Librarians and Information Technology: Which is the Tail and Which is the Dog?

HERBERT S. WHITE

ABSTRACT

THIS ARTICLE WILL ARGUE, PERHAPS IN CONTRADICTION to the discussions which precede it, that providing end users with more information does not really address their problems and, in fact, does not even identify them. Users want information in order to do other things, and this means that they must not only have the best information, but also not have it buried in quantities of other information which may be wrong but are more likely to be irrelevant and thereby misleading. Most importantly, our users need some assurance that what they found is the best that could be found. Dealing with these concerns does not require access to more information, it requires a process to sift the chaff from the wheat. Computer programs used by the end user cannot do this, but computer use by qualified information intermediaries on behalf of, and to protect, the end user can. This growth of specialists has been consistent for any field in which both complexity and options have increased, and the suggestion that computers can be programmed to do their own self-filtering effectively is at best naïve. Peter Drucker has predicted that the most important profession in the next century will be knowledge workers, and knowledge workers are not the same as computer systems specialists. The most competent ones are likely to be reference librarians using sophisticated hardware and software, tools which the end user does not know how to use.

This entire issue of *Library Trends* deals with knowledge discovery or data mining, a relatively sophisticated application of electronic databases. However, most database use is not sophisticated, particularly through CD-

Herbert S. White, 330 E. El Viento, Green Valley, AZ 85614
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ROM and the Internet. This puts databases increasingly into the hands of people who are ill-equipped to search them, but who do not necessarily know how ill-equipped they are. Unfortunately, the impression has been created that *anyone* can find not only the right information but also the "best" information by simply sitting down at a computer terminal. Librarians have unfortunately promoted and encouraged these misconceptions by their own insistence that end users search for themselves and to stop bothering the "busy" librarians. In this exercise, end users may or may not find the "correct" information, but they may also find huge quantities of information which are, for them, irrelevant or misleading. End users will then use whatever they found without ever knowing because we refuse to use our expertise to help them. Based on my own experience over the past half century in dealing with a wide range of information problems and services, I will use this article to point out the problems inherent in such simplistic and abdicative approaches.

I made the decision to become a librarian during my junior undergraduate year as a chemistry major in 1948. Part of the reason was my growing awareness that I probably faced very little of a future as a chemist except by working in a laboratory, and I didn't really want to do that for the rest of my career. The other reason came from the growing realization that neither chemistry students nor chemistry professors really knew how to find information in a university library. They would find "something" and make do with that. Whether they had found the best information or all of the correct information they would never know, although they would never admit that they had not found everything they should have found. Students were occasionally caught in that deception, faculty never were. All research reported from the literature was claimed to be complete, and that claim was simply accepted as true. At the time, I knew virtually nothing about librarianship, except for the observation that most librarians were humanists and had not the vaguest idea what chemists were talking about, but that they discouraged such conversations in any case. Researchers "were supposed to" find their own information. If faculty, but particularly students, were helped in anything but the most simplistic directional assistance, we were simply encouraging sloth. While I did not really know what librarians did, because I don't ever recall using my high school library, I was blessedly unencumbered by that ignorance. I only knew what I felt librarians should do, at least for chemists, although I learned quickly that it also applies to other fields. Librarians could and should find the correct information to meet the specific needs of each patron, in part because these individuals were untrained and incapable of finding it for themselves, but primarily because they would rarely if ever admit that shortcoming. Students sometimes get caught in providing incomplete and erroneous information, particularly if the instructor only assigns what he or she already knows. Working professionals are rarely

caught in that deception, and the higher their level of prestige and importance, the safer they became. Indeed, if what they claimed to have found from their "research" was totally unintelligible to others, their claim to brilliance was safest of all.

