The Politics of Implementing Multipurpose Information Systems in U.S. Local Governments

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Introduction

If the information age is not yet upon us, it is closing in fast, or so it seems. Information processing technology--primarily the computer--is everpresent in the world of commerce and industry. Computers are fundamental to modern inventory control, billing, budgeting and increasingly intra and inter office communication. Word processing capability is nearly ubiquitous in public and private organizations, and more sophisticated data analysis capabilities are readily available, if not so commonly used. In the area of land records, the subject of this paper, local governments in the U.S. increased their use of computers for information storage and updating by 500 percent between 1976 and 1982 (U.S. Bureau of the Census 1984). Likewise, the microcomputer seems to have brought information processing technology within reach of the homes and offices of nearly everyone. For those who cannot or choose not to purchase increasingly inexpensive personal computers, they can evermore commonly be borrowed from public libraries.

This rapid expansion of computer use has lead to speculation of an information society in an information age (Cornish 1981, Molitor 1981). Widespread use of computer, for functions such as electronic fund transfer, computer-aided design, electronic mail, home catalog shopping and computer-aided instruction, is expected to revolutionize the economy and social and political relations of American and other societies (Winner 1985).

This paper explores the relationship of one type of emerging information processing technology--multipurpose land information systems (MPLIS)--to the acquisition, distribution and use of political power within local governments in the U.S. The results of the exploration are unsettling. Current evidence suggests that the introduction of computers to local governments reinforces preexisting power relationships. Instead of computers acting to redistribute and equalize power, they appear to increase the distance between the informa-

tion rich and the information poor, even while increasing the total amount of information available. Computers in local governments in general, and by implication MPLIS, seem to lead to less, rather than more, democratic distribution and use of power.

However, the bulk of the data that leads to this conclusion is nearly a decade old; and it is not specific to MPLIS. Therefore, detailed studies of MPLIS acquisition and use need to be conducted. Also a democratic theory for MPLIS adoption--i.e., what would it mean to facilitate democratic access and use of MPLIS--needs to be formulated, since the issue for the future of MPLIS is not if, but when and how they will be put into place.

In the sections of this paper that follow I will (1) define MPLIS and establish why a discussion of MPLIS implementation in the U.S. focuses on local governments, as contrasted with state governments or the national government, (2) review theories of local political power, and hypotheses regarding computers use and local political power as presented in a study of that subject, (3) present evidence from this study on the politics of computing, and (4) offer thoughts on appropriate future research on the political impacts of MPLIS implementation, and ways to ameliorate negative impacts from such implementation.

MPLIS and Local Governments in the U.S.

Multipurpose land information systems is one of several terms used to describe an interrelated set of computerized data on land. A composite definition from a recent World Bank publication is:

> A relatively new development that incorporates into one source the legal and fiscal cadastre data (a cadastre is an official register of the location, boundaries, ownership, value and other attributes of land) plus information on land use, infrastructure, buildings, soil and other factors.

> A system that consists of a data base containing land related information and the procedures and techniques for systematically collecting, updating, processing, and distributing the information. (Austin 1985, 2).

There are multiple rationales for these systems. According to the World Bank, MPLIS can help to "cope with growing demands arising from large increases in the number of land transactions, swiftly changing land use, and other trends related to rapid city growth" (Austin 1985, 1). Ideally, a MPLIS would provide accurate data on land market activities and their implications, provide clear, unambiguous data to formulate and administer land policies, encourage coordination within and among land related public agencies and private parties, and not unimportantly, facilitate more effective and equitable property taxation.

While there are few, if any, fully functioning multipurpose land information systems, there are many experiments. One, in Dane County, Wisconsin seeks to bring together into a single data base natural resource data, such as on wetlands, land cover, and soils, with ownership data by parcel, legal land use planning data as expressed in zoning, and a base survey conducted by the federal government under the public land survey system (Chrisman et al. 1984b). A unique aspect of this project is that each of the data bases that make up the MPLIS are currently developed and maintained by separate public agencies for separate purposes. One goal of the project is to determine if these land records can be effectively integrated for use by all of the respective agencies as well as individual land owners, land realtors and developers.

This activity in Wisconsin, as well as throughout other parts of the U.S. is spurred in part by two recent reports by the prestigious National Research Council (1980, 1983). These reports argue for the development of MPLIS on the basis of developments in information processing and land assess-

ment technologies (with regard to the latter this includes major new advances in satellite technology and its ability to help determine ground location and features) and, as noted the utilities that should result from system operation.

