

Role of Law in Impeding and Facilitating the Sharing of Geographic Information

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Abstract

The widespread use and accessibility of geographic data sets in combination with the capabilities provided by other communication technologies are raising numerous public concerns. Among these include the effects of such technologies on personal privacy, access to the information used by government, work product protection laws, legal liability for errors and inadequacies in GIS products and services, and concerns that information infrastructure arrangements will contribute to the widening of socio-economic gaps among members of the social system. As developers and purveyors of a powerful social resource, the GIS discipline needs to identify the consequences of use of the technology and consider those consequences in the light of their general social effects. The policy implications of different geographic information sharing arrangements need to be explored and the legal conditions and constraints that will affect the ability to share geographic data widely among divergent groups of potential users of GIS need to be fully discussed.

Introduction

In considering the social effects of increased accessibility to geographic information, the GIS discipline's goal should be to expose and consider those policies, practices, and technical capabilities which increase the beneficial consequences and decrease the detrimental consequences of geographic information sharing arrangements. Determining what constitutes a beneficial versus a detrimental social effect, however, is a value-laden judgement.

Increased sharing and dissemination of geographic data will be highly valuable in better dealing with a broad range of critical social problems; the adverse effects of overpopulation, the use and stewardship of increasingly scarce resources, and environmental problems from local level to global scales. However, it is also widely accepted that information and the knowledge it brings is a source of power. Those with the most efficient access to accurate information are in a better position to take economic advantage of that information or to promote their political stance on issues than those without such access. Wealth creation in modern society often has more to do with access to and use of information about capital, land resources, and labor than it does with, for instance, the current possession of such resources. Thus, economic power and political power are often viewed as the ultimate stakes in the race to capitalize on efficient information systems.

Because geographic information has potential value to those with effective access to it, this realization gives rise to the desire to exercise ownership rights over the information. Thus, the power which information provides is antipathetic to sharing. In addition, this

desire to control information is in direct tension with recent technological realities which make the copying, dissemination and sharing of information very inexpensive (Brand 1987). As technology improves, this tension will only increase. Further, as databases become more accessible, comprehensive and useful, tensions will increase between the desire to control geographic information for private gain versus the desire to use the information for public benefit.

Sharing of geographic information necessarily presupposes the existence of relationships among individuals, organizations and/or governmental units. As spatial databases are developed which are accessible to others than those who created them, relationships among the involved parties and societal control over the databases will be adjusted through legal mechanisms. That is, the value-judgement on whether a social effect caused by a geographic information sharing arrangement is beneficial or detrimental to society will be made within the framework of our legal system and within the context of the functions and limitations of law.

Role of Law

The law has many functions. Among these include settling disputes, maintaining order, and providing a "...framework within which certain common expectations about the transactions, relationships, planned happenings, and accidents of daily life can be met" (Mermin 1973, p.6). The law also "... (secures) efficiency, harmony, and balance in the functioning of government machinery, ... (protects citizens) against excessive or unfair government power, ... (protects people) against excessive or unfair private power, ... (and ensures people) an opportunity to enjoy the minimum decencies of life." (Ibid, pp. 7-8).

The law also has limits. "(Because) basic socioeconomic conditions and interests have a shaping influence on the law, one cannot expect the law to turn around and completely transcend those conditions and interests" (Ibid, p. 11). The law also "... dare not get too far away from popular attitudes, habits, and ideals...." (Ibid, p. 13). In other instances "...difficulties and risks in the administration of an otherwise desirable right may make the granting of the right more harmful than beneficial" (Ibid, p.42).

These general legal principles seem so basic that perhaps they don't warrant repeating. Yet their restatement helps point out that the GIS community needs to resist altering laws which "stand in our way" until the proposed changes have been evaluated in respect to the law's general functions and limits and the larger social implications of such changes have been exposed and debated. Written laws, legislated or judge-made, reflect policies which are currently supported or, at least, condoned by society. Seldom are laws founded on a single underlying policy. The social policies supported are often complex and intertwined in a delicate balance.

Changing a law to achieve a specific purpose desired by some members of the GIS community may upset the balance among the current social policies supported by the law. The result may be a string of consequences or ramifications wholly unintended and highly undesirable. Yet, it can also be argued that the rapid advancement and diffusion of GIS and other communication technologies have already changed the social condition. Because of these technological changes, a rational balance fails to currently exist and laws must be altered in order to accommodate the new social condition. Regardless, the legal and social ramifications of proposed organizational and technical alternatives for widespread sharing of geographic information should be thoroughly evaluated prior to advocating any change in law to support one or more of those alternatives.