I had no way of knowing then how correct my totally unsupported hypotheses were but, in the almost half century since becoming a librarian, almost equally divided between operational management and administration in the area of scientific information and the academic pursuits of academic research, teaching, and administration, I have learned the truth of my assumptions many times over. What has surprised me, and continues to surprise me, is the passionate unwillingness of many, if not most, librarians to assist the foundering (even if unconfessed) client to find what is really needed to meet an information need. Thus librarians who could carve out, particularly in an age of computerization, that which geometrically magnifies the amount of information (both useful and useless for the individual need), the crucial role of what I call information lifeguards and Peter Drucker calls knowledge workers, stubbornly refuse to do so. They prefer to handle administrative and clerical details, to build "gateways" to knowledge, and in any case never to intrude into the researcher's right to founder, thereby leaving us with the "rights," as one researcher invited to speak at a sponsored library conference suggested, to build boutiques of information and, when necessary, sweep the floors (Rockwell, 1997). This is certainly not any sort of professional agenda which a real profession, as described by Andrew Abbott (1988), would select for itself. There will be more about Abbott's premise and our failure to seek a road other than an insistently clerical one later in this article. For the moment, it will suffice to note only that this strange reluctance to take professional responsibility for what we presumably know perhaps uniquely, but certainly better than our clients, serves neither them nor us. It is a philosophy wrapped in the professionally self-deprecating "give 'em what they want," and I have suggested to medical librarians that our practice of simply showing clients to terminals and explaining how to use them without any attempt to determine how well they did in meeting their own needs amounted in their field to an encouragement of self-medication. It was the equivalent of saying to patients "Here is the pharmacy. Help yourself to whatever you want."

I learned very quickly, as a sci-tech librarian at the Library of Congress, the Atomic Energy Commission, and the aerospace industry, and well before my introduction to information technology by coming to work for IBM and later NASA nine years into my professional experience, that the scientific literature grew even more rapidly than I had assumed. Statements that each day enough scientific articles were written to fill several complete sets of the Encyclopaedia Brittanica may have been inaccurate or even apocryphal but, even if they were close, they confirmed the

impossibility that any individual, but particularly individuals who sought necessary information for the purpose, not of its own virtue but to be able to do something else with it, a process which would also require time, was doomed to fail. On a more specific note, I recall that, during my own vice presidency at the Institute for Scientific Information in the early 1970s, this company annually announced and described 200,000 new organic compounds, and that wasn't even all of them, only the most important ones. The literature growth in other fields may not have been as dramatic but, in any case, the "ease" of accessing information on computer terminals with which all now live has re-magnified this problem. Technology, whether in databases, listservs, or e-mail, brags about the large quantities of information we now receive. Whether or not it is good information is our problem as end users and, of course a growing problem as technology becomes "more efficient" in quantifying our access. Could librarians help here? Has it occurred to them to offer? Drucker has noted that, in his view, the most important profession after the start of the new millennium will be knowledge workers. Who are these people going to be? Drucker does not specify, but might they perhaps be the information lifeguards I call reference librarians? Or do they all have to have MIS degrees?

I am indebted to my long term colleague Herbert Brinberg (1986) for a cogent and simple definition of why different groups of people need and want information, at least in a professional setting. Chat rooms, playing solitaire online, and browsing for pedophilic and pornographic literature does not count, at least within the context of this article. Brinberg argued that basic pure researchers wanted only raw materials which they would then sift for themselves. Applied researchers and operational workers wanted specific answers to detailed questions. Upper level managers needed to know what their decision options were, and the implications of these options. Brinberg noted, quite correctly, that these different users required approaches suited to the individual need and not some overall policy. Some clients want only minimal help, others would happily turn the entire problem over to a librarian, if it is a librarian they trust. Twenty years in corporate information work has taught me that.

Librarians tend to treat all clients as though they were basic researchers, who only want to be pointed at information sources, although this is particularly true in academic libraries. However, even in the most prestigious institutions, there is very little basic research going on. This has been noted by such diverse sources as the *Chronicle of Higher Education* and humanist scholar/librarian Charles Osburn. My own confirmation comes from the Institute for Scientific Information's publication of "Who is Publishing in Science" (WIPIS). During the years (1970-1974) when I was connected with this publication, fully half of the authors cited for publishing in the literature wrote only one publication and never again. Even when they wrote more than one, it might well be the well-known process

of extending one particular piece of research (such as a dissertation) into as many satellite articles as possible.