As the NRC and others work to develop the theory and operation of fully functioning MPLIS, one of the key issues to be resolved is which level of government--local, state or national--will be the lead unit for such systems. In the U.S, this discussion focuses on the state and local governments. It is these governments which currently hold primary authority for most land policy, land planning and land taxation functions. With the exception of federally owned lands, the national government has little obvious need reason for a fully integrated land information system.

Among state and local governments, much of the current thinking tends toward assuming that MPLIS will need to be developed within the context of local government operations. The reasons for this are twofold, having to do (1) with the sheer number of local governments and their current responsibilities in the general area of land records, and (2) recent attempts, within the last two decades, to shift land planning and policy authority from local to state governments, disillusionment with this process, and current resolve to work within the local government framework.

According to Chrisman et al. (1984a, 221) "local government appears to be the focal point for land records modernization." Using Wisconsin as their example, the authors note that given that the current system of land registration and planning is locally based, at the county, city, and township levels, the success of MPLIS is premised on its ability to match to this system. In addition, much of what the state seeks to accomplish in the way of land policy and land data collection it does through delegation of responsibility to local government units.

> At present, local government is responsible for floodplain, shoreline, farmland, and wetland zoning. It has recently been made responsible for soil erosion mitigation planning. These state-mandated programs are in addition to other existing land use and zoning authorities and responsibilities. In order to provide the basis for conducting these programs, local government is responsible for collecting and maintaining numerous types of land records. In addition, they are also responsible for maintaining one of our society's most important land records--the one documenting ownership (Ibid).

As noted by Chrisman et al. (1984a) in Wisconsin alone there are nearly 3,000 local units of government, two-thirds of which are counties, cities, villages, and townships. This pattern is repeated throughout the U.S.

The second reason to design MPLIS for use at the local government level comes from largely failed efforts in the past two decades to reform a well entrenched system of local control over land use planning and land policy implementation (Bosselman and Callies 1971, Popper 1974, 1981, Barrows 1982). This system of planning and policy implementation arose in the 1920s largely out of the necessity of cities to manage explosive urban growth. State legislatures through the U.S. passed enabling laws which passed planning and regulatory powers along to the most local of governmental units. By the 1960s a great deal of interest developed in the reform of this local planning and policy structure. The need for reform was premised on the inappropriateness of local control. It was judged to be parochial, discriminatory, destructive of ecosystem resources, and wasteful of investment capital. In the terms of the population biologist Garrett Hardin (1968) local land use planning was a "tragedy of the commons."

The movement to reform local land planning concentrated on the shifting of authority upwards to regional and state governments and agencies (Bosselman and Callies 1971). Centralized control was offered as the solution to the fragmentation of local authority. While significant experiments occurred in this movement (Bosselman and Callies 1971, Popper 1981, DeGrove 1984) by the middle 1970s it was largely dead. After an initial period of what appeared to be widespread support for reform, for a variety of reasons these efforts began to generate considerable opposition (McClaughry 1976, Walker and Heiman 1981). Now, in the 1980s, the current climate in land policy is what can be termed "unsettled localism." Those who once vigorously supported the movement toward regional land use planning are searching for ways to make the local system workable (Healy and Rosenberg 1979, Weaver and Babcock 1979, Popper 1981). Rather than trying to replace what was perceived to be a system of irresponsible local control with a system of responsible regional control, efforts are shifting toward exploration of the dimensions of a responsible localism (Jacobs 1984).

Thus, the development of MPLIS is directed at local governments in the U.S. because (1) they are the units of governments with the most extensive land records and the most pressing need for effective management of those records, and (2) it is now believed that the dominance of local governments in the area of land planning and policy is likely to continue into the forseeable future. That local governments themselves perceive the need to acquire and utilize MPLIS in some form is evidenced by the increasing number of governments with some type of system (Hysom and Ruth 1984) and the concurrent increase in the number of commercial vendors supplying such systems to local governments.

Politics, Power and Computing

According to Winner (1985) computer enthusiasts (or as he terms them computer romanticists) are overwhelmingly optimistic about the political

impacts of new information processing technology. For example, in the area of political participation where participation rates have continually declined for all aspects of the political process--from membership in neighborhood political organizations to voting in local, state, and national elections--one enthusiast writes "the information revolution is bringing with it a key that may open the door to a new era of involvement and participation" (as quoted in Winner 1985, 23). From very preliminary evidence though, the actual impacts may be much less sanguine.

