Technological Innovation, Diffusion and Resistance: An Historical Perspective

Sara F. Fine

The technological revolution has been a complex experience for librarians, bringing with it great leaps forward and moments fraught with problems. Even during the days of its bright beginnings, the application of technology to libraries had its advocates and its detractors, its high priests and its prophets of doom, its accepters and its resisters. There are few today who would question the value of the changes that technology has brought to the delivery of information by libraries, but there are few who would deny that the technological revolution has also produced problems, disappointments and disillusionments. Perhaps it is in the very nature of revolutions that they are complicated experiences for their players.

Like other professions undergoing technological change, librarians have discovered several truths—that time projections are often unrealistic, systems don't always come up on demand, and efficiency drops lower and stays down longer than they had anticipated. It has become a truism that planning for technological change must account for glitches and slowdowns. Unanticipated technical problems no longer come as a surprise.

But librarians and administrators have also discovered another truth—that no matter how much benefit a proposed change will bring to the organization, no matter how meticulous the planning

Sara F. Fine is Professor, School of Library and Information Science, University of Pittsburgh, Pittsburgh, PA.

Journal of Library Administration, Vol. 7(1), Spring 1986

strategy, some individual will resist the change, either through active aggression or passive retreat. Some organizations will fall into apathy or confusion or conflict as they engage in the painful process of reshaping and restructuring.

Libraries were among the first public instititions to recognize the potential of technology for the management of information and to begin to experiment with its use. But it was not until the mid-seventies that the full impact of technological change really began to be felt, when librarians stopped asking Will we? or Should we? or Can we? The questions became When? and How? and How much? and How soon? The age of technology in libraries had arrived, and with it came its inevitable companion—resistance to technological change. It is ten years later, and the resistance phenomenon continues to baffle us, confounding our plans and impeding our progress. As we struggle within our organizations to avoid or minimize its effects, and as we move toward the time when we must bring our end users into direct interaction with the terminal, it is well that we study the resistance phenomenon, recall its history, delve into its sources, recognize its value and understand its influence.

The purpose of this article is to present an historical overview of librarians' reactions to technological change and to review the development of theories and the formulation of strategies that provide the basis for our current understanding of the change process. While it is essential that we acquire the technical expertise to make sound technological decisions, it is equally important that we understand the evolution of principles of human behavior that are at issue as individuals, organizations and societies move more rapidly into the age of technological progress.

While the technological mechanisms for making today's libraries responsive to today's societal demands are already available, the psychological defense mechanisms of the human beings who will be affected by these innovations are *also* already available. Human beings tend to resist change, even when change represents growth and development; human organizations tend to resist change and its turmoil, even when it represents greater efficiency and productivity. Changes in an organization affect the individuals within that organization, and individuals—consciously or unconsciously—in turn have the power to facilitate or thwart the implementation of an innovation.

The library and information profession has paid little attention to the psychological meaning of technological change for its practitioners. Library literature is replete with reports of new technologies and new applications, new promises and new problems. But

there is a dearth of research concerning the psychological impact of these changes on the librarian, the intermediary who must bring the technology and the user into productive interaction. While there have been studies concerned with librarian attitudes, values and behaviors, a review of the literature of librarianship has revealed few studies concerned with the psychological factors that result from or affect the acceptance or rejection of technological innovation by the librarian.

What the literature has suggested instead is that librarians may be predisposed to resist change because they are predisposed to certain attributes of personality. Studies of librarian personality report that librarians are inclined to be introverted, intransigent and inflexible, discontented and humorless, unimaginative, inhibited, narrow and nitpicking, lacking in ambition or leadership, indecisive, unready for technological and social change, conservative, stubborn, petty, and short-sighted. Librarians are accused of being complacent, anxious, wary, passive, unable to understand the potential of computer applications, traditional, unsophisticated, bland, bureaucratic, authority-ridden, cautious and insecure. Fortunately the credibility of librarian personality studies is being called into question.[1]

It is evident from experience and observation that both introverts and extroverts can accept technology or resist it, that some advocates for technology are flexible and some are rigid, that both technologists and anti-technologists can be humorless, unimaginative, indecisive and stubborn. There is also evidence from experience, observation and more recent research that resistance is not a function of personality and that the significant factors that relate to resistance lie elsewhere.[2] But while resistance has been observed in librarians and described in the literature, few of the observations or descriptions have attempted to probe the circumstances or beliefs that might explain its existence. Following are some examples of the way library researchers began to identify the resistance phenomenon and attribute its causes.

In 1969 Orin Nolting[3] proposed that the psychological barriers to innovation in libraries are rooted in the custodial mentality of librarians, mistrust between librarians, jealousy and stubbornness, clashes of personality, and the assumption that each library has unique rather than "commonplace" needs.

In a 1972 study of the Tulsa Public Library system, Nancy Feldman[4] found the following manifestations of resistance: avoidance or postponement of tasks, hostility, resignation, and meeting only the minimum expectations of one's work.

Plate and Stone's[5] 1974 work described resistant behaviors as negative employee attitudes manifested by absenteeism, turnover, underproduction and sabotage.

In a survey of twenty-four academic institutions in 1974, Allen Veaner[6] found that in the face of rapidly changing technology, some librarians were baffled, impatient and frustrated. He spoke of an emotional response to technological change when it is perceived as a threat to routines and stability.

In a 1976 study Danuta Nitecki[7] found that one-fourth of the responding librarians thought that negative attitudes toward technology among library administrators and library personnel were barriers to the incorporation of automated information retrieval systems.

These examples characterize the way the profession first began to describe its own reaction to the technological transition. Some of these were descriptions by technical specialists, reflecting their own experiences with librarians and their own frustrations in dealing with resistance. Others were the reactions of librarians themselves, not infrequently in supervisory positions, who favored technological change and had grown impatient with their subordinates and colleagues whom they perceived as resistant to change. Technology proponents have were to conclude that "librarians will just have to learn to accept" that the technological age is upon us, like it or not.

