

RUSSELL SHANK
University Librarian and Professor
University of California at Los Angeles

Management, Information and the Organization: Homily from the Experience of the Data Rich but Information Poor

Calvin Mooers's Law has long been one of my favorites. I often use it as an excuse for irrational behavior in library management. Over twenty years ago, Calvin Mooers commented: "An information retrieval system will tend *not* to be used whenever it is more painful and troublesome for a customer to have information than for him not to have it."¹

Mooers was involved with information storage and retrieval systems in science, but his words are just as appropriate for management information systems (MIS). The problem with having information in Mooer's view is that you can't just let it sit there if it indicates that something must be done. If that something is hard to do or involves difficult social consequences (such as disrupting the faculty's habits of library use, or the student's timing of meeting his date), it will only cause ulcers, sleepless nights or unemployment if you don't make the adjustment. Of course there is one way to avoid all of the trouble, and that is not to have the information in the first place.

If Mooers's Law is right, then managers and administrators should reject management information systems. Yet here one is, deliberating positively on the future of such systems presumably enhanced to new levels of capabilities by the computer. Well, I suppose that's all right, for in spite of Mooers's Law or anything I might say, human nature makes one inquisitive so that counting things and arraying the tally in various displays comes with his genes.

But Mooers's Law alone is not sufficient. I have discovered Russell's inference: "If there are two things to be counted, that which is the easiest will cost the most to tally." Then there is Shank's syndrome: "If you count one of two things the boss will want the other." This is followed closely by

the invariable derivation: "That which the boss wants is the most ambiguous to define, the most expensive to count, but the most relevant to him." And we have the petulant ukase: Never wait for the information—do it now and then gather data to prove you had the right idea but the "system" subverted the purity of your solution and for irrelevant reasons. Or the invariable proposition: The sum of the columns is never equal to the sum of the footings. Or the perfect postulate: Don't just stand there—count!

Why do we collect data which can be turned into management information? Well, there can be many reasons:

1. The data *might* be worth something. The choice of tasks among several alternatives for the use of one's time, assuming that the utility of the alternatives is the same, might be clearly indicated by the data which shows how much resource would be required to perform each task.
2. We collect some data to sustain tradition. For fifty years research libraries have been reporting the size of their holdings and it has now become a ritual to contribute to the ARL census. Some await the report eagerly which year by year shows them bobbing up and down amongst their peers in a variety of measurable elements. About the best I can say of it is that it might sustain some ego gratification. Unless one is a Harvard graduate there is always something to aim at. Or one can take pleasure—or not—about the company he's in.
3. Some collecting is done just because the data is there. It is human nature to sort things into piles, and to wander idly over the field counting things as one goes.
4. Some data is collected so as to avoid embarrassment. Someone might ask questions about the operations which can best be answered with numbers. What manager would be considered qualified for the job if he or she couldn't tell how much of anything goes into or comes out of the operation. There is, of course, a certain peace of mind which is derived from collecting data, even if no one ever asks about it. At least one has data which can be used in press releases.
5. There is, of course, the great public demand for accountability. Since most of the public does not have the faith any more to believe the litanies of those who spend public money, they need data to explain the use of public money. We may snow them with numbers, but at least the appearance of precision on our part will give the appearance that we think we know what we are doing—and we're doing it for them!
6. Sometimes data is collected in order to create tables and reports to overwhelm the administration. Perhaps this is just another form of accountability. But busy administrators don't need more information (which by the way might be accurate and painful to deal with). What one actually finds is that less and less data is forwarded through the organization

since less and less is read or heeded. From one standpoint, therefore, the function of an organization seems to be to suppress data. What is often lacking is a distinction between data which contains information to control processes at the local level, and data which explains the reason for, or the need for, decisions on resource allocation to the next level. The same data does not always provide the foundation for the extraction of information needed at each level. Hence the need to stratify the management information system to match the management levels in an organization. This would tend to make the notion of a standard set of data to be gathered for the whole organization irrational. Furthermore, the higher one goes in an organization, the more difficult it is to predict what issues have to be handled, hence the more difficult it is to predict management's need for information.

7. Data is collected so that those who give it—those who are doing the work—think that managers know what's going on and care. There are many signals which can be given after they get the data which will sustain this impression. Part of the art of management is giving signals.
8. Data is collected because we cannot lose by doing it. Institutions assess no penalties on departments—including management information departments—for collecting too much data. Data gathering is seldom priced, hence the evaluation of management information systems is seldom based on the economics of running the systems. Management requires data which it assumes can be gathered easily in the course of doing the tasks being counted, and that takes us back to the human nature theory of data gathering.

Just as there is no penalty for collecting too much data, there is no premium on brevity of data collection. Information management departments or systems are not judged on the basis of the value of the decisions which could be based on the information in the data they gather. Managers further up in the hierarchy are judged on the quality of their decisions, which could *possibly* be based on information from a management information system, but which does not necessarily need to be. The whole system seems to be put into place as a perpetual motion machine all too often installed without there being any analysis of what to do with the data.

