ROLE OF INFORMATION IN RURAL ECONOMIC DEVELOPMENT:

A LEGISLATIVE PERSPECTIVE

by

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INTRODUCTION

The Center for Rural Pennsylvania is a legislative agency of the Pennsylvania General Assembly. Created in 1987, as part of the Rural Pennsylvania Revitalization Act, the Center serves as a focal point for rural policy development. The Center has three responsibilities: develop rural policy initiatives; provide information on rural issues; and support rural policy research. In addition, the Center maintains an extensive database on Pennsylvania's rural economic, demographic, and social conditions.

Supporting rural policy research is the biggest component of the Center's activities. Through a competitive grants program, the Center funds policy-oriented research. That is, research that produces information the General Assembly can use to help it make policy decisions. In past years, grant research has become the basis for legislative initiatives. Currently, the Center is funding nine university grants in such areas as: assessing the impact of residential development on rural communities, developing a rural cost-of-living index, and ways to improve economic development staff.

As a policy analyst, my job is to provide the General Assembly with information on rural issues. Information and communications are the tools of my trade. They are also the tools used in rural economic development.

This afternoon, I am going to examine information used by legislators in formulating rural economic and community development policies. To do so, I will first look at the sources of information used in formulating policies. Next, I will examine the uses and abuses of information in modeling policies. And finally, I will explore ways to make information more useful. The purpose of this behind-the-scenes look is to show that information plays a role in formulating government developmental policies.

Before we begin, however, I would like to expand the scope of this paper by combining economic development with community development. Traditionally, economic development was the domain of industry and business, while community development was something governments did. However, as the 1980s have painfully shown, there is no clear dichotomy between business and government. Both are mutually dependent. And both work best as partners. In Pennsylvania, the Ben Franklin Partnership Program has become a national model of government successfully promoting advanced technologies to make traditional industries more competitive and to help develop new technology businesses. Consequently, economic and community development are mutually important for rural communities, which for too long have lacked both.

SOURCES OF INFORMATION

One day when in the library I ran across a master's essay entitled, "The Impact of Photocopiers on the State General Assembly." Written in the late 1960s before photocopiers were common, the essay predicted that photocopiers would reduce partisan animosity and produce better legislation by enabling information to be quickly disseminated.

Photocopiers, computers, faxes, and other technological hardware have certainly increased the speed and availability of information. Today, a rural legislator can sit in his or her district office and receive detailed analysis on any bill or policy decision without having to travel to the capitol. Despite our high-tech ability to communicate, instant information has done little to reduce partisan rivalry or produce good policy decisions. Therefore, when looking at the role of information in policy-making, it is best to look at the message, not the messenger.

Legislators can receive information on economic and community development from one of five sources: legislative, executive, local governments, academic, and nongovernment. Yet, as we will see, there is a great deal of overlap between each of these groups.

Legislative

As we all know, most states have three separate, but equal, branches of government: legislative, executive, and judicial. Each produces its own information. However, the abilities of the executive branch to collect and analyze information often overshadows the other two branches. So, as not to be in the dark, many state assemblies have set up their own informational units. Structurally, these units are to be independent sources of information used to evaluate the governor's proposals. The Library of Congress was, in part, created to fulfill this function at the national level.

Generally, legislative informational units fall into one of three groups: committees and joint committees, research and informational offices, and legislative agencies. In many capitols, committees and joint committees are among the most influential sources of information. Usually staffed by experts in their field, their job is to formulate, investigate, and when necessary, amend legislation. The information supplied by these agencies is the synthesis of public hearings and summaries of executive and academic research. Because of time pressure, committee staffers rarely have the opportunity to collect primary data.

The number of committees can range from over 85 in Missouri and New York to 14 in Nebraska with its one House. The average is 34 per state, with 15 in the Senate and 19 in the House. Thirteen state assemblies have a committee to examine urban affairs. But, only seven states have rural affairs committees. In most instances, rural issues are lumped together under the agricultural affairs committee.

In some states, research and informational offices operate as a political arm of their caucus. Their function is to keep the public informed on legislative matters and to help formulate new policy initiatives. In most instances, these offices are staffed by generalists with roladexes the size of basketballs. Like committees, the information supplied by research and informational offices highlight the policy implications of executive, academic, and nongovernmental research. These offices also examine what other states are doing and whether or not their programs can be used as models. The most important role for research and informational offices, however, is getting new ideas on paper and getting the news out. Pennsylvania, New York, and Minnesota have the largest number of caucus research/informational offices. Over half the states have no such offices.