In a 1977 literature review on "The Impact of Technology on Libraries and Librarian," Susan Martin[8] observed that "In the area of the impact of technology of staff, the profession . . . appears to be hiding from reality" in failing to recognize the significance of this factor. Her statement is borne out by her bibliography: only three of her thirty-four citations had any bearing on how and why librarians react to technological change. The early literature on implementation of technology either ignored the issue of staff reaction (for example, the writings of Fred Bellomy[9] and J. C. R. Licklider[10]), or addressed the issue in patronizing terms which described librarians as suffering from a "feeling of inadequacy when confronted with supervising and contributing to an effort in automation." This last comment appeared in a 1969 article by David Sheldon[11] entitled "A Programmer's View of Technical Processes Librarians." Sheldon reflected a view generally held by technologists—that it is some human failing in librarians that is inhibiting change and process. None of the early writers suggested that resistance is a normal or natural reaction to imposed change or that the dynamics of the organization itself may be the impetus to resistance.

More recently, a few writers went a step further to suggest that more subtle, complex—and predictable—dynamics are operating when people and organizations are faced with technological innovation. Paul Wasserman[12] focused on the problems associated with changing values, a process concomitant with changing technology:

> There is no morality in technology. It is directed at process. Only when it interferes with the human options within the internal system is there threat or strain. But the technical or means change is as nothing beside the responsibility of choice about ends . . . (p. 13)

Some writers and researchers have probed the quality and implications of the changes facing librarians as technology confronts them. Jesse Shera pointed out that "our primary concern here is with the impact of a technological revolution, or threatened technological revolution, upon . . . the occupation of librarianship" (p. 747) and he went on to explain and explore the nature of that impact. Reynolds,[13] Luquire,[14] and Wasserman studied such variables as family background, education and age which might influence librarians' perceptions of and reactions to innovation. None of these studies, however, was directly concerned with the phenomenon of resistance to technological change. Most of them focused on academic rather than public librarians. Only Robert Presthus'[15] 1970 study, *Technological Change and Occupational Response: A Study of Librarians,* was meant to "contribute to the understanding of the library occupation . . . and its capacity to accommodate to several pervasive changes now confronting the field, including . . . preparing itself for computer inspired automation and attending reconceptualizations of the character of librarianship, its traditional role, and the form of the materials with which it works" (p. iii). It is worth noting that Presthus is not a librarian but a political scientist and that the theoretical bases for his work came from the social sciences.

There was one other thin thread that ran through the literature on libraries and their early encounters with technological applications. There were some who opposed it. While there were many warnings against the belief that automation holds the solution to all library problems, there were a few outright rejections of library technology, a few who were willing to say, as Ellsworth Mason[16] did in 1971, that "computerizing library operations at present and projected costs, and with foreseeable results, is intel-

lectually and fiscally irresponsible and managerially incompetent" (p. 193). Sanford Berman[17] suggested that it might be "socially irresponsible" as well to "heartily embrace labor-saving devices that will unconscionably dump people into an economy ill-prepared to ensure them a decent livelihood (not to mention soul satisfying work)" (p. 1054).

While Mason was suggesting that society in general "had become disillusioned with technology" and that "public support for technology . . . will continue to decline," Dan Lacy[18] was predicting that technology would be increasingly important to libraries, but *only* in the conduct of "business"—acquisitions, cataloging, circulation, inventory and other such technical tasks. The use of computers for retrieval would be "the least significant and the least likely to occur on a large scale," because "the majority of users of most libraries are not seeking specific information or specific short passages but rather the opportunity to read a text at leisure and without special equipment" (pp. 19–20).

While these predictions were not, in fact, supported by the events of the years that followed, it is interesting to note that because they were perceived as rational opinions by rational people, they were not called "resistance;" they were called "wrong." In contrast, descriptions of librarian behavior during those same years suggested an irrational negativism that was standing in the way of progress: "The computer scientists and engineers who designed early systems worked in a climate of hostility and frustration brought about by the librarians' . . . unwillingness to imagine a different mode of operation for the library," wrote Miriam Drake[19] in 1977. But, she continued, "the number of librarians who flee to the stacks when the computer terminal arrives is diminishing. Many librarians are learning that active participation is more rewarding than stoic resistance" (p. 15). Both rational opposition and irrational resistance were apparently diminishing, and in a remarkably short time span for so potent an innovation.

But resistance to technology was far from dead, and the acceptance of current technology in its current state of development does not preclude that new technology will encounter new resistance. This was the conclusion from Sara Fine's[20,21] series of research studies on resistance to technological innovation in public libraries and in library schools between 1978 and 1981. The studies further suggested that resistance is not a function of personality nor of demographics but is rather related to the climate of the organization and the beliefs, attitudes and values of the individual. Resistance may have an important function in that it slows down the speed with which innovation might otherwise take hold and

allows psychological and social evolution to keep pace with technological evolution.

Resistance to technology is hardly unique to the 20 century. In 1832, a review called "Effects of Machinery"[22] appeared in the *North American Review.* The reviewer enthused about a book called *The Results of Machinery* which had just been published in England by the Society for the Diffusion of Useful Knowledge. The Society had hoped to persuade British workers that it was counter to their best interests to oppose the introduction of the technology which created the Industrial Revolution. Apparently both the author and the reviewer were the high-tech advocates of the 19th century, also engaged in frustrated argument with those who opposed and resisted technological progress.

And even before that, in the 16th and 17th centuries, nearly all of Europe experienced revolts by working people against the ribbon-loom, a machine for weaving ribbons and trimmings. The resistance was far from passive. In his description of the strife between workman and machine, Karl Marx[23] gave us a taste of the fury and "savage character" of resistance to technology in earlier centuries.

He told of a machine invented in Germany in the early 1500's that could weave four to six pieces at a time. The mayor of the town, being apprehensive that this invention might throw a large number of workmen out on the streets, secretly caused the inventor to be strangled and drowned. In Leyden, where the machine was deemed unlawful until 1629, there were such violent riots by the ribbon-weavers that the Town Council decreed that it be prohibited. It was outlawed again in Cologne in 1676, during the same period that its introduction in England was causing disturbances there. In 1685, it was forbidden in all of Germany by an imperial edict. In Hamburg, it was burnt in public by order of the State. This machine, which shook Europe to its foundations, was, in fact, the precurser of the mule and the power-loom and of the industrial revolution of the 18th century.

About 1630, a wind-sawmill in England "succumbed to the excesses of the populace." In 1758, the first wool-shearing machine driven by water-power was set on fire by 100,000 people. The tremendous destruction of machinery that took place in the manufacturing districts in England in the early nineteenth century, chiefly in reaction to the power-loom, became a "pretext for the most reactionary and forcible measures." The problem of resistance to technology apparently begins with the introduction of technology into any ordered social system, whatever the place, whatever the century.