Information is Different

Information has become a dominant resource in society. "Information (organized data, the raw material for specialized knowledge and generalist wisdom) is now our most important, and pervasive, resource. Information workers are now more than half the U.S. labor force" (Cleveland 1985, p.185). Through the application of new information and knowledge we have learned we can gain more for less; more products, productivity, and efficiency for less labor, capital and physical resources.

However, information as a resource possesses characteristics which are inherently very different from the traditional resources of land, labor and capital. As such, laws developed for controlling the exchange of these other resources may not work well (or at all) in attempting to control the flow of information. Some of the unique characteristics of information described by Harlan Cleveland (1985) are paraphrased as follows:

1. *Information is expandable.* It expands as it is used. It is consumed yet not depleted. Its growth is bounded only by the time and capacity "...available to human minds for reflecting, analyzing and integrating the information..."
2. *Information is not resource hungry.* When compared to other products of value in the marketplace, few physical and biological resources are needed to produce and transmit information.
3. *Information is substitutable.* It can and often does replace capital, labor, and physical materials.
4. *Information is transportable.* Unlike other resources, it can travel at the speed of light. Its transport is far less effected by geography than other resources.
5. *Information is diffusive.* "It tends to leak - and the more it leaks the more we have." Business and organization approaches depending on the exclusive control or possession of information are likely to succeed "...only in more and more specialized fields, for shorter and shorter periods of time."
6. *Information is shareable.* "Things" are exchanged but information is shared. Even after you give it away or sell it, you still possess it.

These unique characteristics of information along with its sudden emergence as a valued marketplace resource have caused many of the assumptions and concepts that underly our current laws for regulating resource exchange relationships to be thrown into question. Cleveland goes on to argue that:

"(T)he inherent characteristics of physical resources ("natural" and manmade) made possible the development of hierarchies of power based on control ..., hierarchies of influence based on secrecy, hierarchies of class based on ownership, hierarchies of privilege based on early access to valuable resources, and hierarchies of politics based on geography ." (emphasis added)

Today, because of the dominance of the information resource, "... the old means of control are of dwindling efficacy, secrets are harder and harder to keep, and ownership, early arrival, and geography are of dwindling significance in getting access to the knowledge and wisdom which are the really valuable legal tender of our time." (Cleveland 1985, p.187)

Our legal system is adapting on a daily basis to the changes which the information age is bringing about. For those involved in developing GIS databases and sharing information in them, social issues likely to loom large in the near future include concerns for personal privacy, access to the databases used by government, work product protection (e.g. copyright, patents, licensing, contracts), legal liability for errors and inadequacies in GIS products and services, and concerns that information infrastructure arrangements will

contribute to the widening of socio-economic gaps among members of the social system. In each of these areas, existing laws and restrictions were formulated to uphold policies which society either supports or has chosen to live with. In enabling or promoting more efficient handling and widespread sharing of information we are inviting conflict with the existing framework of laws and the underlying power balance which those laws support.

Legal Incentives and Barriers to the Sharing of Geographic Information

It can be argued that the existence of a particular law has never been an incentive to invent or develop any innovation. One does not develop a GIS database or develop a data sharing arrangement *because* legal protection for that data base or data sharing arrangement is available. The incentives to create and utilize an innovation are typically profit (i.e. which encompasses the incentives to increase efficiencies, decrease costs, etc.) and recognition. Specific laws which prevent us from taking some action in order to gain that profit or recognition are typically viewed as barriers rather than incentives to innovation.

However, the U.S. legal system when viewed as a whole, while not itself an incentive to innovate, provides an environment which allows the incentives of profit and recognition to ripen. In the early stages of developing a technological innovation, the goal of U.S. law generally is protection of innovators and entrepreneurs. Familiar intellectual property law protective devices used at this stage include patent, trade secret, and copyright laws. As an innovation is exploited (i.e. with products being introduced to the marketplace and modified over time), balancing rights in the competitive marketplace gains greater importance. In this later stage, regulatory, commercial and tax laws take on greater roles. As a general rule, innovations which have a marketplace value and are adequately financed and marketed typically have little difficulty in the U.S in overcoming any inconveniences imposed by these laws.

Difficulties arise primarily when actions are proposed which attempt to alter or circumvent rights protected by existing laws. Certainly laws must change in response to current social and technological realities. Changes in the balance of protected rights are inevitable. However, changes in the law should not alter the balance of protected rights so drastically that the legal system's ability to foster incentives for innovation or support social equity are significantly reduced.

