

DISCUSSION OF POTENTIAL USES OF INTERACTIVE COMPUTER GRAPHICS IN CITIZEN PARTICIPATION

At the end of the session on potential uses of interactive computer graphics for citizen participation, a panel discussion on the session was held. This is an edited version of the panelists' presentations.

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I assumed that the 4 papers presented would advocate immediate, widespread proliferation of interactive computer graphics as a panacea to the many problems in citizen participation. But, fortunately, none of the papers perceives computer-based participation as a cure-all, and each of them has noted that use of this developing technology should be approached with caution because of its razzle-dazzle, its potential for technological tyranny, and its ability to cover forecasting uncertainty with implied certainty. I agree with the general thrust of the papers, and I thought it might be useful to underscore various points that have been offered.

Citizen participation is deeply embedded in the fabric of democracy. Recently, demand has increased vastly for more interactive involvement by citizens in almost all public programs. These demands for increased involvement are emerging from both individual citizens and representatives of public interest organizations who increasingly distrust government, are dissatisfied with society, and are discontented with present institutions and industry practices. And these participatory demands now are coming not only from predominantly poor and powerless people who started the movement for participatory rights in the social opportunity programs of the 1960s but also from environmentalists, consumerists, feminists, and other citizen activists. In response to these demands, more public programs have begun to include requirements for citizen participation. Unfortunately, these requirements and the staff to implement them have largely grown randomly and have not reflected what has been learned from earlier experiences with citizen participation. Because there is neither a discipline known as citizen participation nor a professional association to help practitioners build a cogent body of literature and a coherent body of experience, there has been no central place through which lessons learned in one program could be passed on to another. That the Transportation Research Board did not have a permanent committee on citizen participation until 1973 emphasizes the problem.

Thus in the transportation field today we are struggling with an enormous number of questions about citizen participation on which there are many opinions but to which there are no agreed-upon answers. In my opinion, there are 12 problem areas.

1. Which citizens and citizen groups should be involved in a public participatory process?
2. What is the central purpose of citizen participation (manipulate, inform, consult, negotiate, respond)?
3. How can transportation officials be held more accountable for their actions?
4. How can the benefits and disbenefits of alternative transportation plans be decided equitably?
5. What are the most productive methods and tools for participation?
6. How can citizen distrust be alleviated?
7. How can complex technical information and data be translated into lay terms?
8. What role should value judgments play in technical decisions?

9. What commitments from public agencies are essential to effective participation?
10. What group-dynamics staff skills are essential to the participatory process?
11. How can vast geographic distances be coped with so that continuous participatory interaction can take place in systems and corridor level planning?
12. What technical assistance is needed for effective participation?

The data given in Table 1 show the areas in which interactive graphics will be useful in my opinion.

The papers in this Record alert us to be careful in considering the usefulness of interactive graphics in the areas of determining which citizens should participate, issues of equity, citizen distrust, and agency commitment. Table 1 notes that interactive graphics may have an uncertain effect on problem areas 1, 4, 6, and 9.

On problem area 9, Darwin Stuart observes in his paper:

Before an interactive graphic component within community participation programs can be valuable, there must be sustained commitment to the community participation process itself...until the system and locally oriented levels of participation are adequately strengthened, considering a role for interactive graphics will be largely academic.

On problem areas 1 and 4, Thomas Sheridan cautions:

One must agree that when any new communication tools can be manipulated by a few powerful persons, there is real peril. Alternatively, even if these tools are not subject to manipulation by a few people, a community of well-meaning persons may unwittingly adopt technocratic procedures that will allow the majority to oppress the minority.

On problem area 6, several of the papers noted that some citizens are distrustful or suspicious of the technology. I suspect that there is a high correlation between those who distrust the computers and those citizen activists who are highly distrustful of public officials, consultants, and academics. Much citizen distrust is legitimate. Unless we are mindful of potential misuses, there is considerable risk that interactive graphics will be used by some public agencies not to improve citizen participation but to improve citizen manipulation.

The data given in Table 1 indicate my belief that interactive computer graphics offer limited usefulness for problem areas of central purpose, accountability of transportation officials, and staff skills. Although the resolution of these issues may well determine how useful interactive graphics might be in a participatory process, the technology per se cannot help to resolve the issues.

Table 1.

Problem Areas	Potential Usefulness		
	Uncertain	Limited	Positive
1. Which citizens participate	x		
2. Central purpose		x	
3. Accountability of transportation officials		x	
4. Equity of benefits and disbenefits	x		
5. Methods and tools			x
6. Citizen distrust	x		
7. Complexity			x
8. Value judgments			x
9. Agency commitment	x		
10. Staff skills		x	
11. Geographic distances			x
12. Technical assistance			x

The data in Table 1 indicate that interactive computer graphics will be useful in the problem areas of methods and tools, complexity, value judgments, geographic distances, and technical assistance.

Although interactive computer graphics have been used to date only on an experimental basis, the early findings suggest that their chief value is in "translating" complex data into more easily understood terms. Each of the papers in this Record notes the significant potential of interactive graphics for restructuring complex problems and for helping lay people understand the interrelationships of innumerable variables in a complex plan. This ability to deal with complex data could be a breakthrough to effective citizen participation. Participation now often takes place without adequate understanding of the issues, constraints, and options. I was pleased that Feeser and Ewald urged that we not fall into the trap of using the technology to demonstrate a feature of the graphics system rather than a feature of a transportation facility. I asked Feeser how many lay citizens would find that the examples used in the presentation illuminated the controversial policy-related issues that normally concern citizen groups. Feeser noted that he sees the technology useful for informing citizens in public hearings and is skeptical about its use for continuous interaction on policy-related issues.