RESISTANCE TO CHANGE: A SOCIAL SCIENCE PERSPECTIVE

While librarians have been slow to look at the effects on human behavior that accompany the introduction of technology into the structure and practice of their profession, a large body of research on the effects of change has been accumulating in the social and behavioral sciences. The Tavistock Institute, a London-based group, was responsible for some of the early studies of the relationship between technical progress and social change and the effects of that relationship on the organization. Later, work at the Center for Research on Utilization of Scientific Knowledge at the Institute for Social Research, University of Michigan, built on the Tavistock studies and looked at such elements as bluecollar and whitecollar attitudes toward technology in an attempt to formulate strategies for organizational change and to identify conditions necessary for the adoption of technological innovations. Everett Roger[24] has contributed to the diffusion literature by compiling an extensive bibliography on innovation research which broadly covers the literature from education, sociology, anthropology, economics, business and public administration.

Many of the early studies of organizational change were based in the industrial sector because, with the coming of the Industrial Revolution in England, the effects of technological applications were first felt in the factory. By the early and mid-1960's, researchers on both sides of the Atlantic had begun to study the interactions between advances in technology, the diffusion of innovation, and the management of organizatons. Recognizing that "the internal and external environments of many organizations have undergone rapid and extensive change in the years following World War II" and that "these changes have focused research interest on organizational adaptation, change and innovation," The University of Chicago's *Journal of Business* devoted an issue to presenting "some recent contributions to our understanding of the process of organizational innovation as distinct from (although related to) organization change or adaptation" (Becker and Whisler, p. 262).[25]

It was about this time, in the late 1960's, that it became evident and articulate that technology was not only a tool for productivity but that it would prove to be an important variable in organizational structure and behavior:

> It may turn out that technology is in fact an empty box and that it makes no difference at all what resource and process

> configuration an organization is currently using in terms of its future behavior. We would predict, however, that as there develops a greater awareness of the relationship between technology and structure and between structure and people characteristics, technology will acquire some important explanatory power in a theory of innovative behavior. (Becker, p. 468)

Out of the wealth of business-based research came a general conclusion that "transferring employees from one technology to another produced a break-up of established social routines, leaving the individual uncertain about courses of action which he should take and the responses from others which might follow" (Chadwick-Jones, p. 137).[26]

The effects of resistance were harsh in a machine-driven age. Industry turned to behavioral scientists, psychologists, and psychiatrists for help in coping with resistance related to major changes in the organizational environment and for help in understanding why attempts to implement technological innovations were frequently met by a lowering of morale and why, in some instance, workers were simply unable to adapt. Several areas of administrative oversight that contribute to resistance were identified.

First was the failure of administrators to recognize the complexity and multiplicity of human needs and motivations—the failure to take psychological costs into account in making decisions for organizational change, inattention to the stress hazards in change, and the inability to apply strategies for change that are compatible with behavioral principles. Another oversight lay in the failure to provide adequate lead and lag time, discounting the emotional demands and adjustments that accompany change. Organizational planners did not acknowledge or allow for the sudden drop in efficiency that is always present in the first stages of implementation. Another miscalculation was the belief in the "jackass fallacy," the "carrot-stick" model of rewards and of human behavior and motivation.

Then there was the use of destructive, coercive strategies where units were reorganized and roles and functions summarily changed without consultation, without explanation, and without preparation. Perhaps most demoralizing were "take it or leave it" strategies. This kind of approach perhaps reflected concern for short-term profit, but the price was the erosion of employee loyalty and commitment to the organization. Coercion was met by hostility; manipulation begat counter-manipulation.

Perhaps the most important oversight was in not recognizing

that a proposed change, or the way in which the change is negotiated or implemented, may offend the values of organizational participants. The negativism and outrage that result from the violation of traditional and cherished values will compromise the employee's identification with the organization or the profession. Ralph Hirschowitz[27] forewarned that "Without congruence between the organization's purpose and style and the values of organizational contributors, only cross-purpose activities can be anticipated" (p. 11). Hirschowitz's prediction has been borne out by subsequent research. In 1979 Rockart[28] found that the real resistance to the use of computers emerges in the adoption phase for middle managers, largely because managerial and professional work and the values associated with it seems to be in conflict with computer-based technology and the way it alters the nature of the work, changes that often run counter to deeply held beliefs and values. Previous studies found that the greater the incompatibility of an innovation with deeply held beliefs or values, the more likely it will be resisted, regardless of its potential benefits to the organization.

Another oversight pointed out by Harvey Poppel[29] lay in the reluctance of administrators to commit sufficient resources to the change. It is not uncommon, in fact, for personnel resources to be overextended or withdrawn just at the time when staff is experiencing the greatest stress of change. The most typical behavior is to reassign staff to a variety of unfamiliar tasks, to expect those with some technical experience to quickly become experts wherever expertise is needed, and to view training by training specialists rather than by vendors or in-house staff as an extravagance. In a Booz, Allen and Hamilton study to determine whether the "office of the future" could make workers more productive, Poppel found that at Lincoln National Life, there were only four people assigned to training, despite a goal of reducing the use of paper by 90 per cent. As of 1980, only 15 per cent of major U.S. businesses had more than five full-time training professionals on their staffs. Poppel suggested that this lack of commitment from senior management was one of the reasons that "the office seems to be the last outpost of resistance to automation" (p. 146).

Poppel pointed out another administrative failure that leads to resistance: the lack of balance between planning and implementation, where no pilot tests are done before equipment is purchased or where the right technology is tested on the wrong people. From the literature in librarianship, there is no evidence that libraries ever do time and behavior studies before making commitments to purchase. Planning seems to involve an analysis of the capability of the technology, not the capability of the staff.

Not only are the organization's purpose, style and values at stake in the face of major innovation, but an individual's value system may be threatened as well. For a factory worker, for example, who is still engaged in the traditional role as bread winner and sole supporter of his wife and children, the threat of unemployment resulting from a new technological process would be seen as an attack not only on his basic values but on his role definition. While the technological changes taking place in librarianship rarely lead to a threat of unemployment, innovations may lead to changes in the nature of the job itself and may threaten the librarian's self-perception and self-definition. They may affect professional status, and in that sense violate the personal values that specify the image of a librarian. A number of writers—Sanford Berman,[30] John Gribben,[31] Jesse Shera,[32] and Matthew and Lacy[33]—have described these fears of "trapped depersonalization" as a primary threat that may accompany the advent of technological change.

