoted to specifying his hierarchy of priorities or indicating which alternative policies he regards as most important and desirable.

Other Media Might be Reexamined

The concern with public policy fostered by citizen sampling simulations might carry over to the other media. Simply the discussion of computer-based citizen sampling simulations, even prior to widespread implementation, could increase the growing interest in reexamining the educational, political, and cultural functions of existing mass communications media and their regulatory agencies. It is useful to point out again that an implicit national policy regarding the existing media of mass communications already exists, even though it may never have been debated and consciously decided upon.

For example television could be thought of as an instrument for education rather than for entertainment. A device which brings the patent remedy man directly into the living room could be thought incongruous in a society where many communities prohibit door-to-door selling. Also, the existing media could be used by each of the many "silent minorities" to make its case to the rest of the public. Mexican-Americans,

students, and American Indians are just a few of the groups whose views could be better understood by the public at large.

How Communications Media Affect the Temper of the Times

The present domestic instability and sense of foreboding in the United States may not be due entirely to a combination of very important social conflicts. Each communications medium existing at any particular moment influences the temper of the times by selecting out the kind of information most suited to it. Television tends to select events which are dramatic as opposed to events which are representative of the total set of events. This situation produces numerous consequences. For example, if a person wants to be heard, he tries to make his comments as dramatic as possible, short of what can be prosecuted for inciting violence. A very large number of dramatic events bombarding the senses tends to create a feeling of catastrophic upheaval when in fact the daily lives of most people remain largely unaffected.

Computer-based explorations of future alternatives, in a constant attempt to be accurate, would try to present both dangers and opportunities. Discussions about probable secondary effects would tend to select out the most persuasive arguments as opposed to those most flamboyantly presented.

Will Anxiety Be Produced or Reduced?

The very major change in social communication and decisionmaking procedures which would accompany the introduction of citizen sampling simulations could cause great anxiety in the beginning. However, increased information and public involvement in decisionmaking would, in time, probably reduce anxiety due to unanticipated or unexpected social and technological developments. By looking ahead the public could better anticipate the new technologies and thus have time to create institutions to regulate or eliminate undesirable secondary effects. Greater confidence in society's ability to control the consequences of social and technological developments could lead to more open acceptance of experimentation and alternative life-styles.

Enhancing Self-Esteem

Greater involvement of the individual in social planning could contribute to self-esteem. Assuming that societies change in a nonrandom way—that is, that some "progress" can be discerned, that the store of knowledge grows, and that societies tend to become more organized in terms of an increase in information flow—then one might say that each individual, simply because he is alive and contributing to social choice, is a factor in social evolution, if he participates.

Governance by "Those Who Care"

It has been suggested that a representative sample of the population might not be desirable, that a "constituency of the concerned" might be better than pure democracy. Teaching computers raise the possibility of granting citizenship in proportion

to involvement. Perhaps there is some merit in this proposal, but care would have to be exercised to insure that citizenship was not granted in proportion to involvement *through a particular medium*. Participating in a citizen sampling simulation might be as uncomfortable for some people as marching in a demonstration is for others.

A Technology for Democracy As Foreign Aid

In addition to the considerable impact which citizen sampling simulations could have on government within the United States and other industrially advanced nations, the same equipment would seem to provide a way for accelerating the process of political development in the newer nations. If the people of a nation request it, computer-based education equipment could be given as aid instead of tanks and guns. The device could then be used both for education and for informing people about the operation of their government. It might be desirable to have some means of regulation by the United Nations to insure that the equipment is not used for propaganda or for inciting hostilities between nations.

A Shift from Special Interests to Common Interests

People seem to be becoming aware of the fact that the physical world is not "without end" but in fact is very limited. This realization has very important consequences for political theory. Much of the present theory of coalitions is based on the assumption that some conflicts are of almost no concern to a third party. The idea of logrolling—support my bill and I'll support yours—assumes that each partner has no interest in the other person's bill. However, in an intellectual climate in which everything is viewed as having some impact sooner or later on everything else, the idea of logrolling, at least in its pure form, breaks down. One is forced then to take into consideration, more than before, which side of the issue will produce the most desirable long-range consequences for the population as a whole.

Citizen sampling simulations make feasible the detailed consideration of secondary effects both by planners and by the public at large and thereby could assist in arriving at decisions which serve long-range as well as short-range interests.

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