However, even if we prefer to deny the premise, well supported as it is, that only a few faculty members do a great deal of research and publishing, a great many others, particularly after they achieve tenure, do very little or none at all. However, even this research tends to become applied research, in the social sciences and humanities as well as the physical sciences, particularly because of the increasing influence of government grants and contracts. Such work is applied precisely because it seeks to "prove" what the funding application postulated. Disproving your own hypothesis might be honest, but it would endanger the chances for additional funding. Most research is then decidedly applied because it seeks to accomplish two things: (1) validate the hopes expressed in the funding application, and (2) demonstrate the need for additional funding. Most "research," including academic research, does not seek raw materials. It seeks "proof" for what we already "know" to be true. The finding of contrary information, whether by the researcher or a librarian, is not always accepted graciously. As noted earlier, we can not only pretend that we found all of the needed information, but also that the conflicting data we did find was not found at all. This is not intended to be cynical, only an accurate observation. In all of my years in the corporate and academic sectors, I know of no scheduled policy or decision making meeting which was ever postponed because the literature review was incomplete. We have what we have by the deadline, and whatever that is we claim to be enough.

If librarians fail to serve applied researchers within the framework in which they work, they tend not to serve the administrators who seek to know what their options are at all, and we must remember that not only in industry but also in universities there are powerful administrators who long ago stopped doing research, if indeed they ever did research, but who in any case make policy decisions which affect the status and operation of libraries and librarians. Why librarians adopt stances and policies which are so consistently counter-productive is outside the scope of expertise of this writer and perhaps belongs instead in the field of psychology.

One thing we have long observed about any information system users is that they want what they want, and they object to having this cluttered by what they do not want. Not all of them, of course, and it is observation that suggests that no library reference service policy is ever totally appropriate. Different people want to be served in different ways, and the good thing is that, if we ask them how they want to be served, they will tell us, although that only works if we don't edict policies which label those who really want to be helped as either selfish or lazy. If that occurs, they will perhaps do the work themselves or more likely abdicate it to an assistant or secretary, or most likely pretend they didn't really need to know. That option is still open to them, as indeed it was in 1948.

However, one thing we should understand, because it is confirmed by operations research studies, is that individuals find the ideal information file to be the one that contains everything they want and nothing else. Faculty members who remove library books they might want to use again to that most relevant of all small files, their own offices, understand this instinctively. Since it is not usually possible to create an ideal world in which we have everything we want and nothing else, individuals react differently to the dilemma. In the 1960s, when I managed one of the earliest selective dissemination of information (SDI) systems for 600 NASA scientists, engineers, and contractors, we found that some individuals happily tolerated lots of "garbage" to make sure they received everything they really needed. Others, who already felt they received too much, bridled at even one notification which they considered as outside their area of interest. We fine tuned profiles to meet these ranges of individual preferences. That phenomenon of individual difference in preference exists today, even as librarians, and to some extent information technologists, insist that one size fits all as we buy information off the rack.

If individuals who work for a living and need information in order to do something with it have not changed, then of course what has changed has been the growth of a technology which brings more information directly to people more easily and more rapidly. It can even be argued that the provision is also more economical. What is not more economical is the human process of sifting out the chaff from the wheat, no matter how many clever software programs are developed. If this sifting is to take place, who should do it? The more greatly stressed, untrained, and probably more highly paid end user? Or one of Drucker's specially prepared, and often more lowly paid (at least in the case of librarians), knowledge workers or information intermediaries?