Resistance to Change in Education

Although researchers generally focus their studies on particular occupational groups, they often look for a general behavioral basis for resistance to technological change rather than for the causes deriving from the particular values of a particular profession. Even though personal and professional values may differ among occupational groups, it may be useful to look at another profession in order to identify comparable values which are threatened, and then to review some strategies for coping with those threats.

For a number of reasons, education would seem an appropriate field in which to look for parallels. The training requirements for entry into practice, the preponderance of women in the ranks and men in administrative positions, general salary scales as compared to income scales in higher status professions, and relatively low prestige compared with other commonly recognized professions are all factors which may suggest that people with similar values might choose teaching and librarianship, and that both professions might socialize their practitioners with similar beliefs. Like librarians, educators have looked to other fields for help in understanding their own reactions to change.

Sam Sieber[34] raised the issue of professionalism in education which may have a parallel in librarianship. He pointed out that members of those occupations considered to be professions are characterized by three features: (1) they perform a personal service that is regarded as indispensable in modern society; (2) they possess a high degree of technical competence; and (3) they enjoy considera-

ble autonomy in their work. Sieber suggested that only the first of these characteristics applies to teachers. Henry Brickell[35] attempted to show the differences between education and other traditional professions, pointing out that a teacher does not fit the criteria of an independent professional nor of a private entrepreneur. The teacher is "not free to decide what he will teach to whom at what time and what price. He is instead a member of a staff of a stable institution" (p. 19). The same description might apply to librarians. Sieber referred to teaching as a "quasi-profession" and suggested that quasi-professionalism leads to status-insecurity. "Thus, innovations that are proposed by the administration are often resisted by teachers because they imply further restrictions on 'professional' autonomy" (p. 129). Robert Presthus[36] made a similar observation about librarianship and the profound implications of technology on the status and self-image of the profession:

> Vested status values and aspirations become precarious as technology changes. The appreciation that one's craft and knowledge can be superseded by an impersonal machine is bound to be disenchanting. Professions, as we know, are built upon a monopoly of secret and esoteric knowledge, with attending demands for considerable self-consciousness and career commitment. The sensitive application of such knowledge in variable situations demands the wisdom and judgment of the journeyman. Yet, technical innovation in the library field rests largely on the assumption that such qualities can be programmed for standardized application. Thus, a goal more or less widely held by librarians, professionalization and its psychic incomes, may seem remote as the fund of conventional library knowledge must be shared with outsiders possessing conceptual systems and electronic devices that threaten its very existence. In effect, not only the librarian's partial monopoly of a discrete body of knowledge, but also the very content of such knowledge, becomes contingent. At the very least, some uncertainty regarding the relevance of one's occupational armour must follow. (p. 6)

Presthus later pointed out, as Sieber and Brickell had done for teachers, that librarians do not enjoy much professional autonomy, that they see the power to accept or reject automation "largely as an administrative prerogative," and that "the authority structure in libraries is essentially bureaucratic . . . " (p. 59).

Presthus, like Sieber, concluded that resistance to technological

change may be directly related to status-insecurity deriving from librarianship's "quasi-professional" status. Shera came to a similar conclusion when he wrote that " . . . the important fact is that librarians as an organized group aspiring to become a profession has direct bearing upon their reaction to the technological revolution now taking place in their sphere of social endeavor" (p. 747).

One of the effects of technology on an organization or a profession is the realignment of the existing status hierarchy. Within an organization, status accrues to those who can best manipulate the technical system and who are involved in the decisions for its design and implementation. But the status of a whole profession can shift as well, either upward or downward, in relation to how it accommodates and integrates technology into its professional purpose and activity. The prospect is low for changing the status of teachers through the use of technology for professional purposes; technology will not change the purpose nor the clientele for education. But perceptions of the status of libraries could well change in this age of information need and demand and the status of librarians may move up on the professional scale. Perhaps status insecurity will diminish as more librarians hang out a shingle and become entrepreneurs, controlling their own time, work and clientele. If status-insecurity is a prime factor in resistance to technology by librarians, as it appears to be at the root of resistance by any comparable group, then issues of both status and insecurity must be addressed by an organization contemplating or implementing technological change.

Thus far, librarians have faced job insecurity for economic reasons but not as the effect of technology. But an early warning by a developer of computerized data bases is worth noting. Carlos Cuadra[37] wrote:

> It is in no way necessary or inevitable that librarians shift the balance of their holdings and services to include . . . (the) trappings of advanced technology. It is not necessary that libraries shift their concept of operations from circulation toward outright distribution. It is not necessary that libraries invest in computers and other paraphernalia to provide users with a higher order of access to reference materials. It is not necessary that libraries become elements of networks for the raised identification and provision of material to users. . . .
>
> *However, these functions are going to take place and if the library does not bring them about, some other type of agency will. That agency will then occupy the central role in the infor-*

> *mation business—the role that was once occupied by the library.* (p. 767)

Cuadra's meaning is clear. While technology may not cause job displacement or elimination, resistance to change may bring about that same end.

ORGANIZATIONS IN CHANGE: THE EVOLUTION OF A THEORY

The principles and strategies for effecting change in an organization have become so familiar through both the professional and the popular literature on management that the concepts seem self-evident and their implementation a simple task. In some way the difficult and complex process of diffusing innovation has been reduced and trivalized. "Everyone knows" that the key behavioral components in the process are communicaton and participation.

But these concepts are, in fact, relatively recent developments in organizational theory, the result of observation, conjecture, hypothesizing—and research in a variety of organizations under a variety of conditions. The shift in organizational behavior theory really began in the 1950's, about the same time that psychologists like Carl Rogers, Rollo May and Abrahm Maslow were developing their theories of human potential and self-actualization. The two movements continue to be parallel, reflected in the increasing realization that technology has so changed our traditional view of productivity that the management of organizations must become more communicative and participatory to survive the competitive marketplaces, and that the quality of life in a technological era depends on the personal gratification that people derive from their work.

The changing nature of work in a high-tech world is altering the traditional adversarial relationship between managment and labor, with the signs pointing to a shift toward more worker participation in managerial decision-making. At a 1982 labor relations conference sponsored by Carnegie-Mellon University's Center for Labor Studies, this theme was echoed by labor leaders and management specialists alike. At the same time, Carlton Rochell,[39] Dean of Libraries at New York University, was predicting that "future libraries will inevitably choose flatter participatory organization to function well in a fast moving technological environment (in order to enable) a quick response to change that is impossible in traditional hierarchies" (p. 478). "Managers must set aside tools of

financial manipulation, taught so well in our business schools, and give serious consideration to basic human values and behavior," wrote Charles Joiner[40] in a 1983 issue of *Management Review.* Only then can we create an organization "with improved capability for performing at the highest standards" (p. 48).