To understand the likely impacts of MPLIS on politics and power in U.S. local governments, it is first necessary to review the commonly held theories about how such power is acquired, distributed and used. To this it is then necessary to graft hypotheses about the impact of computers. For this latter task and for the evidence about actual impacts I rely heavily upon a study conducted by Danziger et al. (1982).

There are three primary bases for explaining, and thus predicting, political behavior in and around local government units in the U.S. These three paradigms of local political behavior are commonly known as the pluralist, elitist and radical--i.e., Marxian or neomarxian--schools. The difference in their interpretations of local political action, and importantly non-action, focuses largely on the dual issues of who controls local government policy formation, and in whose interest.

The pluralist theory of local politics embodies current conventional wisdom about politics. It posits that in local politics there are a myriad of interest groups seeking to influence the legislature-administrative policy process. These interest groups compete with each other in the legislative-administrative policy marketplace for relative influence on the nature of final policy decisions and non-decisions. The critical element of this paradigm is the assertion about what results from this competitive process. Pluralists

argue that the outcome of interest group competition in the policy arena is (i) a pattern of winning and influence in which no one group consistently dominates--i.e., a somewhat random outcome to which structural variables, such as being the largest or most important interest group, may not consistently insure success, because of factors such as salience of an issue to other interests and those in the legislative-administrative policy area; and (ii) a set of policy decisions which reflect compromise among all interest groups, and which do not always directly reflect the relative strength of the competing groups. This school of political thinking is most prominently put forth in Dahl (1961), and Polsby (1963, 1980). It continues as the basis of the work of many political scientists, being perhaps the most ascribed to position in local political theory.

Of the three paradigms though, pluralism was the second prominent theory, being developed in part in reaction to the dominant theory of the early to middle part of this century, the elitist school. A central figure in this school is the work of Mills (1959). The elitist school acknowledges the existence and competition of interest groups in local politics. However, it is asserted that what comes out of this competition is a process of politics which benefits an identifiable set of political and social elites--such as the ward boss, the banker, the real estate developer or, not uncommonly, their collaborative effort as an interest group (Laswell et al. 1965, Domhoff 1970).

Whether or not the elitist school was the correct explanation for the early to mid part of the twentieth century--the modern industrial period--it did appear that Dahl's work and that which he inspired in the 1960s and 1970s offered strong evidence that community-local politics in the late or post-industrial periods of U.S. development was not strictly elitist. The question that immediately arose, however, was whether it was strictly pluralist. In 1962, immediately following publication of Dahl's book, two political scient-

ists began to contribute to what is now an ever growing set of criticisms about the universality of the pluralist paradigm (Bachrach and Baratz 1962). This third paradigm has been given various titles: progressive, radical, class-dialectical, Marxist.

Like the other two paradigms, this third paradigm acknowledges the existence of competing interest groups, with varying strengths of resources and access among them. However, parting with the pluralists, the radical paradigm suggests that there is a consistent pattern of winning and influence in local politics. Broadly speaking, this pattern sees one class of society consistently having its interests served and reinforced. However, this pattern is not always overt. Political influence can occur not only by winning and directly influencing the structure of a legislative-administrative policy, it can also occur by keeping items from ever appearing on the political agenda, so that there is never an opportunity for debate and influence, or by social-ideological manipulation that even prevents an interest group from organizing or, if organized, from having widespread influence (Lukes 1974).

In the study Computers and Politics, Danziger et al. (1982) take these three general paradigms of community-local politics and state them very specifically in terms of computer use by U.S. local governments. They modify the basic framework by generating two types of elitist theory and, thus, have four paradigms against which they test their data. The labels they give these paradigms are: organizational pluralism, technocratic elitism, managerial rationalism and reinforcement politics.

Organization pluralism is described in much the same way as is pluralism. Various groups will compete for influence. All the groups will have some resources, though these will not be equal. In the competition, no one group will consistently dominate the others. The political system "is essentially fragmented and nonhierarchical. ...no unitary control system (exists),...no

group is either a consistent `winner' or `loser'" (Danziger et al. 1982, 17). Automated information is not seen to be significantly different than other forms of information, and information itself is only one of many resources important to the political process (Ibid, 140).