We can see an increasing reliance on intermediary specialists in many fields, if not in this one. Many of us recall the days when individuals spent Saturday afternoons working on their cars, including carburetor adjustments. Improvements in automotive technology, obviously for our own benefit, now make this impossible, although it is argued that the inconvenience of having to take our cars in for diagnosis and service is far outweighed by the advantage of having better performing cars. We have also seen this increase in specialization in fields such as medicine and dentistry. My regular dentist recently sent me to an endodontist for needed root canal work because he did not specialize in endodontistry. That individual, finding he was unable to save the tooth, sent me to yet another specialist for the extraction. We can certainly recall when one dentist would have done all the needed procedures.

The examples of automotive mechanics and dentistry are only two of what is really a wide range of examples which could be cited to demonstrate the growth of service specialist professions throughout the economy

to allow us to take advantage of the greater opportunities and options which more complex technology, in all areas, now affords us. As opportunities become greater and procedures more complex, we rely increasingly on specialists, and economists confirm that the service sector—the people who do for us what we are now either incapable of doing or unwilling to do is the most rapidly growing field not only in the United States but in the developed world. That the particularly emphatic changes, growth, and complexity in the information sector should have given rise to a swelling cadre of what Drucker calls knowledge workers, and what I prefer to call information intermediaries or simply reference librarians, seems completely obvious. Indeed, it was obvious to Drucker, and his prediction may yet turn out to be completely true. The growth of management information systems (MIS) as an academic discipline is just one example of this phenomenon. However, what is disturbing, at least to me, is that the emphasis here is not on adapting machines to people, it is rather adapting people to machines. The extent to which this has now become the operational mantra of what once were called our library education programs may simply confirm not that the philistines are at the gate, but that they are in charge of our institutions. Certainly the emergence of a new class of educators in our fields, who not only have no idea of what libraries are and do, but who also see no need to learn, tends to confirm this fear.

Why has the development of highly paid specialists who help the general public deal with new options, opportunities, and complexities, completely bypassed this field? How is it possible that, as both the quantity and the importance of information grow at a rapid rate, the number of reference librarians in academia, government, and industry declines (Abbott, 1988). It occurs to me that there are at least three reasons. The first is the fact, first noted by me in 1948 and since repeatedly confirmed, that information ignorance does not need to be admitted and is usually not admitted. Whatever we have is "enough." How, indeed, could we admit that we don't know anything? As a consultant in the assessment of corporate libraries and information centers, I have found quite a few which were inadequate, some whose librarians realized they were inadequate, but none whose users felt their library service was bad. What complaints they utter concern collection access, but even these criticisms are muted. The reason is obvious. If I am doing a good job, and deserving of promotion, salary increases, and grant funding, I must first state confidently that I am doing well and that somehow I know everything I need to know. The process is not as simple in automotive repair and dentistry, because a car which still does not run, or a tooth which still hurts denies the premise that everything is fine. Since end users and upper management either genuinely do not know or at least refuse to acknowledge how inadequately information processes serve them, it is incumbent that the people who presumably do know, the professional

librarians, make the point not of how wonderful libraries are but rather of how inadequate they are and how good they could be. That librarians suicidally never made this point is, however, a part of my third reason and will have to wait.

The second reason comes from the incessant propaganda with which the developers and sellers of computer systems, both hardware and software, constantly bombard us. These messages tend to fall into three categories: (1) using technology is easy, (2) using technology is fun, and (3) using technology saves both time and money. This article will only cite one example of each of the first two because, thus prompted, the reader can certainly find his or her own. The best example for me of the argument that the use of technology is easy comes from a frequently aired television commercial for America Online. In it a young man urges his friend to come with him to a basketball game. The friend declines. He cannot go because he has to order airplane tickets, he must send a birthday present to his mother, and because his child needs to go to the library to locate information on dinosaurs. The friend reassures him that this is all "easy" with America Online and, as we watch in admiration and fascination, the tickets are ordered, flowers are dispatched to his mother, and the printer disgorges pages of encyclopedia information about dinosaurs. What the child is supposed to learn from all of this is not clear, but it is assumed the viewer will not notice.