The organizational environment has gone beyond the point where a manager can know and control all of the areas in the unit, or even understand all of the technical processes for which he or she is responsible. The delegation of responsibility downward is no longer an administrative strategy to employ or not; it is becoming an essential without which an organization will be unable to function. The concept of delegation, and the trust that makes it work, has evolved as organizational theory has matured. In the past few years, the results of earlier research and the work of organizational theorists in the 1960's and 70's have taken on new meaning and new impact. Some of the principles that evolved from the earlier studies on change were described by Ralph Hirschowitz.

Hirschowitz[41] observed that the more *information* people have about the need for change and about the criteria that guide change strategies, the less misinterpretation and the fewer irrational grievances are likely to occur. In the absence of hard information, rumors and fantasies run wild, and energies are wastefully dissipated in dealing with them.

When information sharing allows employees to participate in the change design, they feel less impotent. Recognition of workers' human needs and rights narrows the we-they schism and promotes identification with the organization and the innovation. *Participatory involvement* between echelon levels of the organization mobilizes constructive forces for problem solving; commitment to the implementation of decisions increases if employees can become at least partially the architects of their new roles.

During change, people's dependency needs are significantly intensified. They look to each other and to their superiors for encouragement, feedback, and direction. They require *authoritative assurance* that superiors care, recognize their contributions, and understand their needs.

In unprecedented situations, people need help in learning new ways, forming new relationships, establishing new routines, and acquiring new knowledge and skills. *Anticipatory guidance,* with opportunities to rehearse new roles, is particularly valuable, both as a practical matter and as emotional prophylaxis. Through preliminary apprehension and tension, a person will build up some immunity to the anxiety that will inevitably be experienced in the new situation.

With the uncertainty, ambiguity, and heightened dependency of the transition state, the ready availability of superiors becomes essential. The actual total time invested in supervision may not have to increase much but *increased frequency of supervision* and *ease of access to supervisors* are important.

In expediting the transition process by which people bury the old and begin building something new, talking about the 'good old days' and 'what it used to be like' helps. The *venting of feelings of anger and nostalgia* give them legitimacy; when these feelings are acknowledged and expressed, they are not displaced to scapegoats or turned upon the self. People are often unaware that their feelings of rage, anxiety, and regret are appropriate, but open discussion permits the discovery that their feelings are shared.

In their new work roles, people need *precise understanding* of tasks and expectations. The potential for role conflict or confusion of functions is reduced by spelling out new functions, responsibilities, and roles as graphically as possible, allowing the worker to imagine himself in his new role. Training is enhanced by encouraging this imaging.

Respect for values and dignity is essential. In a period of organizational change, many people feel their sense of self-worth damaged and their sense of competence and mastery reduced. They struggle to preserve meaning and identity. Any opportunity should be siezed to maintain and reinforce cherished organizational values within a framework of personal meaning for the individual.

Hirschowitz concluded that opportunities to demonstrate that anticipated and unanticipated difficulties can be surmounted in a context of structured, supportive leadership will instill and *sustain hope,* and the maintenance of hope is essential for the successful navigation of change.

Everett Roger,[42] in his 1962 work on innovation and its diffusion, was among the first to suggest the possibility of a general strategy for change which might be applied to a variety of change agent-client relationships. The "change-agent" in a library context would be an administrator responsible for the introduction and implementation of change, a consultant brought in to the organization as an identified change-agent, or even a vendor who may be perceived as the agent of change. The client is the one affected by the change—the librarian.

One implication in Roger's model is that the change agent must attend as much to the organizational climate—the cultural, historical, social, political and interpersonal aspects—as to the technical and procedural aspects of the innovation itself. The process of

change, said Rogers, must first of all be designed to accommodate the cultural values of a profession and must take into account the history and experiences of the organization. Second, the client must feel and perceive a need for the change if it is going to be successfully introduced. The perception of need cannot be imposed; it must be an experience *felt* by those whom the change will affect. Third, the emphasis in the diffusion process needs to be directed toward enhancing the clients' competence in generating and evaluating new ideas, rather than toward the innovation itself and the implementation procedures. A fourth principle, one which is often overlooked, is that change agents need to anticipate the social consequences of the proposed change and lay out a strategy for preventing those consequences from being undesirable or destructive.

Gerld Zaltman,[43] researcher and practitioner in the field of social change, also suggested that the identification of the "early adopters" of innovation within an organization is a significant strategy for the implementation of a new process. The first fifteen to twenty percent of people in an organization to accept a new idea "tend to be active in the word-of-mouth communication process and influential among those with whom they interact. Thus early adopters are important unpaid agents of change" (p. 30). Early adopters are not necessarily top level in the organization; they may be anywhere in the ranks. They need to be sought out and enlisted.

Other researchers and students of change stressed the importance of permitting flexibility in the way change is to be implemented, clarifying the extent to which the change would improve present methods, making certain that the change is easily and clearly understood by the affected groups, and providing for evaluative mechanisms. This last step, setting up a structured or informal vehicle for feedback from the client group, is often overlooked.

Hollis and Krause[44] studied a variety of models for the effective development of a change strategy and found that the most effective models had two elements. First, that the change agent be willing to take calculated risks, and second, that the innovator can see the change process and innovation itself through the eyes of those it affects. He must be willing to modify changes in response to the opinions and ideas of the client group, a sometimes risky position.

Models for coping with resistance to change have been developed and tested in fields other than industry, notably in education. These models are remarkably similar to those advanced by industrial theorists and practitioners, as a few examples will illustrate.

Egon G. Guba[45] developed a four-stage sequence consisting of

research, development, diffusion and adoption. Most relevant here is the diffusion stage which is delineated by the various interpersonal processes that must precede and accompany the introduction of the innovation into the system.

Guba's first two processes may be termed *announcement,* whether written or verbal, and *demonstration,* which involves a "direct confrontation with the phenomenon of interest, as in a planned or casual observation, or in actual participation" (p. 48).

Third is the *helping process,* where the diffuser becomes involved in the practitioner's frame of reference, but on the practitioner's terms, not his own.