The technocratic elitist position assumes that organizations are composed of domains of technical experts dealing with complex and technical phenomena. Political power is believed to flow to these experts because of their ability to understand, manipulate and control technical processes. Therefore, it is not legislators and administrative policy personnel who control technology and technical information, but instead the very people generating and utilizing such information. Thus, when computer technology, such as multipurpose land information systems, are introduced, it can be expected that those who understand and use such systems will become powerful over those policy areas to which the systems apply.

Managerial rationalism, the third theoretical perspective, posits that instead of technical elites benefitting from the introduction of computing, it will be the top managers of the organizations. In this paradigm, it is assumed that the goal of the local government organization is to be as rational as possible in its decision-analysis and -making process. From this perspective, computerized information is seen as increasing the potential for rationality of the organization. It is believed that the very availability of large amounts of automated information will lead to greater use of such information, thereby leading to more rational evaluations, assessments and decisions.

The final political perspective offered is reinforcement politics. This perspective asserts that in any given political situation there is a dominant interest or coalition. The introduction of a technology, such as MPLIS, is believed to further reinforce the position of these dominant interests. According to the authors, "computing will <u>reinforce</u> the power and influence of

those actors and groups who already have the most resources and power in the organization" (Danziger et al. 1982, 18).

According to Danziger et al. (1982) the computer literature offers two variations on the elitist theory of local politics. One thrust argues that the managerial rationalist perspective best explains and predicts the adoption and use of computers in American local governments. In contrast, another part of the literature hypothesizes that the technocratic elitist perspective will best explain and predict political events. The authors amalgamate these two to hypothesize that "computing was likely to shift power toward technical experts and top managers in organization" (Ibid, xiii).

How Political is Computing?

Drawing from a national survey of 700 cities and fieldwork in a selected sample of 42 cities, the authors of Computers and Politics seek to test the saliency of the respective paradigms, or perspectives, of politics. Their results are unsettling.

Perhaps the most important general conclusion which is offered is that "computing is a political instrument rather than simply a neutral tool" (Danziger et al. 1982, 130). In fact, the authors go farther than this in their analysis and conclusion when they offer the observation that "computing has been a politically conservative political innovation" (Ibid, 3) (Emphasis added).

These observations, and others, lead the authors to conclude that the perspective of managerial rationalism is not and cannot be a satisfactory explanation of local politics. This perspective is essentially, and especially among the four, apolitical. It assumes that the local political system has lost power to influence technological decisions. Instead decisions are made by neutral bureaucrats/administrators/managers whose only concern is the interests of the organization as a whole.

From among the other three paradigms, the authors next reject their other hypothesized explanation--that of technocratic elitism. According to their data, technological elites have not been particularly successful in gaining new political power as a result of their mastery over automated information technology. Instead, they observe that automated information technology and capability become diversified among units within local governments, and that while certain technocratic elites sometimes gain some power, there is no consistent pattern of gain for this group.

The politics of computing within local governments is thus best explained and predicted on the basis of either organizational pluralism or reinforcement politics. In line with the explanation offered by organizational pluralism, the authors note that the role of automated information appears to increase the number of perceived alternatives and thus further complicate bureaucratic politics: "infusion of data-based evidence can...exacerbate the competitive aspects of bureaucratic politics, producing outcomes desired by none of the players" (Ibid, 165).

While this would appear to offer evidence for organizational pluralism, when the authors examine the totality of their results and analyses, they suggest that reinforcement politics is the paradigm which best explains available evidence. In their words,

> In general, it (information technology) has been shaped by those who directly control it to serve the interests of those who dominate the prevailing structure of influence within the local government. ...computing tends to reinforce not only the prevailing structure of control within local governments, but also the prevailing political and organizational biases of those governments (Ibid, 3).

Danziger et al. (1982) explain the different levels of use for computing by suggesting that computers "tend to be employed where the dominant policy makers are most certain that they can control the access to, the manipulation of and the use of automated information" (Ibid, 20). The class nature of computing is brought out most clearly toward the end of the book when it suggested that computing "is a conservative technology and not an instrument for change and redistribution" (Ibid, 231).