Now for any and all of these reasons, and probably more, we collect and report data. But a typical administrative characteristic seems to be the appearance of ignoring irrefutable information derived from good data. This is particularly true in the political arena. There the black and white of logic is overwhelmed by back scratching and other heuristic devices. Most of our political and some of our administrative behavior seems to be based on a sample of one—preferably apocryphal—incident.

If we are so good why is our data rejected up the line? My inventory of reasons is long and sound, based on many years both as a producer of data about operations, and as a manager whose primary functions seems to be finding reasons why managers, administrators and politicians reject data. This may occur because:

1. It is not clear what, if anything, can be done about whatever the data purports to show. Here I have reworded Mooers's Law. Management information will be rejected to the extent that it indicates that something has to be done. Fewer managers have been fired for doing *nothing* than for trying *something*.
2. Rejection may occur because the data is not trusted. One way to reject a whole report is to find one error in it. This error can be used to discredit the whole report. Then the difficult decision can be avoided with impugntity.
3. Rejection may occur if it is not clear if the data indicates something good or something bad. Clear data, and good information, does little to clarify ambiguous social conditions.
4. A corollary to the previous pronouncement is that data is rejected because those who present it do not have the theatrical skills required to convince the hierarchy that it means anything.
5. Data is rejected because the recipient of the information is inclined to see "the other side" of the issue. This is the side for which one did not gather data. This is particularly true of social and political issues. The use of this technique is one of the signs of the successful politician or administrator.
6. Rejection may occur because the recipient has his own MIS which produces contrary data, or provides grounds for alternate inferences. This produces enough ambiguity so that the manager or politician can display the wisdom of quick, seat-of-the-pants judgment. If the person has been successful to date (that's why he or she is in the management position), he or she will probably be right again.
7. Data is rejected because there is no way to match the data from different but related departments or situations. This moves us again into the arena of ambiguity and the need for a carefully designed, stratified management information system.
8. Data rejection occurs because there is a lack of understanding along the way as to what data and information will sustain decisions about the value of services. This is either the result of a manager's inability to direct the enterprise by thinking of scenarios for a possible future, or a lack of empathy for the manager's problems by those down the line. Lack of empathy may short-circuit as many upwardly mobile people as it does the data they provide.

Perhaps I can be a bit more sanguine about management information systems with the involvement of computers. Obviously if data storage and retrieval is the name of the game, computers are ideally suited to this function. They can tally and summarize and they can work fast. If the summaries can be made hierarchical, just like the organization, then computers can take over the screening (or data suppression) function but with a difference. With a computer and the right software, the manager can get not only his or her own compressed summary data, but at any time go into the file and see anyone's data should the fancy strike him.

But I worry. Data system operators tell me that the cost of storage is coming down rapidly—has been for years. What this means is that it will not cost so much on a unit basis to store the garbage; so for the money, we can store more. But all that we will then have is cheaper garbage.

Computers have still another advantage. They can count the transactions as they work on them. No longer does someone have to tally the number of circulation cards at the end of the day, or the orders sent out, or the number of items processed. Programmed correctly, the computer will do the counting as it goes. Just look at the number on the bottom line. If nothing else, this is a labor saver.

To me the chief advantage of the computer, though, is that it can economically work on the "what if" questions. These are the ones that managers like to ask, but usually cannot get answered because there is no way to test all of the variables in order to substantiate answers without operating on the patient (the library or its users) without an anesthetic.

The "what if" questions I am thinking of are operational. Administrators may ponder notions such as: What if we closed seven of the branches two hours earlier each day, paid the staff to travel to a regional installation for the remaining time, beefed up the reference staff for half the hours lost, and added 25 percent to the budget of the book delivery system? What would be the differential cost (excess or saved), and what would be the effect on service (given some reasonable measures of service output of the library)? This is not the kind of question that can be answered with assurance. The hot, highly successful managers might be able to handle it. After all, they are hot and highly successful because they have the intuition, the experience, or the ability to make their analyses sound good, which leads them to answer questions while dodging issues.

But in the main they tread gingerly—take one step at a time—try to find those things which can be done relatively cheaply, and which do not involve an intolerable sunk cost. If we have to retreat we at least want to do it gracefully and cheaply.

The computer could handle all of the data for the mix of options we would like to test *if only*. And here is the crux of the issue of making the computer a real management ally. One could do it best *if only* he had good

models of the library as an operating organism, and lots of data about the units of operation in the system. Then he could run libraries as models with different variables, look at paper outputs and do it all without disturbing current operations. Then one could make decisions—if he had confidence and a lot of courage. Intuition and experience might still be the *sine qua non* of the administrator, but now the data output by the management information system would be in the context of the management questions.