Several of the papers note that one of the important contributions of interactive computers is to enable exploration of values to examine the relative importance of conflicts and trade-offs. Citizen groups frequently are unaware of why they encounter conflicts among themselves. I view interactive graphics as a tool that could help them clarify the issues and the value judgments that lie within them. All too frequently professionals insist that they are making technical decisions and that they should seek greater objectivity rather than the additional biases that emerge from participatory processes. I believe that almost all transportation planning is based on values and, regardless of how objective planners try to be, personal values enter into both the questions asked or not asked. All too frequently planners fail to ask significant questions about who benefits and who does not benefit from an alternative and about what can be done to avoid or minimize disbenefits to some population sectors. By exposing data to public view in meaningful formats, planners will become more sensitive to the role of value-laden decisions.

Because so many of the important long-term decisions in transportation planning are made at the systems level where participatory processes are more difficult to maintain because of the distance and time frame involved, interactive computers might be useful in helping to narrow the distance and time gaps. I do not believe that this will occur soon because connecting distant points would depend on joining computer-based teleconferencing with interactive graphics.

One of the problems many agencies face is whether to assign their regular technical staff to interact with citizens or to hire special behaviorally trained staff for that function. Problems are associated with either choice because engineers usually are not accustomed to interacting with citizens about issues that they consider to be technical. Newly hired group dynamics staff frequently do not know enough about the critical variables of transportation planning, and this is a disservice to citizens. Computer graphics would play an important role in bridging this gap because the computer could help the group dynamics staff learn more about technical issues. They would become more useful in providing technical assistance to citizens; all too frequently technical assistance to citizens has been based on what some people have aptly termed technical ignorance.

Concerning the problem area of which methods and tools are most productive, Goldberg and Ash point out that members of the general public who are not affiliated with a special interest group usually lack the interest to achieve a minimal level of understanding. Their paper also indicated, however, that the most successful demonstration was the one in which the audience was permitted to actually try various options on their own. I wonder whether the audience interactive process by which the graphics system was introduced or audience motivation was the deciding factor in developing interest in the process. Sheridan suggests that individual reactions on various background and personality factors. He points out that the style of the moderator significantly affected how the technology worked. This brings us back to the point mentioned by several of the speakers that this technological tool is likely to be highly dependent on the skill,

commitment, and objectives of the staff and agency employing the tool.

As a result of an examination of various alternative participatory tools with which I was involved (1), I recommend further exploration of the potential of interactive computers.

REFERENCE

1. Interim Report to Federal Highway Administration on Contract No. DOT-FH-11-8514. Arthur D. Little, Inc., 1975.

John S. Winder, Jr., Environmental Impact Assessment Project,
The Institute of Ecology

The entry of interactive computer graphics into citizen participation in transportation planning could be dangerous because not enough is known about the technology. Feeser and Ewald show this when they suggest that a major purpose of computer graphics is to show project features better. Computer graphics should be used to facilitate public participation. On a broader scale, Feeser and Ewald suggest that public hearings are to inform the public about new projects. Public hearings should be conducted to involve citizens in the decision-making process.

That channels of communication are insufficient is a current problem that was noted by Sheridan. Interactive computer graphics can be focused on this. Sheridan points out that, although interactive computer graphics can assist citizen participation in the decision-making process, it cannot serve as a foolproof means to cast final votes on important decisions.

Stuart very clearly and optimistically describes potential uses of interactive graphics for citizen participation in transportation planning. As he suggests, interactive graphics may help define concepts, problems, solutions, and values. He supports a maximum interactive graphics potential in this context to improve community and decision-maker participation in plan making. Stuart identifies the relationship of interactive graphics to planning and participation issues. Community participation needs strengthening in identifying goals, developing alternatives, and evaluating alternatives. Stuart concluded that strong community participation, agency support, faith in the technology, simplicity, time consumption, policy issues, and cost are most critical for the use of interactive graphics and represent potential implementation problems.

Goldberg and Ash describe some planning and participation models that can be used with interactive graphics. They focus on the principal, and easily overlooked, potential use of interactive graphics, which is to provide information to the public to involve them clearly and directly in model building and the political process.

Feeser and Ewald describe interactive computer graphics in a way that suggests that computer graphics may be another visual aid by which transportation planners can better describe their proposals to the public. They apparently disdain, however, the potential uses of computer graphics in an interactive context. They apparently view interactive computer graphics in the context of their definition of the purpose of a public hearing, which is to inform the public about new projects.

Feeser and Ewald apparently endorse study recommendations for improving the public hearing process in Virginia, which are

1. To show project plans at convenient locations,
2. To have engineers on hand to answer questions before the hearing,
3. To have better visual aids, and
4. To take appropriate action on any important citizen feedback.

This approach clearly avoids the interactive potential of interactive computer graphics and, thereby, eliminates its potential for improving citizen participation and the decision-making process.

Sheridan clearly describes the previous applications of interactive computer graphics in a planning and participation process. He describes different types of question-response modes that can be used in a group forum. He describes how interactive computer graphics can be used to rapidly identify consensus and conflict. He recognizes that this system may rapidly increase participation by, in part, permitting anonymity; he cautions at the same time that this process reduces verbal participation. Sheridan suggests that interactive computer graphics may have significant potential for improving citizen participation and the decision-making process, but he also recognizes that the technology must be used carefully and in concert with other, traditional methods of communication and participation.