The second example of the point that using computers is "fun" is best demonstrated for me in a commercial for Hewlett Packard, which demonstrates ingenuity which I consider very effective. We are ushered into the plush office of a very busy executive through the use of an unobtrusive camera. We know he is an executive because the office is so large and tastefully furnished; we know he is busy because it is late at night and he is still hard at work on his Hewlett Packard computer. He rejects our interruption by stating that he is very busy and has no time. Suddenly he moans in anguish. When asked solicitously what has gone wrong, he replies that he has hooked his tee shot into the lake. We all know, and managers have learned, that computer terminals behind a closed door are a potential for doing work and also for wasting time and playing games. Hewlett Packard would be foolish not to stress this second feature, because it probably sells at least as many computers. I am not criticizing either company here for doing what obviously is intended to sell computers. That is their primary responsibility to their stockholders. The problem is not only that these advertisers have a lot of money (I haven't even mentioned Microsoft), but primarily that there is no counter-strategy by those most negatively affected, librarians.

The third argument, that the use of computers saves money, is of course nonsense, and even IBM had stopped stressing this advantage way back when I worked there in the early 1960s. It is both foolish and

unnecessary to claim that computer technology is cheaper, when it is far easier and far more important to demonstrate that the proper use of technology (and even some of the improper use) is cost effective. However, it is wrong to make straight cost comparisons, because this would be a comparison between apples and oranges. Indeed, the use of technology is clearly potentially cost effective in libraries, primarily because it allows that far more effective work be done. However, we must deal not only with the additional hardware and software costs, we must also deal with additional professional staffing costs to use the advanced technological opportunities more effectively. That is why I now have the "privilege" of paying three dentists instead of one. It is good for my dental health. I am certain that corporate, government, and academic administrators really understand this as well, but perhaps I am wrong. Certainly librarians have made no attempt to make a point which should be easy to make—access to more information by more highly paid people who don't really know what they are doing costs more. Obviously.

The mystique that somehow having computers is enough to assure success in information and in education is perhaps best exemplified by the present federal argument, expressed by Vice President Albert Gore, that the solution to our educational problems is making sure that all school children have computers. Presumably not librarians, because they are not necessary. Learning to use computers is both "easy" and "fun."

All of which brings me finally to the third reason. I have always understood, in many years working with information technology, that vendors prefer end user searching to librarian searching. End users have more money, there are more of them, and because they search more sloppily they will spend more. I do not resent this strategy because it makes sense—for them. However, silent acquiescence makes no sense for us.

The great problem for this profession is the lack of any sort of professional philosophy about what libraries are and what librarians do. The issues are no longer discussed in our professional literature, and our library education programs have moved away from any consideration of institutional management. Instead, we have become survivors trying to cope under a barrage of budget cuts which never consider the implications of those budget cuts simply because nobody makes upper management face them. As an adjunct professor at the University of Arizona School of Information Resources and Library Science, I now teach a course in planning and evaluation precisely because I am painfully aware that, to an overwhelming extent, librarians do not plan. Instead, they react to what others have already decided about the future of the library. Planning, by contrast, is an early process of pointing out to upper management the alternative implications of various decision options before those decisions are made. Librarians have largely abdicated any confidence that they understand what they ought to be doing far better than anyone

else, the essence of any professional discipline. Thus, the Baltimore County Public Library motto of "give 'em what they want" rather pathetically sums up the vision of many librarians. It is not "give 'em what they need" or even "make 'em aware of what they could have and should have."

Nor do libraries really evaluate. Instead, they rig questionnaires which only ask people already in the library, and therefore an obviously biased constituency, how they "like" their library. As compared to what? The responses may be predictable, but they are also not only useless but dangerous when we recall Drucker's injunction that the essence of management communication is exception reporting—what ought to be happening but is not happening.

