



COMPUTING AT WORK: Empowering Action By 'Low-level Users'

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Computers in the 1980s had to be user-friendly. Now, it seems they have to positively *empower* their users. The image of computers empowering people is a potent and appealing one. For the many working people whose autonomy is routinely challenged by the constraints of large organizations or the vagaries of the market, the spread of sophisticated computers holds the promise of gaining personal control. This prospect is presented at a time when conventional organizations are themselves being increasingly criticized for being excessively rigid and hierarchical. The notion of empowerment also touches directly on one of the longest standing debates over the social implications of workplace computing, the issue of control: how does computerization influence who controls productive processes and in what way? The classic tension between labor and management perspectives in this debate is increasingly overshadowed by talk of coordination, cooperation and, perhaps most intriguingly, worker "empowerment." It is now commonplace to hear management experts claiming to reject Taylorist precepts in favor of providing employees with greater autonomy of action—with sophisticated computing systems promoted as potent tools enabling this shift.

While there are good grounds to treat some of this talk of empowerment as advertising hype, managerial soft-sell, and at best naively optimistic, this article takes a different approach. It explores what it would mean to take the notion of empowerment seriously in addressing the central social issues of computerization as they have affected a large group of workers who have long been relatively disadvantaged in their dealings with computers.

Functional vs. Democratic Empowerment

"Empowerment" is a highly charged term which is now fashionably applied to a wide range of situations. However, underlying its proliferating use, we can identify two durable and distinct meanings. Most prominently the term has been given currency in the context of recent managerial initiatives to reshape organizations and their internal practices. Driven by a host of interrelated factors, notably an intensification of competition through the globalization of markets and widespread technological changes, enterprises are turning to approaches such as total quality management (TQM) and business process reengineering in attempts to remain viable. This is urged on by a burgeoning literature heralding a vision of the flexible/virtual/intelligent/lean/networked/reinvented... organization. This involves flattening the organizational structure by reducing middle management and pushing decision making down the hierarchy. Employees are expected to take on wider task responsibilities with reduced direct supervision. As Benjamin and Scott Morton note:

The leaner, more networked, more autonomous forms of organization we are moving towards, all have an empowering characteristic. Empowerment requires knowledgeable workers who rather than pass information up the hierarchy use that knowledge to manage their process as a feedback control system.... Empowerment means that operational decisions will not be made hierarchically, that knowledgeable workers must feel comfortable in making decisions, that managers must provide counsel rather than

directives, and that information and our conceptual models of how to use it are the source of decisions. [1, pp. 137-138]

Similarly, Tapscott and Caston observe a "paradigm shift" to a new form of organization based technically on the client server model and open networked architecture in which individual employees and work groups are "empowered to act and create value" [29, p. 209]. In another best-selling management book, business 'gurus' Hammer and Champy claim that employee empowerment is the "unavoidable consequence" of reengineering business processes [15 p. 71].

Computers are presented as contributing to employee empowerment as powerful tools that can bring relevant information to the person on the front line, implement the action decided on, and then provide monitoring feedback. While there is growing attention to supporting work groups via computer-supported cooperative work (CSCW) applications, the computers are still seen mainly as personal devices for extending the capabilities of individual users.

This concept of empowerment may be termed "functional," in the sense that it is oriented to improving performance in the interest of organizational goals that are assumed to be shared unproblematically by all participants. It is presented as a way to respond locally and flexibly to rapidly changing environmental conditions within the framework of organizational relations demanded by efficiency and other competitive criteria. Such empowerment is thus largely a matter of authorizing employees to assume much greater responsibilities, whether or not they chose to do so. While there is some admission within these visions that lower-level staff have been insufficiently empowered in the past, there is no provision for the initiative for change to come from below. Even Shoshana Zuboff [32], who shows unusual sympathy and insight into the plight of the workers at the bottom of authoritarian organizations, and who rejects a hierarchical organizational model in favor of one consisting of concentric rings of managers serving the learning needs of operations staff located at the core,

sees no role for this staff in the transformation which is presumably so much in their interests. In short, this is a vision of empowerment in which the political dimension of power is submerged and any enlargement of discretion remains confined within a framework of "bounded autonomy."

But empowerment has another and perhaps older meaning. It has been used for years by advocates within the labor and women's movements as a rallying cry to encourage members to work together to achieve greater control over important aspects of their lives—to act with a greater grasp and sense of their own powers. This may be termed democratic empowerment, for it emphasizes the rights and abilities of people to participate as equals in decisions about affairs that affect them. It is not so much received as a gift or an obligation, but claimed through ongoing individual and collective actions—actions that can be aimed at improving the *conditions* of work as much as they are at its *products*. This empowerment seeks emancipation from the subordination within oppressive institutions and "is directed toward creating conditions for independent individuals in a society of free cooperation and communication" [8, p. 247]. And where this emancipation is blocked by entrenched, privileged interests, struggle will likely be necessary. In other words, this form of empowerment is based on the history and ideals of Western democracy, as they would apply to workplaces. Significantly, it is the association with this celebrated tradition which gives "empowerment" much of its current potency and appeal.