It should also be mentioned that if your market for providing digital data to others is secure, you are unlikely to attach much importance to legal protection of your database. If others find it difficult to compete with your database services, with or without the protection, this means you probably don't need more than minimal legal protection. Some of the reasons others may find it difficult to compete with you include the following: you have a highly efficient operation, you possess "know-how" or an established infrastructure that others don't have, you have access to information that others don't, your database services are necessary for purposes internal to your organization anyway and can be made available to others at a very small additional cost, your system is subsidized by taxpayers, or one of many other possible reasons. Perhaps the value of the data you are providing is primarily due to its timeliness or its guarantees of reliability. In such instances, even if others copy the data sets you possess, they still need to be able to compete with your updating capabilities or your ability to guarantee the data.

If the market for your data products and services is insecure, you are much more likely to want to maximize any protection you can gain from the intellectual property laws. Because of the inherent characteristics of information noted previously (including its "leakiness"), maintaining market security in a database, the value of which is not

dependent on its timeliness, may be very difficult. Lack of market security and heavy dependence on intellectual property laws in order to gain economic advantages from a GIS database may foretell preoccupations and disputes over rights in the data in the future.

Construing Open Records Laws as Supportive of Widespread Sharing of Geographic Information

The current debate surrounding open access to government-housed geographic databases provides a ready forum for illustrating several of the issues raised above. Open records laws are often looked upon by local government administrators as barriers to the creation of useful GIS operations. Yet the argument can also be made that such laws, when viewed from a broader context, are critical in providing a legal environment which supports the diffusion of GIS innovations and GIS data sharing generally.

To explore the status quo of open records laws as an incentive to the widespread use and sharing of geographic information and to demonstrate the effects of a change in one area of the law on other areas of the law, consider the following hypothetical scenario:

Local government administrators in several cities in State X are strongly advocating alteration of the sState's open records law in order to exempt GIS data sets from the provisions of that law. The reason for doing this, of course, is that the local government administrators see a potential means of paying for the creation and maintenance of improved land information systems other than through their general tax revenues. In these times of tough budgets, they see an opportunity to generate income through the sale of products and services resulting from their GIS operations. They also believe their income will be considerably reduced in providing these products and services if private firms and private individuals are allowed to copy these publicly financed spatial data sets at the cost of duplication.

Restricting access to public records goes against the plain letter language of most existing State open records law. Those seeking to change such laws must overcome the underlying policy arguments on which the laws are based, foremost of which is that open records laws keep government accountable. In addition, proponents of change will almost certainly encounter other credible policy arguments that favor free and unfettered access to public records.

In evaluating the legal issues which arise, we begin with the presumption that the general social policies currently supported in this and closely related areas of the law will continue to be supported in the future regardless of the impact of contemporary technology. That is, even though the letter of the law may change significantly or exceptions for special situations may be made, the underlying policies which the law was intended to support will continue to be supported, or at least will change at a much slower rate than the written law.

The following proposition and advocacy arguments in support of it are offered in the spirit of raising several public policy issues.

Proposition:

Allowing wholesale duplication of publicly held land records is good for the public welfare.

Arguments:

1. *Government sanctioned monopolies are less efficient than private enterprise.*

After a government department has gained an exclusive right to provide a specific service which generates income, there is little incentive for the government bureaucracy to improve that service. If a monopolistic government service makes a net income for the government, the operation is almost certain to be inefficient. In the land records area, the most obvious example is local registry of deeds offices. In a typical year, most of these offices in the U.S. have income far greater than the total expenses to run their operations (Jeffress 1991). Even in an extremely slow year for real estate transactions they seldom run at a loss. If they do, the simple solution to cover expenses is to raise recording fees rather than increase efficiencies. The captured users have no recourse but to pay. Because of their exclusionary nature and the fact that they almost always make a profit, most of these offices are at least a decade behind the proven technology which would allow them to increase the efficiency of their operations.

By analogy, if administrators of government-housed GIS have an exclusive right to set a price for government gathered data, there is little incentive for them to improve the database and its administration over time or to increase the products and services provided by the GIS. However, if a government program such as a GIS operation is a burden on general tax revenues, it is likely to be more efficient over time because it needs continual justification in the budgeting process.

In the private marketplace, competition promotes efficiency and innovation. That efficiency is passed to consumers which means that all users of the product or service gain. Thus, if twenty local engineering firms wish to copy a local government's GIS data sets en masse in order to better compete with each other in delivering services of value to the public, they should be encouraged to do so. Their need to remain competitive results in overall lower costs and more innovative products and services for the consuming public. Our federal freedom of information act supports this fundamental economic principle; that is, that private enterprise and the private marketplace are more efficient than government. If this policy makes good sense at the federal level, it makes doubly good sense at the state and local levels.