There are four general categories of legislative agencies: legal, administration, oversight, and research. The first two agencies focus on legislative housekeeping issues. That is, keeping track of statutes and code revisions, computer services, office supplies, etc. Oversight agencies do performance and fiscal evaluations of executive branch agencies. These audits are used to weed out corruption and ensure laws are being faithfully executed. Research agencies, like the Rural Center, examine policy issues in greater detail and make legislative recommendations. With a longer time frame than committee and caucus research offices, research agencies often contract projects to colleges and universities. Minnesota, Michigan, and Pennsylvania have the most legislative agencies. Eleven states have only one agency. The information supplied by these agencies can play an important role in setting the policy agenda and analyzing the issues.

Executive

The executive branch is at once an information cornucopia and a statistical labyrinth. Often mandated by law, executive agencies collect information on almost everything: from unemployment rates to birth weight; miles of sewage pipelines to the number of high school dropouts. At the federal level, the Census Bureau is, of course, the granddaddy of all informational sources. Despite the seemingly overabundance of information, getting the data you need can be challenging. With numerous agencies, finding the right office requires detective work. It also requires persistence. In many cases, your telephone call can be transferred at least a dozen times.

As an information source, executive agencies generally supply two types of information, numerical data and reports. The numerical data is just that, page after page of numbers on everything from employment to hospital beds. Fortunately, many agencies are beginning to provide the data on computer disks that can be easily downloaded into any computer. The availability of data on floppy disks overcomes one of the biggest hurdles in data analysis—inputting.

Although often voluminous, the reports published by executive agencies are useful for understanding the mechanics of a program or issue. They are also useful for assessing trends and as indicators of future executive initiatives. Along with empirical information, executive agencies also supply normative information. Through hearings and informal discussions, executive officials will communicate to legislators the problems of their agency's constituents and highlight solutions. Because politics is an interpersonal enterprise, such communications are often more important than data and reports.

Within any agency, information used in legislative decisions can come from any one of a dozen sources. Rarely is access restricted. The most common source, however, is the secretary's officer or the legislative liaison. Another important source of information are state data centers. In 70 percent of the fifty states, the lead data center is an executive agency. Ten percent of the state data centers are housed within the state library, the rest are located at universities.

Local Governments

Local governments can be an invaluable source of information to state policymakers. In many states, local officials are directly responsible for implementing programs. Also they have more direct contact with citizens than state officials. Consequently, when making policy decisions, local government officials are called upon to provide two types of information: implementation feasibility and level of grassroots support.

In large states, like Pennsylvania, statewide programs can be difficult to implement. For example, a program designed to help the urban homeless may be unworkable in a rural county. Local officials are often in the best position to judge the feasibility of such programs. Moreover, they provide information of the probable cost of the program and its likelihood of success. Similarly, a local official is often the first person residents call with a problem. This direct contact enables them to identify the need for new programs or problems with existing programs. It also enables them to judge where the greatest need is in their community. In rural communities, the input of local officials is especially important. Unlike urban areas that have a wide diversity of groups to support citizens' interests, rural residents often lack spokespersons. Local officials help give rural residents a voice in policy decisions.

Academic

In each state, colleges and universities are one of the greatest information depositories. With experts in almost every subject, these institutions have made valuable contributions to their state's policy research and formulation. As an informational source, colleges and university supply three types of information: consultation, basic research, and general information.

The consultation services provided by colleges and universities can range from advice on economic modeling to historical analysis. Consultants are used in the technical analysis of an issue. In addition to their expertise, consultants are called upon as independent sources of information. Legislators request college and universities to perform basic research in both the social and physical sciences. This information, for example, can be used to evaluate new management techniques or experimental road surfacing materials before they are implemented. In most instances, the basic research directly funded by general assemblies focuses on application rather than theory. Finally, colleges and universities supply policymakers with general information. Often this information comes from the schools' libraries. It is used to fill in the gaps. In most cases, it is accessed through informal phone calls to professors. In the Pennsylvania House of Representatives, this relationship has been formalized through a special liaison office and the state-owned and state-related universities.