While elements of both meanings of empowerment are relevant to addressing problems workers have experienced with computer use, there are obvious tensions and contradictions between the two. Functional empowerment can promote higher quality, greater productivity and more responsible jobs, but it assumes the overall workplace structures are adequate and that staff have no need or even legitimate interest in affecting the broader conditions under which they work. It takes for granted that goals are shared and

that there are no major obstacles to individuals achieving their potential along with appropriate rewards as long as they work responsibly within the domains delimited by higher-level management. In the many settings in which these assumptions of institutional virtue are not met, such a narrowly based notion of empowerment becomes a hollow claim. It may even be dangerous when the rhetoric of empowerment is used to intensify work, while obscuring an inequitable distribution of the benefits.

Democratic empowerment seeks to overcome these common pitfalls by giving staff a potentially unbounded scope to participative rights on all matters that directly affect them. However, unless it leads to more effective organizations—which can compare favorably with the overall performance of more conventional, less democratic organizations, this form of empowerment will remain a marginalized ideal. Thus for empowerment to offer an authentic promise of enhancing work experiences and outcomes, it needs to combine the attention to job effectiveness of the functional approach with the emancipatory aspirations of the democratic approach. Since advances in improving productivity have been achieved in recent decades, even as the structures of subordination have remained remarkably resistant to reform, it is democratic empowerment which we need to pursue more vigorously.

Control Issues in Workplace Computerization

Examination of the empowering potential of computers belongs within a larger discussion of the role that computing plays in the control of work. Since the earliest days of computerization, when Norbert Wiener withdrew from research on automatic control because he feared the consequences for workers [25], there has been a sharp and still largely inconclusive debate over its workplace implications [7]. Issues of control have been at the center of this debate: Who sets the pace and standards of quality? What skills will be recognized and rewarded? Who will govern when and how these skills will

be deployed? How will work be supervised? What data will be collected on the production process and who will use it for what purposes?

Two starkly opposing visions of computerized work have captured the imagination of observers and framed the debate: the "optimistic" or utopian view, which sees computers as benign, even friendly devices under the control of workers, liberating them from toil while offering new possibilities for creative expression and social engagement; and the "pessimistic" or dystopian view, which sees computers as extensions of oppressive management imposed on workers, rendering many human skills redundant, and monitoring every move to enforce an unrelenting pace of routinized production. What we have learned in the debate is that while these extremes can be found, most situations of computer application lie somewhere in the middle. There is no overarching social or technological logic that inexorably drives all computerization in one direction or the other [7].

Furthermore, the characteristics of the computer systems and their implications for the workers involved depend on the specific technical and social contexts in which they are deployed. A conclusion of this debate, from a social responsibility perspective, is not to focus on assessing the net, overall aggregate effect of computerization (i.e., whether technology is "good" or "bad" for workers). Instead, as the aim becomes more to eliminate or alleviate adverse consequences, it is more productive to ask such questions as: In which situations are the conditions worst? Who has contributed to this and how? What actions can participants take to promote reform? A prime place to start this investigation is with low-status office work.

Why Focus on Women Office Workers?

Office work performed largely by women provides a fruitful focus for understanding and ameliorating the adverse consequences of computerization for a host of reasons:

1. Office service and support tasks play a large and vital role in the effective operation of all major organizations,

particularly those that provide essential services to the public. Industrial restructuring processes reinforce the importance of office-based service work as a major center of economic activity, even as other sectors decline.

2. Office settings have been the primary site of capital investment in productive technology over the past few decades, as well as the scene of the most intensive computer use.

3. The labor market places a substantial proportion of the female work force in a few large job classes (i.e., secretarial/clerical) at the end of the occupational hierarchy, most vulnerable to technological and economic pressures. The concentration of working women in a few large female-dominated occupations is remarkably durable. For example, The U.S. clerical workforce is growing faster than the workforce as whole. In 1988, 80% of the 18 million clerks were female, vastly outnumbering all the women programmers, systems analysts, engineers and managers [7].

4. A substantial body of research identifies a range of potentially deleterious effects, particularly for women, from office computerization—stress, health and safety, social isolation and alienation, occupational immobility, pay inequity.

5. As a principal location of female employment, it has been the focus of the women's movement reform efforts—arguably one of the most important progressive influences in contemporary Western society. Specifically, there have been significant feminist critiques of the technological, cultural and organizational aspects of office work which have informed moves to greater user participation in system design, employment equity and valuing of "women's work" [12].

In short, what happens to office workers experiencing computerization is of considerable importance, not only to the millions of women involved, but to the organizations that employ them, the public they serve, and society as a whole. In turn this implies a complex set of responsibilities and challenges for the many professionals who design, develop

and implement the information systems (IS) targeted at office settings.

Case Examples

Office service work is by no means a homogeneous phenomenon—indeed there are wide and significant variations in information technologies, implementation strategies, organizational settings, task requirements and management styles. However, there are common patterns for each of these factors that can be found repeatedly in a large number of settings. Some of the more important ones can be usefully illustrated in three case examples—involving respectively, telephone operators, library clerks and secretaries. They are neither unusual for the computerization processes involved nor the problems that emerged. What they have in common, distinguishing them from most other settings, is that they have been the scenes of change initiatives in which the office staff have played a central role. These cases reveal serious shortcomings in conventional approaches to computerization, while demonstrating possibilities and obstacles for office workers seeking empowerment.