Fourth, the diffuser enlists the *involvement* of the practitioner in the development and evaluation of the innovation and in the innovation process itself. Through involvement the practitioner in essence becomes a secondary diffuser to others in the organization.

Fifth is the process for increasing skills and competencies and for altering existing habits and attitudes: *training.* During this process the practitioner becomes familiar and comfortable with the proposed innovation. More important, it is through this process that the practitioner makes a formal commitment to the innovation by allowing himself to be trained.

The first steps each involve communication and interchange, as did the models recommended in the business literature. It is only after these five processes and activities have been established that the sixth process can be effectively introduced—the *intervention* of the diffuser, the change agent, the organization's representative on his own terms and the organization's terms. "It may take the form of mandating certain actions . . . inserting certain control mechanisms . . . or intruding certain economic or political factors . . ." (Guba, p. 49). Guba's intervention step recognizes that the diffuser or change agent will at some point step back into the perspective of the organization's needs and direction, make the best possible decisions, and impose them. But the intervention process is only one of the six and it must follow, not precede, the others.

Sam D. Sieber,[46] who theorized that status-insecurity is a basis for resistance to change, examined three role strategies for inducing change in education and found all of them wanting. His "Rational Man" strategy assumes that ignorance is the chief barrier to innovation; the response to ignorance is one-way communication in the form of information from the change-agent to the practitioner. Sieber claimed that the "Rational Man" strategy fails because it overlooks "the necessity of learning about the practitioner's values . . . by means of two-way communication . . . " (p. 137).

A second role, which Sieber called the "Cooperator" strategy, involves two-way communication. It "involves the participation of members of the system and rests on the assumption that practitioners are willing and able to cooperate in new ventures" (p. 138). The "Cooperator" strategy is of limited value for two reasons: first because it does not pay sufficient attention to the issues of quasi-professionalism and, second, because it requires too much attention to individual personalities.

The third role employs the strategy of the "Powerless Participant" and assumes that practitioners cannot be empowered to innovate; change must therefore be imposed by regulatory change-agents. Sieber pointed out that even quasi-professionals are not completely powerless and that change in the form of regulations from an external source tends to get bogged down in local bureaucracy and is slow to reach its target.

"The three strategies fail," said Sieber, "because men are not wholly rational, cooperative, nor powerless." Rather, at different times and under different circumstances, they will exhibit reactions that are peculiar to each of these patterns of behavior. What's needed, then, is a change strategy that concerns itself with the circumstances and conditions that predispose people to react in certain ways, a strategy that possesses "the resources of all three strategies" and includes "guidelines for their employment under particular conditions." Sieber called this approach "the strategy of the Status-Occupant."

> In presenting the image of practitioners as *Status-Occupants,* it is assumed that they are imbedded in an intricate network of role relationships that holds its shape as a consequence of shared values, shared solutions to status problems, and shared sanctions for deviance and conformity. Efforts to change one component of this structure without consideration of the other components will ordinarily result in failure. (p. 139)

In a study to determine the factors that relate to faculty receptivity to organizational change, Carole Kazlow[47] confirmed Sieber's hypothesis that receptivity is a function of members' status characteristics and of the risk they perceive as a result of their status-occupancy.

Sieber advocated an organizational revamping which permits practitioners to behave in accordance with their professional self-image, encouraged to test innovations of their own, with strong and consistent support from administration. Those who are able to

assert their own creativity and innovativeness are then motivated and empowered to become change-agents within their peer groups.

Sieber's approach stressed that practitioners are involved in professional relationships which are formed as a result of shared values, shared status assumptions, and shared behavioral criteria. He cautioned that each component must be considered in relation to the others and as part of the whole if change is to be successful. This view is compatible with the generalized conclusion reached by the early students of technical change in the industrial sector that shifting employees from a familiar technology to a new one produces " . . . a break-up of established social routines, leaving the individual uncertain about courses of action which he should take and the responses from others which might follow" (Chadwick-Jones, p. 137).[48]

Theories of innovation and resistance have not changed very much in the past twenty years. The models developed by Rogers and Sieber and Hirschowitz are coming into their own as technology begins to affect more and more organizations and virtually every profession. In 1983, T. J. Springer[49] described three management styles that can be employed when implementing automation, observing that the strategy chosen may mean the success or failure of the system. The "technitron" approach emphasizes automation and minimizes human activity. The "Luddite" approach minimizes the technology, disregarding its potential benefits. The "ergonome" approach concentrates on a balance between the strengths and weaknesses of people and how they fit the characteristics of available technological tools. Only this third approach, said Springer, will insure successful implementation.

The theme that runs through all of these change models is that there is one crucial strategy factor: communication. Management consultants have consistently stressed the need for planning, the need to provide advance notice, the need to make certain that those affected understand the reasons behind the change, and the important of involving organizational members in the change as early and as often as possible. "When you get people—whatever the level—in on the planning, permit them to participate in the creation and organization of their program, and allow them to see the end results of their work, it becomes a new and different ball game . . . When people are involved, they have a stake in the change" (*Management Review*, pp. 19–20).[50]

But it takes thought, time, and planning to get people involved. Karen Horny [51] described the thought and planning that went into innovation diffusion process at Northwestern University Library, a process that was begun five years before implementa-

tion. A systems analyst was officially appointed to the library staff, allowing a gradual and thorough understanding of library operations and technological applications to evolve. Horny reflected that "the mutual confidence which evolved was a significant factor in facilitating the massive retraining project necessitated by systems implementation."

Horny's discussion of the steps involved in preparing for and initiating Northwestern's automated technical service system is filled with descriptions of staff meetings, orientation sessions, demonstrations, and slide shows. These activities included library personnel who were not part of the technical services division as well as those who were directly affected. This series of activities was the result of "a decision to emphasize communication," a decision which "encouraged cooperation, promoted special efforts, and reduced anxieties" (p. 366).

The importance of communication is stressed again and again in the literature, emphasizing to administrators and change agents that communication includes listening to the views, opinions, fears and regrets of employees as well as communicating their own views and decisions. One management consultant emphasized that "communication from the bottom up is necessary if management is to gauge how the change is proceeding. In communication of this kind the operational work is *interchange.*" Change agents must engage in "interchange" with those who will be affected if change is to occur smoothly. The findings of Hirschowitz and Rogers have many implications for library administrators and systems developers; the more they consult with the librarians who will be affected by a technological innovation, the greater the likelihood that the innovation will be accepted and integrated into the social structure of the organization.