There are three distinct roles that libraries can play, and the later named ones are far more important and offer far more potential than the earlier ones. The first is the library's role in recreation. It is the easiest to explain and to justify, and it is indeed the role, particularly for public libraries, that our clients most easily identify. It is also, of course, the most trivial and becomes the most dangerous during the budget review procedures which have become standard in all management operations. These reviews force the ranking of priorities, and recreational activities (parks, libraries) can never compete against the priorities of police protection, road repair, and public health. When libraries are judged in this environment, the evaluation usually comes out as "of course we favor good libraries, but. . .". In the context of the information world, this sometimes comes out as "of course information is important, but what has this to do with libraries?"

The second role, in education, is the one which probably the majority of librarians embrace. In this context, we don't so much answer questions as teach students to answer their own questions. It is certainly a different approach from that practiced by plumbers and mechanics who are not likely to teach us how to fix our own leaks and transmissions. However admirable one might consider this role as an objective, it cannot succeed as long as the "other" educators, be they teachers or professors, fail to acknowledge us as partners of equal importance.

This trivialization of our educational role can be easily seen, on the one hand, in the willingness of teacher unions to sacrifice librarians to retain teaching slots. On the other hand, we must recognize the failure to grant (as at institutions like Harvard) faculty status to librarians, and the constant pressure to take both faculty status and tenure away from librarians. That pressure sometimes comes from administrators, but I have failed to see it ferociously opposed by the American Association of University Professors (AAUP). Finally, the failure of our "fellow" educators to accept us as full brothers and sisters can be observed in the traditional low, almost invisible, status of library programs and particularly library research within the federal Department of Education and the research-oriented

Institute for Education. Educators have now neatly finessed this problem by transferring library programs to the Institute of Museums and Libraries, again with us in the junior positional listing and under the directorship of museum experts. And yet nobody in this profession, in its leadership, and in its professional publications finds this objectionable, let alone intolerable.

The third role, that of information intermediaries, is clearly the one which, in this age of growing information output, growing information access, and therefore growing information confusion, poses the greatest potential for this field, as Drucker recognized in his stressing of the importance of knowledge workers. However, acceptance of role number three causes a potential direct conflict with role number two, that of educators. In role number three we do not teach end users to solve complex problems without us, even as that educational exercise is at best problematical because we do not know whether such users whom we have turned loose in the information ocean ever find what they need—no I did not say want. WANT is, particularly for the unprepared, as irrelevant here as it is in medicine. In accepting our roles as information intermediaries, we seek rather to make our clients dependent on our unique expertise. To place this into the context of a profession's responsibility and sense of expertise, I will now return to the writings of Andrew Abbott (1988), briefly mentioned at the beginning of this article, and his definition of a profession. Professions, Abbott argues, have the unique responsibility of addressing human problems amenable to expert service, and I interject only to note the words *problems* and *expert.* Abbott continues that professionals compete vigorously for existing and newly emerging problem jurisdictions, and that they strive to expand those jurisdictions by preempting the activities of other professions.

The reader can certainly understand what sort of expanding jurisdiction, as well as amenable problem areas, computerized access to information represents, and it should be equally obvious what the other fields are at whose expense we should be expanding our jurisdictions. That the growth of computer-based information access not only provides opportunities but also changes the ground rules is certainly clear today. Indeed, it has been clear for thirty-five years.

In 1964, in what can be argued to have been the very beginning of the technological information age, my friend and mentor, Mortimer Taube (1964), the president of Documentation Incorporated, noted that the development of the MARC system by the Library of Congress, and its reliance on what is now seen as rudimentary but was still exciting technology, allowed librarians to rethink and completely restructure their cataloging rules, particularly with regard to subject analysis. That analysis, Taube noted, was constrained by the economic problems of having to file 3" x 5" catalog cards, and this limited subject analysis to the perfunctory level of

perhaps one or two broad subject headings. Even the computer technology available in 1964 removed that limitation and allowed for analysis in far greater detail. Taube expressed the concern that the library profession would fail to see this opportunity and simply devise techniques for computerizing the Anglo-American Cataloguing Rules. And that, of course, is exactly what we did do.