Telephone operators—MTS Trial Office project

The work of telephone operators epitomizes the routinized, fragmented, fast-paced, computerized office job. Positioned in the ever shrinking interface between the machine that automatically feeds calls into her headpiece and the machines that switch circuits and retrieve telephone numbers, a telephone operator is under constant pressure to work quickly and accurately, while being unfailingly courteous in the company-prescribed manner. This regime is enforced through a system of work monitoring that is perhaps the most comprehensive and fine-grained of any job. Operators are typically expected to maintain an average working time (AWT) per call of only 30 seconds, and sometimes much less. They can be listened in on and recorded surreptitiously by a supervisor at any moment without announcement. It is little wonder operators report high levels of stress. Usually the effects are confined to

the individuals concerned, in the form of muscular discomfort, elevated blood pressure, repeated sick leaves, increased consumption of painkillers, and so forth. But in the case of the operators at one telephone company, the stress reactions also triggered a chain of events with much more dramatic and wide-ranging consequences.

The Manitoba Telephone System (MTS) is a public corporation employing 5,000 individuals. Its operations are centered in Winnipeg, where more than 350 operators work. Ninety percent are women. Above them in the organizational hierarchy are seven levels of supervision and management, which at its top is exclusively male. A management consultant who began working with the corporation in 1988 observed that it was an "intensely hierarchical, autocratic" place, which at that time had a "serious gender ghettoization problem." According to her, "it had a pervasive command and control culture in which operators were treated like prisoners," constantly watched over and punished for every infraction of the rules (personal communication, 1993). Operators themselves felt they had become "Rapid Transit Robots" [22, p. 28].

Starting in early 1986, operators reported on several occasions experiencing "shock-like" sensations while working with the computerized switchboards. The symptoms ranged from numbness and tingling to more severe pain requiring medical attention. In September, with the incidents increasing and tests of equipment not indicating any physical cause, operators in one office exercised their legal right to refuse work they considered to be hazardous to their health and walked off the job—severely disrupting telephone services. Following a stop-work order from the provincial Workplace Health and Safety Division, terminals and staff were relocated to another building while technical, ergonomic, and environmental testing continued. Several studies concluded that the equipment was not a key factor in this phenomenon, pointing instead to the "highly automated, repetitive, routine, closely measured and super-

vised" [21, p. 2] work environment as the main cause of a "collective stress response" [19]. Prompted by these findings, the corporation executive immediately removed the most overt aspects of machine pacing of work—the use of AWT as an individual performance measure, the screen message telling operators when there were calls waiting that the office couldn't handle immediately, the high-pitched tone when the call-waiting queues were full, and the bell that sounded throughout the building, warning that coffee break would end in exactly two minutes. To deal with longer-term issues, the executive agreed with the union representing the operators to the establishment of a joint labor-management Trial Change project. A principal aim of the project was to "trial innovative organizational and managerial approaches in order to improve the working environment" [23].

The Trial Change project got underway in June 1988 with a design team consisting of three managers and three operators running the project. Two external consultants were hired to support the design and implementation processes. Together, they established a Trial Office, in which issues such as shift scheduling, the elimination of electronic monitoring, training, group problem solving, consensus decision making and a host of other work reorganization ideas could be tried and evaluated before being implemented throughout the corporation. The Trial Office was a working service center staffed by 40 operators selected randomly from 90 volunteers. The operators took turns sitting on the internal committee that ran the office. In the beginning, managers played very little role and decisions were made by consensus. The operators developed a statement of philosophy which stressed the need for "equality, fair play, openness and honesty in order to . . . experiment with innovative organizational and managerial concepts . . . [and] empower active involvement of all employees in decision making by encouraging development of skills and knowledge, achieving high morale and enhancing work" [19]. Another theme emphasized by both operators

and managers was the importance of improving customer service, both as a way of enhancing operators' jobs as well as to bolster the company's competitive position in an increasingly deregulated telecommunications industry.

After six months of experimental operation, the Trial Office in conjunction with the design team, had refined a list of 22 recommendations involving changes to organization structure, training and education, operator job description, work procedures, scheduling and participative management. A project trustee group consisting of MTS executives and senior union officials selected nine of the top-rated proposals and presented them to the operators for approval. Operators ratified all the proposals. Consequently, operator services have been reorganized around smaller, multifunction work groups, while several of the innovations first adopted by the Trial Office (e.g., elimination of remote monitoring, improved training resources, cross-training, unlimited rights to trading shifts, greater discretion in responding to customer queries) are being extended throughout MTS. The more radical proposals related to flattening the organizational hierarchy and raising its lowest level (eliminating some management and supervisory positions, enhancing the responsibilities and pay of operators, continuing the participative management practices of the Trial) await approval by the senior trustee group. The Trial Office still operates, but in a reduced capacity. The union-side coordinator of the project feels that while important gains have been made, the office is "now nothing more than a glorified quality circle" (personal communication, 1993) and is disillusioned that the early promise of the experiment is not likely to be achieved. She attributes this to a variety of factors—short-term financial pressures, a new president more interested in pushing a TQM approach, and the more general resistance to change of a deeply ingrained organizational culture.

The Trial Change project has led to significant innovations in the way in which the corporation develops new IS. For the first time operators

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**technological change help open
'spaces' in organizational life** *within which*

the staff can bring to the surface long submerged concerns.