A similar theme appears in the library literature. Donald Hammer,[52] the same specialist who insisted that librarians "will have to accept" and "will be required to adapt," also realized that computer specialists have their own responsibilities in the process. They "must work closely with the librarian who is most knowledgeable about the library area under study;" they "must frequently consult with the librarians;" and—perhaps most important—"they must keep in mind that they are invading an established order that, like most 'secure' institutions, does not readily respond to change . . . " (1969, p. 4494). And Mary Lee Bundy[53] wrote in 1968: "If outside personnel are adequately to assess the library's needs, they must immerse themselves thoroughly in its operation. In turn, if librarians are to contribute to planning and to work with the system . . . they must learn the technical aspects . . . " (pp. 322–323).

From the time when technological applications were first beginning to have a significant impact on libraries, there were those who admonished and forewarned the designers and implementors of new systems that "familiarizing" themselves was not enough, that they must truly know and understand the library and its functions, "immerse themselves thoroughly" in its operations, consult and cooperate with librarians, and recognize that their technological innovations are an intrusion into a tidy, ordered, traditional institution. But system designers and technologists were caught up in the adventure of technology, and as new designs and products become available for libraries, they couldn't slow the pace of their own excitement. They couldn't understand why librarians were reluctant to accept innovations, whether they were ready for them or not. "Their mystification at the librarian's unenthusiastic reception of the awkwardly formulated printout is something to behold," wrote Hammer. "Systems people would produce better systems if they would put themselves in the user's shoes on occasion" (p. 4495), or at least listen to what they have to say, a theme that runs through Malinconico's[54] 1983 series of articles on resistance in *Library Journal:* first we must *hear* the resistance, then we must truly *listen.*

It seems we have come full circle, from the early researchers who knew that change imposed is change resisted, to the first awarenesses that technological change threatens established traditions and values, to Sieber's admonition that change will be unsuccessful unless shared assumptions in the social structure are maintained, to the present time when organizations are once more looking at participation, shared decision-making and work satisfaction to counterbalance the impact of high-technology on the work lives of employees.

It seems appropriate to look at what was perhaps the first article to directly address the problem of resistance to change.

In 1954, Paul R. Lawrence[55] wrote in the *Harvard Business Review:*

> When we stop to think about it, we know that many changes occur in our factories without a bit of resistance. We know that people who are working closely with one another continually swap ideas about short cuts and minor changes in procedure that are adopted so casually and naturally that we seldom notice them or even think of them as change. The point is that because these people work so closely with one another, they intuitively understand and take account of the existing social arrangements for work and so feel no threat to

> themselves in such everyday changes. By contrast, management actions leading to what we commonly label "change" are usually initiated outside the small work group by staff people. These are the changes we notice and the ones that most frequently bring on symptoms of resistance. By the very nature of their work, most of our staff specialists in industry do not have the intimate contact with operating groups that allows them to acquire an intuitive understanding of the complex social arrangements which their ideas may affect. Neither do our staff specialists always have the day-to-day dealings with operating people that lead them to develop a natural respect for the knowledge and skill of these people. As a result, all too often the men behave in a way that threatens and disrupts the established social relationships. And the tragedy is that so many of these upsets are inadvertent and unnecessary. (p. 53)

Lawrence's article became an "HBR Classic," a designation given to certain articles which have been requested consistently over a period of years, and in 1969—fifteen years after its first appearance—it was reprinted in the *Harvard Business Review.* To accompany it, Lawrence wrote a "retrospective commentary" in which he pointed out that human resistance to change has remained very much the same over a fifteen-year period but that methods for dealing with those problems are evolving. ". . . There is increasing understanding of the respect for the differences between groups. There is less striving for consistency for its own sake. More managerial effort is being applied . . . to bridge the gaps in understanding." And Lawrence concluded:

> We are all, at times, resisters as well as instigators of change. We are all involved on both sides of the process of adjusting to change.
>
> In light of this, let me reemphasize the point that resistance to change is by itself neither good nor bad. Resistance may be soundly based or not. It is always, however, an important signal calling for further inquiry by management. (p. 6)

It is Lawrence's concluding thought that suggests that resistance is a complex phenomenon, worthy of respect, understanding and further research.

Lawrence had no way of anticipating the speed with which technology would sweep through our society, changing the way we

conduct our business, live our daily lives, interact and commune with each other. But the universal truths about how human beings act and react, resist and adapt, are as relevant in 1986 as they were in 1969.

Perhaps the lesson of history is that resistance will always exist, that acceptance of a current innovation is no assurance that the next level of change won't be resisted, perhaps even more vigorously, as people make commitments to what they have achieved and mastered. Perhaps it is also the lesson of history that resistance to change is just as crucial to our survival as is acceptance of change. Perhaps the purpose of resistance is to give us pause, force us to slow down, and impel us to pay attention to our basic human needs and values.

REFERENCES

1. Agada, J. "Studies of the Personality of Libraries." Drexel Library Quarterly 20 (2) Spring 1984.

2. Fine, S. *Resistance to Technological Innovation in Libraries.* U.S. Department of Education, Project No. 475AH70073 (ERIC Doc. #226730), 1979.

3. Nolting, O. F. *Mobilizing Total Library Resources for Effective Service.* Chicago: ALA, 1969.

4. Feldman, N. G. "Pride in Heritage—or Resentment?" *Wilson Library Bulletin* 46 (January 1972): 436–440.

5. Plate, K. H. and Stone, E. W. "Factors Affecting Librarian's Job Satisfaction: A Report of Two Studies." *Library Quarterly* 44 (April 1974): 97–110.

6. Veanor, A. B. "Institutional Political and Fiscal Factors in the Development of Library Automation, 1967–71." *Journal of Library Automation* 7, no. 1 (1974): 5–26.

7. Nitecki, D. A. "Attitudes Toward Automated Information Retrieval Services among RASD Members." *RQ* 16 (Winter 1976): 133–41.

8. Martin, S. K. "The Impact of Technology on Libraries and Librarians: A Literature Review." In *The Information Society: Issues and Answers,* pp. 20–25. Phoenix, Arizona: Oryx Press, 1978.

9. Bellomy, F. L. "Management Planning for Library Systems Development." *Journal of Library Automation* 2, no. 4 (1969): 187–217.