However, by far the greatest opportunities thirty-five years later lie in the expanded role for reference librarians to claim for themselves Abbott's territorial role in doing what others should not do and, more importantly, could not do. That we have failed to seize this opportunity is most evident in the decline in the number of reference librarians, even as we are deluged by reports of growing information files, growing information needs, and growing information complexity. Justifying additional reference librarians as the most cost-effective strategy for dealing with this issue should be relatively simple. However, we continue to see the strategy of National Library of Medicine administrators of teaching medical practitioners to search for their own information online, even as we are also told that the development of Health Maintenance Organizations (HMOs) increasingly turns the doctor into an overworked production employee with neither time nor energy for undertaking information searches at the end of a fourteen hour working day. Since medical librarians are both much cheaper and better trained for information searches, the solution should be obvious, yet no one sees and no one clamors for it.

In the absence of management courses in our library education programs, in the lack of professional discussion concerning our management strategies, and in the absence of research literature on this topic, it is difficult to understand why librarians insist on following a suicidal policy of shifting professional duties from their own desks to terminals to those of the end user, while they retain the routine activities which make them look like clerks. And yet they do. In reviewing grant funding proposals for the Institute of Museums and Libraries, I found numerous requests for additional money with which to purchase hardware and software for our end users. There were no proposals for funds to purchase tools to be used exclusively by librarians, to give them skills end users could never possess, and to make them more important. These are not disciples of Andrew Abbott.

Just as Peter Drucker predicts, the growth in the role of information intermediaries or knowledge workers is certain, even as the part which librarians will play is not nearly as certain. Once we get past our fascination with teaching children to play computer games on the premise that playing on computers is somehow more virtuous than playing soccer or basketball, and once we understand that having adults waste time on computers playing solitaire, surfing the Net aimlessly, or downloading

anything for any reason or for no reason is more educational than watching soap operas on television, we will be left with the information needs of people who work for a living, and who need information in order to do this work. Herbert Brinberg (1986) has given us a clear indication of who these people are.

In addressing information needs of end users, there are two things we need to keep in mind. The first is that here, as in any other segment of society, we delegate what we can delegate, and save for ourselves only what we must do ourselves. The development of terminals in executive offices has not reduced the number of administrative assistants, precisely because having more assistants at our beck and call makes us more powerful. The second is that ignorance does not need to be admitted. Complete knowledge will be claimed whenever an admission to the contrary gets in the way of the primary objective.

For end users to delegate to information intermediaries, there are still two additional requirements. The first is that the user must trust the intermediary. Trust cannot be simply claimed, it must be earned. However, once it is earned, it is freely and openly given. Good reference librarians, whom clients insist on using even if they have to wait until they come on duty, understand this and appreciate this, and their bosses should also understand that clients usually know who the good librarians are. The second requirement is one of convenience. Clients want to be helped on their schedule and not the institution's. However, technology can be very helpful here. American Express learned long ago the virtue of establishing an 800 number telephone staff twenty-four hours per day. Whoever answers the phone has complete access to your file and can help you. The Social Security Administration has learned the same thing. Its 800 number is staffed from 8 A.M. on the East Coast until 6 P.M. in Hawaii. You never get the same person twice, but it doesn't matter. The person who answers the phone is well trained, has complete access to your file and organizational policies, and can either put you on hold or call you back while he or she seeks either clarification or approval from a higher level of management. Is this possible for an online reference service? Of course it is!

Given acceptable options, clients will treat the increasing opportunities and options in information access exactly the same way they treat increased complexity in automotive repair and financial investment decisions. We delegate to a specialist whom we trust, and who will work within our time frame. A high level executive made the point quite clearly. He was delighted at the improvements in air transportation, which now allowed him to fly far more rapidly without the delay of refueling in a luxuriously appointed corporate jet. However, that did not prompt him to learn how to fly—not as long as he could hire a qualified pilot.

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