[redacted]

and unionists are included in the committees responsible for overseeing major system upgrades. For instance, there are equal numbers of labor and management representatives on the most recent of these, the Modernization of Operator Services Technology task force. It is charged with recommending a replacement for the computer systems used by operator services, identifying future service enhancements and planning for the human resource implications. An explicit objective for the new technologies is to help enhance and expand the job of the operators. The committee in 1993 recommended moving away from IBM as the vendor for a new directory assistance system, a decision subsequently ratified at the executive level in spite of considerable outside pressure on the corporation.

Results of an internal evaluation of the now renamed M-POWER (M-Professional Operators With Enhanced Responsibilities) project indicate considerable success in improving working conditions. A preliminary report notes that the change effort has "had positive impacts on the work lives of the workers and managers affected. Many have reported greater job satisfaction, more challenge and variety in their work, more opportunities for learning new skills and for career advancement at MTS. This has generally been manifested by a drop in absenteeism, significant decreases in the number of grievances . . . , and improvements in customer satisfaction" [21, p. 4]. But there is also a recognition that more needs to be done. While jobs have enlarged, many remain highly repetitive and boring. Based on this experience, the joint labor/management evaluation team is encouraging the corporation to proceed with the further organiza-

tional restructuring proposed by the design team and Trial Office.

It is important to note that the main impetus for these beneficial changes did not come initially from managers, but rather despite them. It was the operators, systematically excluded from any formal influence for so long, who first had to force management in a dramatic way to take their concerns seriously, and who then came up with many of the concrete proposals for change. They showed they could run much of the operation on their own by developing innovative work practices and structures. Even if not all their feasible proposals have been adopted and progress is slowed by institutional factors, MTS operators have initiated a process of significant organizational reform. In so doing, they also demonstrated the latent potential of lower-level staff that in many similar settings still awaits the opportunity for release.

Library Assistants—Human Centered Office Systems Project

The 400 library assistants of Sheffield City Council Library and Information Services have much in common with office clerks in large service organizations everywhere. They are almost all women (99%), are poorly paid, and have little upward mobility. The work is conventionally regarded as routine and low-status, since it involves responding in person to inquiries from the public and maintaining transaction-based records in a computerized IS. The library assistants check out books, receive, repair and reshelf them, process catalog and borrower records and otherwise keep one of the most heavily used public libraries in Britain functioning smoothly. While they are beginning to integrate microcomputers into this information-

intensive operation, many of the principal files are still accessed via a batch processing system running on the city council's mainframe computer. The system, regarded by management and staff alike as a "disaster" [11, p. 222], was constructed piecemeal over more than a decade. Staff find that the poor response time makes these facilities worse than the previous manual system. Its many shortcomings and peculiarities are a constant source of great frustration for the staff, one of whom described it as "an iron carthorse with ribbons" [10, p. 17].

In the mid-1980s the library service as a whole began moving away from its traditional "custodial" view of its role to a more outward-looking, active, community-oriented model. As part of this, management accepted a trade union-based equal opportunities proposal to expand the pay and career opportunities of library assistants. They began to be rewarded for handling the more complex public inquiries, officially the exclusive domain of professionals. Management also recognized the need to upgrade the computer system, and began planning to acquire and customize one of the integrated library systems then becoming widely available. However, they were not able to finalize specifications for the £1 million system or develop proposals for staff involvement. In part, this was because they feared that in light of the staff's reaction to computerization so far, they would resist any further moves in this direction.

It was this setting into which an interdisciplinary team of researchers from the nearby university came with proposals for collaborative research on new approaches to user involvement in systems development. Management welcomed the initiative, and later released the clerical staff to par-

ticipate in project activities during their regular working hours. The researchers also contacted the staff union, which played little subsequent role, although it approved of the project.

The principal techniques that the Human Centred Office Systems Project (HCOSP) brought to the experiment were the "study circle" and the "design team." A study circle is a small group of staff, who come together voluntarily to work with a facilitator on a range of activities around a given central topic—in this case the specification of an IS [31]. The agenda is not mandated or delegated by management, but can be open-ended. As the researchers leading the project note:

Unlike management-inspired 'quality circles,' study circles emphasize active involvement by the participants in working on an agenda which they define themselves. The groups can provide a basis for 'consciousness-raising' (in the feminist sense), they enable participants to develop a mutual-support network, and also to gain access to new ideas and information. [10, p. 323]

The study circles consisted of 6 to 8 volunteers from the clerical staff, with the researchers acting as facilitators. The first study circle was held in 1987 and initiated the establishment of a broadly based design team to oversee the acquisition of the new computer system. Unlike the uniform status of the study circle participants, the design team was more representative of the organization as a whole—with three library assistants working alongside colleagues from middle management, computing, and other professional posts. Over the next three years, six more study circle groups met, so that eventually over 10% of all library assistants had taken part. While the study circles were gaining momentum, the design team began to get bogged down. The library assistants' representatives felt isolated—from senior management and, increasingly, from their coworkers. To address this situation, the research team held a seminar designed to bring together all those concerned with the project. Library assistants were in a majority and during policy-making sessions were in a group of their own.