Another argument sometimes made is that since local government has gathered information at taxpayer expense, government officials have a responsibility to hold this information "in trust" for the benefit of all citizens. Allowing commercial enterprises to acquire public data sets at the cost of reproduction would breach this public trust. However, the public trust doctrine is founded primarily on the principle that valuable public resources should be protected from consumption or despoliation by one generation so that those resources remain available for the enjoyment of future generations. Because information may be consumed at will and yet remains available for innumerable others as well as future generations, the argument can be made that the public trust doctrine is simply inapplicable to public information.

2. *Cost recovery arrangements create bureaucratic overhead and legal disincentives to the sharing of geographic information.*

In performing strictly governmental functions, local governments are provided with some measure of protection against liability for their actions through sovereign immunity. However, much of this protection may be lost if the governmental unit goes beyond its traditional public service missions and moves into areas which might be classified as private commercial functions in nature. It is likely that charging "user fees" for "value-added products" (i.e. products not necessary for the performance of government) with the intent of generating income in excess of expenses would be construed by the courts as

making such a GIS operation a private commercial venture in nature. If a private enterprise offers products or services for sale, basic liability principles mandate that some level of acceptable performance in the delivery of services or the quality of products is required. To make clear what its level of performance will be in order to decrease its liability exposure, the local jurisdiction will want to enter into license, contract, or alternative formal arrangements with all those seeking "value-added" products from the GIS operation. In addition, the jurisdiction will likely want to use contracts or licensing to ensure that persons purchasing information products or services won't distribute copies of those records free to other potential customers.

Developing written contractual relationships will create an administrative burden on the department housing the GIS. There are likely to be significant fees for attorneys and consultants in establishing the formal process for dealing with user requests as well as continuing administrative expenses over time. Once a "closed information environment" based on contracts and licensing is established, we can also predict breach of contract law suits and persistent involvement of lawyers in our GIS operations in the future. Lawyers will be necessary to deal with issues such as intellectual property rights, liability, equal treatment, antitrust, undue competition, and similar issues.

Without user fee arrangements, an "open information environment" exists. If citizens want a copy of a GIS record, whether in paper or digital form, they are typically free to have it at the total cost of duplication. The government in effect is saying: "This is a copy of a record we made in the course of doing the government's business. It may or may not have been suitable for some governmental purpose and we make no guarantees, implied or otherwise, that it may be suitable for some purpose you intend." The courts are likely to uphold this traditional position of local governments and support their sovereign immunity. In such an environment, there is little need for contracts in meeting user requests for GIS records.

Even if a local government believes it has the ability to create a restricted GIS information environment, it still needs to question whether a sufficient market really exists for the planned "value-added" products it intends to sell. Is the expected income sufficient to more than offset the increased administrative trouble and expense? Will the markets for products continue over time even with advances in technology such that the GIS operation will continue to produce a significant income?

GIS systems are often justified in local and state governments based on the argument that they will reduce duplication of data collection and will promote sharing among government agencies, different levels of government, the private sector and the general public. The need to enter into contracts negates much of the willingness and practical ability to share and thus eliminates the benefits to be gained by sharing. If public GIS operations build walls made of contracts and licenses around themselves, it is difficult to see how these restrictive arrangements will foster cooperation and sharing with large numbers of citizens or other agencies.

Successful GIS operations in local governments in the U.S. have often been justified solely on cost savings and increased efficiencies and services in carrying out the currently defined statutory missions of that government. If a GIS project is possible and justified without pursuing cost recovery arrangements which go beyond traditional duplication charges, it can be argued that this is by far the preferred alternative. "Cost recovery" and "user fee" arrangements promote an increase in the size of government bureaucracy to produce services and products which are outside of government's role.

The underlying premise of these arguments is that local government agencies should be in the business of collecting and analyzing data only in support of their legislated public missions. If a GIS allows them to carry out these public missions more efficiently or to expand the services they can offer in support of their missions, local governments should by all means take advantage of the capabilities which GIS provide. However, if the implementation of a GIS operational environment in local government is justified only if "value-added" products and services are supplied and sold (i.e. those not necessary for the performance of government), perhaps the technology is not yet ripe for use by the government organization.

3. All other rights in a democratic society extend from our ability to access information. Democracy can't function effectively unless people have ready access to government information in order to keep government accountable.