10. Licklider, J. C. R. *Libraries of the Future.* Cambridge: M.I.T. Press, 1965.

11. Sheldon, D. N. "A Programmer's View of Technical Processes Librarians." *California Librarian* 30 (1969): 116–119.

12. Wasserman, P. *The New Librarianship: A Challenge for Change.* New York: R. R. Bowker, 1972.

13. Reynolds, M. E., et al. *A Study of Library Network Alternatives For the State of Washington.* Olympia: Washington State Library, 1970.

14. Liguire, W. C. "Selected Factors Affecting Library Staff Perceptions of an Innovative System: A study of ARL Libraries in OCLC." Ph.D. Thesis, Indiana University, 1976.

15. Presthus, R. V. *Technological Change and Occupational Response: A Study of Librarians.* Washington, D.C.: Department of Education, Bureau of Research, U.S. Department of Health, Education and Welfare, 1970, Project No. 07-1084, Contract No. OEC-1-7-071084-5017.

16. Mason, E. "The Great Gas Bubble Prick't or, Computers revealed—by Gentleman of Quality." *College and Research Libraries* 32, no. 3 (May 1971): 183–196.

17. Berman, S. "Let it All Hang Out." *Library Journal* 46, no. 12 (1971): 2052–2058.

18. Lacy, D. M. and Mathews, V. H. *Social Change and the Library, 1945–1980.* Washington, D.C.: Bureau of Research, Office of Education, U.S. Department of Health, Education and Welfare, December 1967.

19. Drake, M. A. *Impact of On-Line Systems on Library Functions.* Paper presented at the On-Line Revolution in Libraries (Pittsburgh Conference on Resource Sharing in Libraries), Pittsburgh, November 1977.

20. See Note 2.

21. Fine, S. Library Education and Resistance to Technology. U.S. Department of Education, Project No. 475AH80037, 1981.

22. "Effects of Machinery." Review of Working Man's Companion, No. 1. Results of Machinery. Being an Address to the Working Men of the United Kingdom. *North American Review* 34 (1832): 220–46.

23. Marx, K. *Capital.* Vol. I. (1873) New York: International Publishers, 1967.

24. Rogers, E. M. *Communication of Innovations: A Cross-Cultural Approach.* 2nd ed. New York: The Free Press, 1971.

25. Becker, S. W. and Whisler, T. L. "The Innovative Organization: A Selective View of Current Theory and Research." *Journal of Business* 40, no. 4, (October 1967): 462–469.

26. Chadwick-Jones, J. K. *Automation and Behavior: A Social Psychological Study.* London: Wiley-Interscience, 1969.

27. Hirschowitz, R. G. "The Human Aspects of Managing Transition." *Personnel* 51, no. 3: (1974), 8–17.

28. Rockart, J. F. "Chief Executives Define Their Own Data Needs." *Harvard Business Review* 57 (1979): 81–93.

29. Poppel, Harvey L. "Who Needs the Office of the Future?" *Harvard Business Review* 60, no. 6 (1982): 146–155.

30. See Note 17.

31. Gibbin, J.H. "Computerphobia and Other Problems." *Southeastern Librarian* 20, no. 2 (1970): 78–82.

32. Shera, J. H. "Librarians Against Machines." *Science* 156 (May 12, 1969): 746–750.

33. Mathews, V. H. and Lacy, D. *Response to Change: American Libraries in the 70's.* Bloomington, IN: Indiana State University, 1970.

34. Sieber, S. D. "Organizational Influences on Innovative Roles." In *Knowledge Production and Utilization in Educational Administration,* pp. 120–142. Edited by Terry L. Eidell and Joanne M. Kitchell. Eugene, OR: University Council for Educational Administration and Center for the Advanced Study of Educational Administration, University of Oregon (1968).

35. Brickell, H. M. *Organizing New York State for Education Change: A Study of the Dynamics of Instructional Change in the Elementary and Secondary Schools of New York State with Recommendations for 1961.*

36. Presthus. See Note 15.

37. Cauadra, C. A. "Libraries and Technological Forces Affecting Them." *ALA Bulletin* 63, no. 6 (June 1969): 759–768.

38. CMU. See Footnote 3 at end of article.

39. Rochelle, C. "New Organizational Responses to Our Changing Social, Commercial, and Technological Environment." *American Libraries* 14, no. 7 (July/August, 1983): 478–480.

40. Joiner, C. W., Jr. "One Manager's Story of How He Made the Z Concept Work." *Management Review* 72, no. 5 (May 1983): 48–53.

41. Hirschowitz. See Note 27.

42. Rogers, E. M. *Diffusion of Innovations.* New York: The Free Press, 1962.

43. Zaltman, G. "Strategies for Planned Change." *Public Relations Journal* 32 (1976): 30–32.

44. Hollis, J. W. and Krause, F. H. "Effective Development of Change." *Public Personnel Management* 2, no. 1 (1973): 60–69.

45. Guba, E. G. "Development, Diffusion and Evaluation." In *Knowledge and Utilization in Educational Administration,* pp. 37–63. Edited by Terry L. Eidell and Joanne M. Kitchell. Eugene, OR: University Council for Educational Administration and Center for the Advanced Study of Educational Administration, 1968.

46. Sieber. See Note 34.
47. Kazlow, C. "Faculty Receptivity to Organizational Change: A Test of Two Explanations of Resistance to Innovation in Higher Education." *Journal of Research Development in Education* 10, no. 2 (Winter 1977): 87–98.
48. Chadwick-Jones, C. See Note 26.
49. Springer, T. J. "Technitrons, Luddites, and Ergonomes." *National Underwriter; Life and Health Insurance* 87, no. 7 (February 12, 1983): 21, 38.
50. "How Companies Overcome Resistance to Change." *Management Review* 61, no. 11 (Nov. 1972): 17–25.
51. Horny, K. "Automation of Technical Services: Northwestern's Experience." *College and Research Libraries* 35 (1974): 364–368.
52. Hammer, D. P. "Casting for Automation." *Library Journal* 94, no. 22 (1969): 4492–95.
53. Bundy, M. L. "Automation as Innovation." *Drexel Library Quarterly* 4, no. 4 (1968): 317–328.
54. Malinconico, S. M. "Hearing the Resistance." *Library Journal* 108, no. 2 (January 15, 1983): 111–113 and "Listening to the Resistance." *Library Journal* 108, no. 4 (February 15, 1983): 353–355.
55. Lawrence, P. R. "How to Deal with Resistance to Change." *Harvard Business Review* 47, no. 1 (Jan–Feb. 1969): 4–12, 166–176.