One major outcome was the expansion of the design team with library assistants making up nearly half its membership, and their successful insistence that a *senior* manager serve as chair. Additionally, management agreed to set up a multiparty support group to coordinate detailed work by professional and nonprofessional staff in such areas as job design, health and safety, and training. On this basis, the new design team structure made slow but steady progress in spite of delays related to managerial resistance to the new staff assertiveness and changes in key personnel. A more serious and chronic source of delay was the growing budget crisis affecting local authorities throughout the UK. Nevertheless, the library completed the specifications in 1991, shortlisted potential vendors and more recently advertised a call for tenders. Anticipating that recessionary pressures will ease sufficiently to enable software purchase and customization work to begin, library assistants continue to be involved in the related organization redesign activities, specifically job design, health and safety, and systems services.

Even though all the original objectives have not been reached, at least not yet, the HCOSP project is able to claim some significant achievements. The study circles demonstrated both to the management and the staff that "low-level" support workers, who previously had been regarded simply as an obstacle to technological reform through their passive resistance, could take the initiative and make valuable, positive contributions. By developing a network of support within the organization, library assistants gained the confidence to make and press their demands. In contrast to entrenched gender stereotypes, the women made informed, practical suggestions about the software specifications.

Based on their direct experience of the work involved and their concern for serving clients, the library assistants identified significant requirements that would otherwise have been overlooked. In particular, the specifications now contain several items intended to enhance their interaction with customers (e.g., man-

ual overrides for overdue notices, fines collections policies, local printing facilities and maximum response times). Furthermore, the library assistants enlarged the focus of inquiry beyond the narrowly technical aspects to include relevant issues of job design, training and equity of employment opportunity. In addition to broadening and strengthening the specifications, the study circles were an impetus in structuring (and restructuring) the design team, overcoming an impasse in its activities and generally reshaping the design process as a whole, so it was more in tune with the organizational realities of everyday library work. In so doing they have improved the chances that the final system would be accepted and better fit the varied needs it must fulfill.

Secretaries—Self-Managed Office Automation Project

Secretarial work is among the least structured of clerical office jobs. While specific task outcomes are usually clearly specified, the manner in which secretaries accomplish them is often more discretionary. They are told what to do, but not how. In a busy office a secretary must constantly juggle a complex and dynamic set of demands from a variety of sources. The computer support for the document preparation aspects of such a job reflects the character of the tasks and the organizational relationships within which they are embedded. The current norm is for management to provide standard microcomputer hardware and software packages for wordprocessing, and possibly spreadsheets, databases, and so forth. Networks for resource sharing (e.g., disks and printers) and communications are now becoming commonplace. Installations often grow in an incremental, *ad hoc* fashion, without the guidance of a detailed central plan.

This is certainly the pattern followed at York University, near Toronto, where the widespread introduction of desktop computers for office support began in the mid-1980s. This was a time when student enrollments were growing rapidly, while the number of support staff remained fairly static. The dean's

office in the Faculty of Arts led this computerization effort by installing over 100 PC-compatible micros in the 17 academic department offices that make up the faculty. While the intention was to save the "secretarial system [from] breaking down under the pressure [of increasing workloads]," the secretaries were not consulted about this beforehand, and in many cases the equipment arrived on their desks without prior warning. Reflecting an all too common underestimation of the complexity of computerization and the organizational learning needed, it was planned that training would consist of a two-day introductory session on DOS and WordPerfect. According to the dean responsible, the purpose of the training was "as much to desensitize people's fear of the machine as to instruct them in any intricacies of [its] operation" [3, p. 211]. Secretaries were expected to learn as they worked, but no extra time was set aside for this.

It soon became clear that this approach did not work well. Complaints by staff prompted managers to provide some temporary additional training and support, but this too was not sufficient. A later survey of the entire all-women secretarial support staff in the faculty revealed that the source of dissatisfaction was not with the computers themselves, but with the lack of training, support and consultation. Consistent with detailed studies in similar settings [4, 16], the secretaries reported learning much more by studying on their own and talking with coworkers than from formal courses or other external sources of expertise. They dealt with usage problems primarily through mutual support within the work groups rather than by referring to written manuals or to outside specialists. A comment by one secretary summarized well the overall reaction of the staff:

I certainly feel that there was a great lack of consultation with the staff in the introduction of computers, and it is only due to the efforts of the staff themselves that this has had any success at all. I feel strongly that training has been inadequate in the extreme and that computers are not being used as they should be. With proper training there is so much

that could be done. The staff neither have the time nor the facilities to expand on their knowledge.

As the secretaries were attempting to adapt to the introduction of desktop computing, they also took their complaints about the continuing lack of training and support to the technology committee of the staff union. This led to collaboration between the chair of the committee, and the author, a computer scientist on the faculty. Together we initiated an action-oriented research project entitled Self-Managed Office Automation Project (SMOAP) [3, 5]. The aim was to help the office staff assess their needs and demonstrate that, with appropriate resources under their control, they could support their own use of computers.

The main focus of the project was the establishment of a microcomputer resource center. This served as the site for regular meetings of the Analysis group, consisting of secretaries from selected department offices who discussed their computer-related work problems. These were conducted along lines very similar to the study circle sessions of the previously described project. According to the wishes of the participants, there was a strong emphasis on training for word processing (indeed stronger than the organizers had originally planned). The staff also raised and discussed related issues of direct concern to them—dealing with heavy workloads, upgrading job descriptions, improving ergonomic conditions, developing new computer uses and generally getting the recognition they felt they deserved from management for their contributions to the university.