In summary, the authors of Computers and Politics seek to determine which of four perspectives on local politics best explains and predicts political behavior around the issue of computer adoption and use. These four perspectives are derivatives of three fundamental paradigms in the fields of political science and community sociology on local politics. Organizational pluralism supposes that there will be interest group conflict over computers and their use, and that the outcome of a series of fights will be a pattern where no single interest group consistently prevails. Managerial rationalism and technocratic elitism are two variations on the general paradigm of elitism. Respectively, they suggest that either top managers and administrators will capture the political power of computers, to use in the general interest of the local government as a whole, or that computer/information specialists will gain in political influence as a result of their specialized knowledge about the workings of the technology. Reinforcement politics suggests that the outcome of local politics, regardless of what paradigm appears to be operating, i.e., pluralist or elitist, will result in a set of decisions or nondecisions that will act to reinforce the existing biases of the local government and the existing power of those already holding power.

The results of this research are to reject hypotheses about either managerial rationalism or technocratic elitism being the most viable explana-

tion of local political behavior, and to instead put forth reinforcement politics as the perspective best fitting the evidence.

This research conclusion, that the introduction of computing technology reinforces the existing distribution and use of political power instead of acting to redistribute it, concurs with the speculative conclusions offered by both Winner (1985) and Steinhart (1985). These authors do not examine the issue of computing and local governments; instead they look more broadly at the impact of computing on power relationships in society. According to Winner (1985, 24):

> The computer savants correctly notice that computerization alters relationships of social power and control; however, the most obvious beneficiaries of this change are large transnational business corporations. While their "global reach" does not arise solely from the application of information technologies, such organizations are uniquely situated to exploit the new electronic possibilities for greater efficiency, productivity, command and control. Other notable beneficiaries will be public bureaucracies, intelligence agencies, and ever-expanding military organizations.

Likewise, Steinhart (1985) raises concerns about "revolutionary opportunities for exploitation, manipulation and privacy infringement."

The Politics of MPLIS Implementation

Yet, the literature and research on computer use in general, as well as its use by U.S. local governments does not focus on multipurpose land information systems. These systems are relatively new, in fact they are just beginning to emerge. The politics of MPLIS implementation, an implementation process which will likely be widespread within a decade, may follow that identified for other computer use, or it may not. The research at the base of the conclusions offered by Danziger et al. (1982) was conducted nearly a decade

ago. In that time there has been a revolution in micro (personal) computer technology, software, availability and cost; and the trends of easier to use, cheaper and omnipresent computers appears to be continuing.

These changes raise several issues for research on MPLIS implementation. Two of these are outlined below.

Given the changes in computer technology and software in the decade since Danziger et al. (1982) conducted their research and the ever increasing rate of computer use by local governments for MPLIS related functions, a specific study needs to be conducted which replicates Danziger et al. for MPLIS. Who uses MPLIS, for what reasons and with what results? Does use of MPLIS follow the pattern of other types of computer use in local government; do MPLIS allow for a concentration of power among a class of interests in a locality? These and related questions need to be posed. My colleagues and I at the University of Wisconsin-Madison (Chrisman et al. 1984a, Buttenfield et al. 1984) are confident that the future will bring extensive use of MPLIS and aspects of MPLIS by local governments throughout the U.S. for a wide variety of functions. Will this nearly certain implementation of land related information processing technology lead, as Danziger et al. (1982), Winner (1985), and Steinhart (1985) seem to imply, to an Orwellian world of centralized information used for social and political control? At a minimum, it is incumbent upon those of use interested and involved in the development of these systems, and interested for the very best of reasons, to honestly assess patterns and implications of system use.

If, however, this research confirmed our worst fears, and we are convinced of the forthcoming ubiquity of multipurpose land information systems, then we need to formulate and test a democratic theory for MPLIS implementation. Research needs to be done on what would constitute a "democratic MPLIS." What does this mean for the design of a system--i.e., the type of

software used, the accessibility to the data set, and the cost of access? What does democracy mean for the maintenance and evaluation of a system--who should have responsibilities in this regard, with accountability to whom and under what type of charge? (For instance, in Wisconsin, the Department of Natural Resources is monitored by an independent public intervenor's office, in order to assure the Department's environmental mission is fulfilled. Will similar types of institutional arrangements need to be devised to insure democracy in MPLIS implementation?)

The research we do have suggests that efforts to clarify, rationalize and increase the analytic capability of land related offices in local government is most likely to result in the exclusion of ordinary citizens from the management of governmental affairs. Instead, those local political and economic interests that currently control such offices and governments will likely be able to grow stronger and more entrenched through the use of MPLIS. As an alternative of this scenario we need to formulate and test an MPLIS implementation process that at least does not exacerbate pre-existing unequal distributions of power, and perhaps even fulfills the promise of computing, the distribution of access and use of information for more informed and empowered democratic participation.

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