Nongovernment

Nonggovernment sources of information are as important to policymakers as governmental sources. These sources represent alternative methods, special concerns, and competing ideas. Ignoring these informational sources would make for poor policies. As we will see shortly, information plays a vital role in building a consensus, both inside and outside government. There are, of course, many nongovernment actors that can supply information for making policy decisions. To save time, however, we will limit ourselves to just two: lobbyists and the media.

The role of a lobbyist is to influence policy decisions. Although the public views lobbyists with suspicion for advocating narrow interests, lobbyists provide reasoned opinions, information, and technical assistance to policymakers. This information, of course, represents the views of the organization the lobbyist is representing. Such views can be extremely useful when deciding policies that affect a particular group of people. Moveover, lobbyists enable a diverse organization to speak with one voice such as the township supervisors, rural school districts, rural utilities, etc.

Sometimes called the fourth branch of government, the media is an informational institution. The media plays an important role in identifying issues and pressuring policymakers to take action. However, one of the unique roles of the media is information dissemination. In the Pennsylvania General Assembly, each of the four caucuses puts together a daily packet of statewide newspaper clippings. These clippings enable both members and staffers to quickly gauge state opinions on a variety of policy issues. In addition, the media provides policymakers with an easily accessed forum from which to explain their actions.

INFORMATIONAL SHORTCOMINGS

Despite the many sources of information there are a number of informational shortcomings which plague all policy decisions. Some of these include information availability; time constraints; methodological considerations; and use of the "wrong" information. The first two of these shortcomings deal with informational access; the second two, with the information itself.

Information Availability

Information is not free. Someone has to define what is to be collected and how to collect it. Then the information must be collected, processed, analyzed, distributed, and finally stored. Because this process requires money, no government or private organization can collect all the information available on a subject. The shortage becomes all too apparent when it is needed to make policy decisions. For example, a recent Rural Center request was to develop an alternative formula for hospital medical assistance reimbursements. One of the major stumbling blocks was cost-of-living adjustments. Urban hospitals wanted one rate while rural hospitals wanted another. Each group claimed to have higher costs than the other. To confuse matters, the federal government's cost-of-living index is only collected for major urban areas and statewide. There is no rural cost-of-living index. The information was unavailable. Fortunately, the Center was able to convince committee members to accept a different criteria of unemployment and per capita income— data which was readily available. To make a long story short, the Rural Center's next research proposal targeted the creation of a rural cost-of-living index. Therefore, while information may seem abundant, it is not always the "right stuff."

Time Constraints

The Constitution requires a census to be collected every ten years. The information collected by the Census Bureau provides a very useful window from which to view changes in American society. Unfortunately, ten years is a long time to wait. Last year, while the Census data was being collected, the Rural Center, along with other agencies, was forced to rely on projections, estimations, and old data to describe rural conditions. Except for historical analysis, information, especially statistical data, has a very short shelf life. Consequently, one of the most serious problems in accessing information is its timeliness. No one wants outdated information, and no one likes to wait for new information to be released. As a result, agencies like the Rural Center are forced to rely on update sheets to keep policymakers informed.

Methodological Considerations

How was the information collected? How was it analyzed? What implicit assumptions were made? These are the types of questions that give analysts like myself sleepless nights. Understanding how information is collected and analyzed is important to avoid making wrong assumptions and wrong conclusions. This is especially critical when examining cause-and-effect relationships. Some lesser, but equally important, methodological considerations include how the information is being presented. It is amazing in the age of computer spreadsheets and $5 calculators how many data tables do not add up to their reported total. It is equally amazing how many variables are mislabeled and how many charts and figures are irrelevant to the subject being discussed. A word of advice: when asking someone why their columns don't add up, be very careful. Some people take their data very personally.

Using "Wrong" Information

Information comes in many forms. As a result, it is easy to use the wrong yardstick. When examining rural conditions, there are many measures that can be used such as unemployment rates, hospital beds per 1,000, number of daycare centers, etc. Each of these were designed to measure one thing. However, when formulating policies, single measures are forced to be surrogates for other conditions. For example, the number of hospital beds is frequently used to gauge county health care and unemployment as a yardstick to measure economic vitality. At best, such measures are only cloudy indicators of larger conditions. Moreover, these types of measures rarely address the quality of services or conditions. Having more daycare centers does not mean they are being managed properly or even efficiently. As a result, care should be taken in selecting social indicators.