At the end of the five-month project, a questionnaire survey of the participants indicated strong positive attitudes to the experience. One of the secretaries remarked:

I feel there is concrete hope for staff demands regarding ergonomics, staff input in decision making, staff independence over access to training and procedure making. Through my own initiative to learn and develop new skills, I have created new systems and procedures for carrying out my responsibilities [3, p. 225].

These remarks take on added significance in light of subsequent events. Several months after the project ended and the resource center closed, the support staff union went on strike. One of the three main issues that kept the 1,100 members out for over two weeks, was the demand for a staff-run microcomputer training. This demand was ultimately met, and in early 1988 a training program was established. Modeled on SMOAP, it was headed by the former project coordinator and offered small workshop-based training. After three years of expansion and internal "politicking," the Microcomputer Training Programme moved into its own specially designed training facility. At the opening ceremony, the university vice president in charge of finance and administration publicly apologized to support staff on behalf of management for taking so long to recognize the validity of their demands!

The program has a regular budget funded by the administration, while the union retains a say in its operation. One of the features the union has successfully insisted on is that all staff have an equal right, on a first-come first-serve basis, to the program's services. In other words, a secretary and not her boss, formally decides what courses to take and when. With a former secretary as trainer/administrator, the program trains over 300 staff per year in using software popular for word processing, spreadsheets and hard-disk management. A deliberate attempt is made to gear the courses and the content of each session to the self-identified needs of the staff. It is beginning to offer support specifically for informal design activities, and the secretaries in at least one department regularly follow up training sessions with group discussions on how to apply what they learned to their particular office. The expanding scope and continued popularity of programs' offerings are testimony to the valuable role it now plays in helping university staff make effective use of desktop computing technologies.

Common Patterns

These quick sketches do not do full justice to the complex organizational

changes subject to multiple interpretations. They should not be treated as "success stories," for the eventual outcomes are far from clear-cut. Nevertheless, they provide the basis for interesting insights into empowerment issues over computerization. Despite all the differences between these three cases in terms of the jobs, technologies and organizational setting, there are striking similarities. In each case, women office workers faced unnecessary hardships because of conventional ways in which computerization had been imposed on them. They had not been consulted about the introduction of the computer systems in the first place, and initially tried to accommodate to the new conditions, in spite of experiencing considerable adverse effects—effects that are commonly associated with the negative implications of computerization elsewhere. Coming from the lower reaches of rigid, strongly hierarchical organizations, attempts to voice concerns were met with fates typical of bottom-up initiatives. Only after pressure for change had grown considerably was any action taken. In the MTS and York University cases, the office staff had to take the drastic step of actually stopping work before management took their complaints seriously enough to support a process leading to significant organizational reforms. In pushing for reform, staff had to act collectively to overcome the resistive presumptions of technological primacy and managerial authority by those above them. In the HCOSP case, less extreme actions were needed, in part because of the timely arrival of researchers who were instrumental in resolving an organizational impasse.

In each case, the clerical staffs' demands were not mainly for personal gain (e.g., pay increase), but to improve the functioning of the organization. Toward this goal they sought greater control over various facets of their workplaces—information (e.g., reduction of individualized monitoring), control over knowledge (e.g., via their own training program) and decision making (e.g., scheduling, technology investment). They also sought to change the structure of the organization in

ways that would give them greater influence. This pursuit of greater control, however, was not principally to challenge management, but to perform their jobs more effectively, to improve their working conditions and to enjoy greater respect than they had so far been granted. All these were matters that management could (should?) have acceded to earlier in the common interest of enhancing organizational performance without diminishing their legitimate authority. It was only later that management recognized the validity of the demands, and belatedly agreed to corrective actions in these areas.

It is also interesting to note that while the initial focus of concern in each case was a computerized information system, the avenues for remedying the situation were quickly enlarged to embrace various aspects of its organizational context—training, support, job design, organizational structure. Thus, it was not just the particular design of the computer system that was problematic for the office staff, but how it fitted in with their overall jobs. By taking a more comprehensive approach and an active role in determining many of the details, the participants have undoubtedly contributed positively to the overall system development. The signs are thus good that when the systems described in the cases are fully implemented, they will be welcomed as functional tools for extending the capabilities of the office workers who use them.

The central organizational innovations adopted to pursue these concerns were also remarkably similar, though arrived at independently. In each case, staff voluntarily came together on a regular basis in a forum at which they could address a wide range of problems in a manner largely of their own choosing. The study circle, analysis group and the Trial Office, with the assistance of their facilitators/mentors, and in the context of more general employee agitation, each served multiple and crucial functions in the wider organizational reforms. They provided a relatively protected setting in which women could learn from one another, develop mutually supportive relationships, and experiment with

new ideas and approaches.

The skills they developed in this setting, as well as the confidence that came from practice and the assurance that they were not alone, helped participants to be more assertive in their dealings with other organizational actors. While in two cases, the union actively supported these efforts, much of their strength and authority derived from the experiences gained in the groups. These grass roots forums drew their vitality from the women who participated and in turn enabled them to find and amplify their voices when other routes had been denied.