Modeling and collecting a large volume of operational data would then make some sense. The work of people such as Hamburg, Kantor and King are steps in this direction. So is that of those who have done the many user studies. But their work only provides proofs of the utility of the process. They show the way to analyze problems and to count data. What we need to do now is to build models of library operations. And the data to be inserted in them must be specific to the library being analyzed. But beware of the monster we might create. According to the *Wall Street Journal* the major computer centers in the United States produced over 240 billion pages of printout in 1980—about 1000 pages for every man, woman and child. This number could grow to 10,000 pages per person by 1985 at the rate we are going.²

Wildavsky said that: "Alas, access to data does not automatically convert itself into information. Inference and interpretation are required."³ This is where administrative talent (whether based on intuition or experience) must come to the fore. It cannot be replaced by the computer. It could even be stymied by receiving thousands of pages, or even thousands of lines, of data. Even computer graphics which coordinate and display data in compact and different ways might not help. Some users are visually illiterate. Here it may be well to note an even deeper issue. Not only is there widespread visual illiteracy, but also there may be an even greater antipathy—if not illiteracy—to mathematics. If computers lead to an increase in quantitative reports we might expect an even greater rejection of the output of MIS by administrators and politicians. Unless we can improve peoples' ability in general to handle numbers, the rejection syndrome is likely to be reinforced.

Areas for concern when the computer is brought into MIS abound. While the data storage costs per bit are coming down rapidly, Parkinson's Law prevails. Data will expand to fill storage space—and the total cost of the system will go up both because it costs a lot to collect all of the data that can be stored, and because the actual cost of the storage mechanism goes up even though it densely packs in a lot more data with each machine generation.

Both the power of the computer and the cost of using it might force us at last to pay the kind of attention to management information systems and

problems that has been notably lacking in our profession. We are extremely cost conscious in every other aspect of library work. We establish budgets for various phases of our operations. We seldom do it, however, for management information systems. Budgets for management information ought to be developed, and done so on the basis of the utility of the information the systems can extract and give out. Or perhaps managers should be given information budgets—either in terms of cash they can transfer to the management information system, or cash they can give for information, or in terms of the time they are allowed to spend examining data and information. (In a way, most administrators have a time budget. Some management information systems output is rejected simply because managers are enervated by merely seeing a pile of printout and wondering where they will get the time to look at it.)

At last we may have the impetus to place heavier emphasis on the education of managers to analyze and state issues in terms which will suggest their information needs. And perhaps we can even learn to evaluate administrators and managers for their ability to state issues and to make inferences based on sound information derived from reliable and sensible data. In this realm we are asking people to live symbolically. George Miller of Princeton warns that: "More and more people will become useless if they cannot live at the symbolic level."⁴ The success of computer modeling, therefore, might well be proportional to the ability to live symbolically.

We must, of course, recognize that the high technology of computers does not mean that they are infallible. That is—and this ought to be obvious from what I have said so far—people, not computers, solve problems. Neat columns, multi-inverted matrices, accurate tallies, quick eating and consolidation of lots of data are not substitutes for intuition and inference.

In case you missed it, here's where I have been. As a manager I am not overwhelmingly enthusiastic about the utility of management information systems—up to now. I am skeptical about why we count, and I am not certain we can see the way to use information derived from the data. We have created reasons—or perhaps just allowed human nature to take its course—to reject data. The computer, however, might finally get us nearer Nirvana in the management information arena. A big task for the profession is to find ways to let the computer stimulate the organization under different circumstances. Then maybe the manager's knowledge and intuition will be supported with something more than faith.

But there is still work to do. The computer has to be fed and kept on the right track. We could fail. I think of the story of the two men who were cast adrift in a life boat in the cold North Atlantic Ocean. Just as they were

about to take their last breaths, one looked up and said: "Praise the Lord, we're saved. Here comes the Titanic."

ACKNOWLEDGMENT

I am indebted to Aaron Wildavsky (UC Berkeley) whose views on management information have been eloquently expressed in many places, but particularly in his unpublished paper "Information as an Organizational Problem."

REFERENCES

1. Mooers, Calvin N. "Mooers' Law, or Why Some Retrieval Systems are Used and Others are Not." *American Documentation* 11(July 1960):ii.
2. Needle, David. "Managers Face a New Problem: An Information Glut." *Infoworld* 4(1 March 1982):17.
3. Wildavsky, Aaron. "Information as an Organizational Problem." Paper presented at a colloquium sponsored by Public Not-for-Profit Management and Computers and Information Systems Curriculum Areas, Graduate School of Management, 9 Oct. 1981, UCLA.
4. Miller, George *quoted in* Fiske, Edward B. "Schools Enter the Computer Age: An Analysis." *New York Times*, 25 April 1982, p. 38.