USING INFORMATION IN POLICY DECISIONS

So far, we have examined some of the sources of information used by policymakers. We now need to go one step further and explore how legislators use information. From a policy making perspective, information has three overlapping roles: identifying new opportunities, analysis, and consensus building. Each of these roles are cumulative and cyclical. And, as we will see, each role utilizes information in a different context.

Identifying New Opportunities

Among policymakers, it is recognized that there are many problems facing society. Similarly, it is recognized that their are many solutions to these problems. The trick is to match the right problem with the right solution. Information can help by identifying new matches or new opportunities. Identifying new opportunities is one of the first steps in designing a rural policy. Information has two roles in this process: identifying needs/problems and identifying goals.

Identifying Needs/Problems

Rural residents face a host of needs and problems. Some of these are local or even private in nature, while others are state and national in scope. Identifying exactly what these needs and problems are as well as their root causes is an important first step in finding the right solution. Although such information can be gathered in a number of ways, the most common is through a needs assessment. A needs assessment is a detailed evaluation of a community's or region's resources. This assessment can be used to determine whether existing programs are meeting specific needs in areas like housing, transportation, health care, etc. Or, the assessment can be used to inventory issues rural residents want government to resolve.

In addition to a needs assessment, there are other ways to identify needs and problems. For example, public hearings can be a useful tool for gathering information. If held around the state, such hearings enable individuals and organizations to forcefully impress upon policymakers their area's needs and problems. A less intrusive way to identify issues is through data analysis. By carefully comparing indices, researchers can locate communities that are far below the state average, but have been overlooked by state policymakers.

As a policy tool, the information gathered through needs assessment and other methods is extremely useful for identifying problems and for measuring their severity. In addition, this information is useful for bringing the issue(s) to the attention of others— both inside and outside government. This is called getting an issue onto the policy agenda. In many state houses, rural concerns often take a backseat to those in urban areas. Finally, needs assessment can be used to justify budget allocations and priorities.

Identifying Goals

Although most government programs are design to resolve a specific problem, they also are used to address larger social and political goals. Piggybacking programs to larger goals is important for giving a program direction after its initial objectives are met. It is also an important indicator of program success or failure. For rural residents, program goals are useful for knowing up-front what the government is trying to do and why. This information is useful for communities putting together an action plan.

At the conception stage of a policy or program, information plays a key role in identifying goals. After problems or needs have been recognized, it is not always clear what exactly should be done. For example, in rural areas afflicted with high unemployment, should the government's goal be to persuade traditional manufacturers to reopen their factory gates with various incentives? Or should the state encourage new high-tech or service firms to locate in the region? Or should anything be done at all? These basic questions need to be decided before policies can be formulated. If not, it is more than likely that well-intentioned programs will end up with conflicting goals.

Information can help identify policy goals in one of three ways: first, it can identify the policy's target group(s). In some cases, the target group is self-evident, like teenage mothers or seniors on fixed incomes. In other cases, it is more general and vague, like consumers or manufacturers. Information can be used to locate and define groups with the greatest need. Studies have shown that the more specific the target group, the more successful the policy. Second, information can be used to decide policy outputs. That is, what will the policy end product look like? Will cash vouchers be used or counselling by social workers? Information is necessary for deciding what tools should be used in solving the problems. Finally, in order to link the new policy with existing policies and programs, information on those policies and programs is needed.

Information helps answer the questions How will this policy fit into the overall picture?; Is it redundant of other government policies?; and Does it conflict with other government goals? In our federalist system, state policymakers are especially cautious of these issues in order to ensure that state policies do not conflict with federal or local government initiatives.

Analysis

Up to this point, information is used to identify problems and goals. The next step is applying information to find solutions. In a legislative context, application means analysis. Information plays two roles in the analytical process: formulation of policy options and strategies; and second, outlining consequences of government actions. Each of these roles uses information to further define solutions to rural problems.

Brainstorming Solutions

Again, once the problem and goals have been identified, the next step is to determine how to implement a policy or program. This is no small task. Among the many decisions that need to be made are the selection of an implementing agency, funding patterns, and start-up time. Moreover, decisions must be made on how the program will work. Information plays a creative role in this process by identifying options.