Empowerment Revisited

We can see that each of these three cases represent partial, yet significant examples of empowered action—in both senses of the term discussed. First, the staff took on greater responsibilities and worked with management to improve their own job performance. They were not trying to avoid work or obtain larger rewards. Rather, they wanted access to resources so they could do their jobs better. They took initiatives to develop systems and establish infrastructure to enable them to use the computing facilities more effectively as work tools. In spite of difficulties, they achieved some success. This is the sort of empowerment the TQM and business process reengineering advocates would approve of. However, the staffs went considerably further than this. They also made progress tackling the wider technical and organizational constraints they found blocking the way of more satisfying jobs. In the spirit of labor and feminist notions of empowerment, they worked together in effectively challenging their subordination within the gendered workplace hierarchies of managerial and professional authority. It is in combining the performance-enhancing aspects of functional empowerment with the emancipatory aspects of democratic empowerment that these three cases point out possibilities for significant organizational and technical reform.

These cases also show that making progress will not be straightforward. In spite of the ultimate acceptance by management of many of their initia-

Democratic empowerment seeks to give staffers a potentially unbounded scope to participative rights on all matters that directly affect them.

tives, the efforts by staff to act in an empowered way involved overt political contest. In part, this accurately reflects the inherent political nature of empowerment. After all, any attempt by individuals or groups to expand their influence over some sphere of activity raises questions of how this affects others who also have a stake in the same sphere. One should therefore not be surprised or dismayed that addressing these questions results in dispute. Indeed, in these cases, the contest is best regarded as a healthy sign that the tensions resulting from poor management and the more widespread need to readjust organizations in the face of technological and other changes in the external environment are being dealt with openly and constructively. This illustrates Gareth Morgan's more general observation that political conflict can serve a useful purpose by stimulating innovation [20]. In this sense, computerization serves not so much as an empowering tool, but as the catalyst and occasion that expands the possibilities for organizational realignment and empowerment. The constraints and opportunities presented by technological change help in opening 'spaces' in organizational life within which the staff can bring to the surface long submerged concerns. A particular focus in addressing such concerns is to exercise control *over* the information technologies as a precondition to exercising control *through* them.

It must be recognized that although the staff in these cases have taken significant steps in the direction of authentic empowerment, it is not yet clear how far they will be able to go. The improvements so far are modest, and fall short of their goals. It is not even clear to what extent organizational changes are permanent, in the sense that old patterns of

subordination may reassert themselves. Indeed, there are signs of this happening. As the more obvious irritants that provoked the reforms are tackled, an important component of the motivation among clerical staff for change subsides. Maintaining momentum requires overcoming some formidable obstacles. We have seen that shifts in senior personnel, resistance from middle management, conservatism of union officials, and external financial pressures have all taken their toll. The cultural climate generally does not yet favor initiatives of this kind and there are few ready examples to legitimize and guide such efforts. Further progress depends not only on dynamics within the staff but also on gaining support in other sectors of the organization. In particular, systems specialists can help improve the prospects for sustainable empowerment initiatives.

Implications for Systems Specialists

These cases suggest several important lessons that can be useful in enabling office workers to take empowered action. They underscore the growing recognition that conventional, rationalistic systems development approaches are inadequate for dealing with the interpersonal aspects of service work illustrated in these cases. The required skills are often vital to office operation, but are inherently difficult if not impossible to formalize and they lack the authoritative status they would enjoy if associated with higher-ranked, more formally qualified personnel. Greater priority therefore needs to be given to development methods that allow the people concerned to bring their experiences as well as their self-identified interests to bear in an early and effective manner.

The alternative approach re-

flected in these cases is consistent with the traditions of participatory design (PD) (see the special issue of *Communications*, June 1993 and [8,13,28]). It should be clear that this involves more than simply having user representatives attend design meetings, explore various options and take responsibility for the results. While the preceding was done in the two cases involving systems design, there was additional support through forums, notably study circles, where office workers could meet on their own to share their experiences and study the common problems they faced. Their value comes from being separate from, but feeding into, the multiparty negotiating forums more conventionally associated with PD approaches. To function effectively, they need to meet regularly during working hours and with experienced facilitators. Providing the necessary official sanction and resources will initially require considerable faith on the part of management since these forums must operate informally and free from immediate managerial oversight or reporting obligations. There are indications (see the "Coast Pharmaceuticals" case [17]) that where far-sighted middle managers have fostered a climate supportive of grass roots innovations, the payoffs have been significant and sustained (Rob Kling, personal communication, 1993).

This raises the interesting possibility that with the spread of networks, mail and other forms of computer-mediated communications may be useful for providing valuable forums for office staff to keep in touch. Like the workplace analogues of community information networks discussed by Doug Schuler in this issue [27], these may offer vehicles for learning about new developments, sharing

perceptions, and mobilizing effort. While lacking in the immediacy of face-to-face contact, they could fill a useful niche by offering an efficient way for staff to communicate with one another with fewer cost and schedule constraints. It is now technically possible to create various forms of quasiprivate electronic spaces. Some could be like study circles, with small stable memberships and all interactions between participants mutually known. Others could be equally protected from outside observation, but with a dynamic membership and contributions made anonymously. This could facilitate idea generation, voting and other group processes.