GIS are being used and will continue to be used in local government to help make permitting decisions, planning decisions, tax assessment decisions, and decisions on where to spend tax dollars. A GIS may be used to determine how a child's school bus is routed, whether and when the street in front of one's home is fixed, and whether one is served by one emergency service rather than another. All of these decisions affect people personally. The right to access information about government is very different from the right to have consumer goods such as water or electricity delivered to our homes. Access to government information involves the basic right to know on what our government is basing its decisions.

We can readily determine whether the flow of electricity or the flow of water has been cut off to our homes. But how do we determine whether the flow of information has been cut off? We don't unless we have the right to inspect the entire body of records upon which the government is making its decisions. The potential for abuse is quite staggering if local government administrators have ulterior and inappropriate reasons for wanting to hold back information. For instance, individual citizens or citizens groups will find it virtually impossible to determine whether computerized gerrymandering has occurred in establishing the bounds of a district or in determining where tax dollars are going to be spent unless they can efficiently gain access to the same data sets. Cost recovery arrangements and contract negotiations over providing access to government housed GIS data sets provide a ready excuse for elected officials or government administrators to delay release of records or hold them back altogether. Because of the need to maintain confidence in our public administrators and elected officials and to avoid accusations that they may be holding back records about which citizens have a right to know, we should not restrict access to GIS data sets gathered at taxpayer expense simply because that information is commercially valuable to the government.

The preceding three arguments are but a sample of the arguments which can be raised in support of open access environments for publicly held geographic information. Note that of the arguments raised, none speaks against expanding access to government databases through on-line services and charging fees to support those services. This presumes, of course, that on-line users are free to duplicate the government housed GIS files. Note also from the discussion above that arguments may be more aptly framed by addressing specific cost recovery arrangements (for example, arguments relative to the creation of an "information utility" as opposed to an in-house local government GIS service).

As stated at the beginning of this section, the intent of presenting the preceding advocacy arguments is to illustrate that maintaining the status quo of open records laws may be argued as supporting the widespread use and sharing of geographic information. Thus, the intent has been to present advocacy arguments but not necessarily to take an advocacy

stance on one side or the other of the "open access" versus "cost recovery" debate. Local governments attempting to cover GIS costs through some mechanism other than general tax revenues should be prepared to address the issues raised above. Counter arguments to those presented do exist and it is up to local jurisdictions to convince themselves of the appropriateness of the policies and practices they choose to pursue in implementing GIS in their locality.

Open access issues are only one set in a series of critical legal issues which need to be debated and reevaluated relative to their underlying social policies and in the light of recent technological advancements. Additional legal areas relevant to GIS data sharing that beg comprehensive review include personal privacy, work product protection for GIS products, services, and databases (e.g. copyright, patents, licensing, contracts), legal liability for errors and inadequacies in those same products and services, and concerns that GIS infrastructure arrangements will contribute to the widening of socio-economic gaps among members of the social system.

Conclusions

If information and the knowledge it brings is power, the more widely information is shared the more diffused will be the power. If the diffusion of economic and political power is considered an admirable social goal, sharing of geographic information would appear inherently to be a good thing.

Yet is sharing of geographic information best promoted by advocating "free access" environments or by constructing legal means of protecting those ownership rights in information which provide economic incentives to its dissemination? Is dissemination of geographic information best promoted by allowing commercial businesses to gather and distribute any information they wish to on us as individuals or will greater social utility and use of GIS data sets be gained by restricting the gathering or disseminating of some forms of personal information? Will greater sharing take place if we increase the reliability of datasets by making their producers and disseminators liable for damages resulting from errors and inadequacies in those data sets or will greater societal sharing take place if *caveat emptor* policies are promulgated in the electronic information legal arena? Do work product protection laws simply need to be added to in order to cover new forms of electronic information or is this new resource so inherently different that the assumptions upon which our work product protection laws have been built need to be reevaluated? What is the best legal environment for promoting the incentives of reward and recognition such that sharing of data will take place, diffusion of information will occur, and reasonably equitable opportunities to take advantage of the information will result?

The question remains whether the GIS discipline as a whole cares to address these broad social issues. As a discipline, we have the option of letting society react as best it can to the technological advancements being made in our field and the application of those advances to the social condition. As a discipline, we might see our primary objective as the technological advancement of GIS capabilities and leave the scholarly and practical consideration of social impacts to others than ourselves. Alternatively, we can take a proactive role - a proactive role in contemplating, discussing, and debating the social and legal ramifications of the GIS databases and processing capabilities being proposed by those inside and outside our discipline. By taking such a role, GIS applications and developments are far more likely to contribute to the elimination of bases for discrimination and unfairness in our culture than to their increase.

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