Most state legislators punt when it comes to the nitty-gritty of how to implement a program. Instead, they outline the program goals, describe how it is to work, and then designate an executive agency to fill in the details. Deciding how a program is supposed to work has been the cause of more than one floor debate. However, in the early stages of the policy process, these decisions usually begin as a list of options. These options can range from the ridiculous to the sublime. They can also be partisan standard-bearers. The first use of information is to make a list of the possible ways to implement the program.

The sources of information used in this process varies. Some officials examine what different states are doing, while others review pertinent literature for theories and ideas, while still others evaluate previous programs to find out what worked and didn't work. The next use of information is to develop a criteria by which to narrow the options. This criteria usually involves political, financial, ethical, and other considerations. The weight each element receives is not always objective. Policies concerning hazardous waste sites, for example, are typically measured against a heavier political and environmental criteria than say a legal or economic development criteria. The end result of this process is a list of two or three workable policy options.

Outlining Policy Consequences

No problem exits in a vacuum. For every policy solution there is a reaction. Often these reactions can be extremely negative as witnessed in many states with wetland policies. In an effort to protect valuable wetland, farmers and developers have been unable to use the land to earn a living. Understanding policy consequences is important for avoiding unwanted consequences or negative spillovers. It is, of course, impossible to map out all the consequences of a policy. However, with information and analysis, the most glaring deficiencies can be removed in one of two ways: public input and analysis.

Legislators often seek public input into policies in order to measure in their constituency's reaction to a policy proposal. This input can come in many forms. The most formal are hearings. At a hearing, testimony is taken from groups both pro and con. There is also opportunity for these groups to ask questions and to convince legislators of the importance of their point. Although costly and time-consuming, hearings provide a forum for citizens and organizations to voice their concerns. Next to hearings is lobbying. There are many ways to lobby elected officials. Organizations and associations typically employ professional "legislative liaisons." Their job is to keep the organization and its members informed of policy changes and to influence policy decisions. Again, these are rarely cigar chomping, backslapping individuals. Instead, they are usually professionals that provide reasoned opinions and technical assistance to policymakers. In some cases, these lobbyists are former legislative staffers. Unorganized groups can also lobby effectively. By meeting individually with legislators or through protest rallies, these groups can have an impact on policy decisions. An important point to remember is that policy-making involves compromise. Rarely is it a zero-sum game.

A less visible, but equally important, method of identifying and weighing the consequences of legislation is bill analysis. Such analysis can involve cost-benefit analysis, computer modeling, or other types of scientific inquiry. And because policymakers are not technocrats, there is also the analysis of political repercussions. Both types of analyses are important for outlining the consequences of a policy proposal. The information gleaned from this process is extremely useful in the next phase— consensus building.

Consensus Building

One of the most important roles of information in policy-making is consensus building. A consensus is necessary in order to ensure cooperation and agreement among policymakers. It is also needed to enact policy and programs. Yet, as we all know, achieving a consensus is never easy. On rural issues it can be exceedingly difficult. In the Pennsylvania House, for example, about 28 percent of members represent rural districts. Getting these lawmakers to agree to a common policy strategy is difficult enough, let alone getting the rest of the House to go along. There are a number of ways information and communications can be used to build a consensus. The most common method is to create a cooperative environment.

Creating a Cooperative Environment

With different groups having different agendas, rural policy can become a political football. Information can de-emphasize the political aspect of the debate by identifying areas of cooperation. Rural needs and problems are often exactly the same as those of highly urbanized areas. Many rural Pennsylvania counties, for example, suffer the same crime rates, illiteracy, teenage-pregnancies per capita as does the city of Philadelphia on a per capita basis. The only difference is that urban issues tend to be more obvious because of their visibility. Information can be used to point out the similarities between urban and rural areas. By stressing the similarities rather than the differences, cooperation can be achieved.

Cooperation can also be encouraged by using information to support common ideas or objectives. While some groups are naturally antagonistic, they may share common values or goals. Republicans and Democrats disagree on many issues. However, they do agree on some things like, increasing federal aid, expanding employment opportunities, and providing good education. These areas of cooperation usually involve outside resources or programs that cost little or nothing. Providing information on these "win-win" situations can be extremely useful in building cooperation.

Information does not always guarantee that the best policy will be selected. Selecting a policy involves persuasion, influence, and compromise. Information, however, can take the edge off and make selection a cooperative effort. By using such methods, far more can be accomplished.