However, the emergence of such "electronic social fields" are likely to face the greatest suspicion where they are perhaps needed most—in traditional bureaucratic institutions [26]. Additionally, it will not be easy to protect against the sort of managerial subversion which effectively shut down a lively computer conference about "professional improvement" among women in a large drug company [32, pp. 382–383]. While computer systems may play a useful role in expanding the functional capabilities of individuals and groups of workers and provide forums for more open discussion, the benefits of these are likely to be modest at best unless staff can become legitimate 'actor-constructors' in systems development as well as wider organizational reform activities [14].

To help achieve these reforms, systems specialists will need to do more than adopt more participatory methods and assist in creating new forums. Essential to both, and more fundamental in nature, systems specialist and office staff must develop more constructive and respectful relationships than those described in the preceding cases. Ben Shneiderman pleads for an important step in this direction with his stirring call for systems designers to "fight" for users [29]. In order that this advocacy not usurp active participation by users themselves, it should be directed mainly at allowing their voices to be heard. The basic principle he identifies is "recognize the diversity" of users. Often this means taking into

account differences in users' experience, but when the aim is to foster empowered action, it means first recognizing and then addressing the specific gender, occupational and hierarchical dimensions to the power differentials that have helped marginalize office staff in the first place. These are not just abstract attributes of contemporary organizations, but must be observed and dealt with in the immediate situations of everyday work life.

Peter Denning offers similar useful guidance on how to accomplish this when he identifies *listening* as one of the critical skills for educated engineers to acquire [6]. The "clients" of the systems specialists who need to be listened to most carefully will be the office staff, for often it will be their voices that are least customarily heard. The adaptations required for tuning in to what these women are saying go beyond the subtle changes in speech pattern and physical deportment appropriate to respectful attention. Where managers resist grass roots initiatives, systems specialists may also need to assert some professional independence. For instance, in the interests of good development practice, it might be necessary to insist that office staff have an adequate opportunity to prepare among themselves before design meetings and that they be able to participate in sufficient numbers for their views to compete with those of parties more accustomed to such settings. If forums are made more receptive in these ways, then staff will no longer be regarded as mere 'users' but as real 'actors' with their own distinctive voices and constructive roles to play in the ongoing dramas of technological and organizational development.

While systems specialists should not abandon the particular and vital abilities they bring to any encounters with office staff, they do need to eschew the presumptions of technical authority to define problems exclusively on their own terms. Such changes in habitual behavior and sources of prestige will likely be uncomfortable for many systems professionals, especially men, but will be effective in leading to relationships that are more equal and open. It can

only be through partnerships based on mutual respect and learning that the full potential of all participants can be brought to bear in improving the development and use of IS. Otherwise, the old patterns will persist—in which staff remain silent or have to shout before they are heard, and struggle continually with inadequate systems.

Where office staff and systems specialists can open up dialogues that recognize equality of rights as well as differences of perspective, it is likely that all parties will learn much. In an environment of mutual learning [18], office staff will develop a deeper understanding of the technical processes involved as well as a better appreciation of the opportunities and constraints under which system personnel have to work. Likewise, systems specialists will encounter many of the practical considerations in real office systems from the point of view of the people actually doing the work. Seeing how their design decisions can affect others' lives may educate them better to the ethical dimension of systems development work and encourage an accountability for their actions, which is an essential aspect of socially responsible computing (see [9] and [24] in this issue for more on ethical aspects). If the cases discussed earlier are any guide, then systems specialists will also be reminded by staff that it is not so much the actual technologies that are "critical" for effective systems, but a range of other, highly contextualized factors, that spell success or failure. Wherever technologies are made, their value is determined by how they can be worked together with the specific practices of the organization they have to serve. These collaborative development processes can also be seen as the microlevel counterparts of the democratic, participative, needs-driven policy vision that Gary Chapman in this issue advocates at the national level [2].

Conclusions

We are in a period of considerable institutional flux, when many of the assumptions and structures that have guided organizations in the past are being questioned and alternatives actively sought. In particular, there

are frequent calls for the reshaping of organizations along lines that are significantly less hierarchical and more democratic than in the past. At the same time, systems specialists are promoting technologies that can support such a redistribution of institutional power. If these transformative visions are to have real substance, then those who have suffered most from the now recognizably outdated organizational and technical forms should have a strong voice in any reform process.

For both practical and ethical reasons, the promotion of authentic empowerment among those at the lower end of occupational hierarchies needs to be taken seriously. Organizations can become more effective as humanistic and democratic values are pursued. While enlightened managers and tool-like technologies can certainly help in this process, they alone are unlikely to be sufficient. As we have seen from the experiences of women performing three common clerical jobs, the initiative of the office workers themselves can be vital in reshaping technologies and reforming organizations.

Systems development professionals concerned with fulfilling pragmatic as well as social responsibilities can play an important role in this. If they listen carefully to the individual and collective voices of office staff, they may be surprised to find they have new partners in creating IS that function better, contribute to a greater quality of work life and distribute power more democratically. At the same time, they will be lending their efforts to wider social reform processes as women actively claim more equitable participation in work organizations. We should not look mainly to competitive pressures and computing advances to foster such overdue empowerment, but to the concerted endeavors of individuals taking greater control over their own working lives and enabling others to do likewise.

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