MAKING INFORMATION MORE USEFUL

To conclude my remarks, I would like to leave with you some tips on making information more valuable to policymakers. There are a number of ways to increase the value of information. From my experience, most of them emphasize the way the information is communicated, rather than the information itself. Therefore, when presenting information to policymakers, there are three rules I follow:

Individualizing Information

Each day, legislators receive mountains of reports, studies, and updates. The likelihood that any of it is read is directly proportional to size of the document and to whether or not the policymaker is familiar with you or your organization. By individualizing information, your chances increase that the report will at least get skimmed. Individualizing information requires preparation. It requires knowing who the policymaker's constituents are and what are his or her interests.

Most legislators have two types of constituencies. The first and most important are the district voters. Locating these constituents only requires a legislative map. A comparison between district voters and statewide or national trends is usually enough to grab the attention of most legislators. The second type of constituent can be a little more difficult to pinpoint. It is comprised of agencies, organizations, and citizens who are stakeholders in issues the policymaker is interested in. For example, in the area of telecommunications, some of the constituents would include the telephone companies, state regulatory agencies, tele-link businesses, telephone customers, etc. There are a number of ways to identify these secondary constituents. The easiest is to look at the committee assignments. Normally, policymakers are assigned to committees that focus on their interest. Another way is to examine the type of legislation he or she introduces and who it will affect. However, the best way to identify a policymaker's interest is a face-to-face meeting. The purpose of individualizing information is to ensure the material you are presenting is relevant to the policymaker.

Keep It Simple

One of the truisms of government is that thick reports go unread. Rarely does size or weight of the information matter. What does matter is whether or not the facts or ideas can be easily understood and used to address policy issues. Consequently, information should be presented to policymakers in an eye-catching, easy-to-read format.

Desktop publishing has made information presentation easy and fun. With dozens of graphic programs available, small agencies like the Rural Center have been able to increase their outreach and visibility. It has also enabled us to quickly individualize letters and reports with data about a member's district. While computers can enhance any document, there are a number of rules to follow: first, make graphs as simple as possible. Also make sure all variables are labeled. Second, make sure the text is easy-to-read. Ideally, it should be on an eighth-grade reading level. Third, always enclose an executive summary page that highlights the main point. And fourth, don't overload the reader with data. Attaching column after column of numbers will do little to enhance your argument if no one reads it. In short, when providing data to policymakers remember that, "simple is best." Although you might feel like you are providing sound bites, the policymaker can always call you for more information.

MAKING INFORMATION ACCESSIBLE

One of the best ways to make the information you collected valuable is to make it accessible. Access is important for giving policymakers and others the information necessary to make informed decisions. There are a number of ways to make information accessible. At the high-tech end, there are electronic bulletin boards where data and other information can be accessed and downloaded through a computer modem. A low-cost approach is to encourage policymakers to call for information. At the Rural Center, most of the information requests are taken over the telephone. This personal contact enables us to better identify the types of information they need. Also, if the information is unavailable, the request allows us to explain why and to determine whether a research project is required.

Information access is a two-way street. In addition to policymakers coming to you for information, you can go to them. Information can be used to push policymakers to take up issues deemed important for rural areas. Similarly, the same information can be used to inform others outside of government concerning issues facing rural residents. The Rural Center has worked closely with outside groups to inform them on rural issues and to help identify new opportunities. When taking information to policymakers or others, care is needed to maintain organizational legitimacy. In a partisan political environment, it is may be necessary to say no.

CONCLUSION

Despite what the newspapers say, policy-making is not all political. Information does play a vital role in identifying needs and goals. It is also necessary for analyzing solutions and outlining consequences. Finally, information is needed to build consensus. Information used in policy-making comes from many sources. Some of the more notable include legislative committees and agencies, executive agencies, local officials, academics, and nongovernment organizations. The information they provide, however, is not without its shortcomings. A few of these shortcomings include availability, time constraints, and other methodological considerations.

From a rural perspective, information has a dual role. First, it is used to inform policymakers rural residents have many unmet needs. Second, it is used to identify new opportunities to build a better rural future. While information has its limits, it is the most useful tool available. Indeed, as Don Dillman pointed out, "throughout this century, information has been used to encourage the substitution of energy and natural resources for labor. Now information is being substituted for all three."

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