IN THE AGE OF THE SMART MACHINE

THE FUTURE OF WORK AND POWER

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PREFACE

THIS BOOK was born of serendipity and silence and a passionate curiosity. There is a story to it. . . .

By the autumn of 1978, I had spent more than nine months deep in the stacks of a mammoth university library. I had been reading literature on the history of the industrial revolution as part of the preparation for completing my Ph.D. degree at Harvard University and a specialization in the history of work. Through this literature, I tried to grasp how everyday life had been altered by the profound material change in the means and methods of production. By "everyday life" I mean those things that we usually take for granted—the cast of our feelings, sensibilities, and expectations; the intimate details of eating, drinking, and socializing; the things that make us cry or laugh; and the things that make us mad. Yet I found the historical investigation frustrating. In many cases it provided rich detail about behavior, or the interpretations of behavior by observers, but offered inadequate insight into the subtleties of human experience. Constructing an idea about the inward sensibilities of ordinary people during those volatile times required painstaking effort and imagination. As my work progressed, I was ever more fascinated with the very different social constructions of reality that characterized workers then and now. I was fascinated by the ways in which older sensibilities are lost to a kind of social amnesia, crowded out by our adaptations to the demands of changing times.

While working on my research, I continued to develop my practice as a consultant to organizations. My practical work had been in the areas of organizational change and the evaluation of workplace innovations. Late in 1978, a Wall Street bank asked me to assess its first application of advanced information technology to clerical work. It had dramatically restructured its approach to the production of several key products, such as loans and letters of credit. Clerks who had performed one small operation in a long paper chain were, for the first time, using computer technology to accomplish all the functions associated with a single product. Visiting the bank's offices, I witnessed a sight that would eventually become so familiar as to defy notice—an entire floor of

people seated at their partitioned workstations, staring into the screens of desktop terminals. At that time the experience was still peculiar enough, for both the clerks and their managers, as to provoke concern. The clerks seemed to have more difficulty adapting to these conditions than anticipated, and the first phase of the new effort resulted in skyrocketing error rates. Managers believed that they had enriched the clerical job, and they could not explain the sense of malaise that had swept over the back office. I proposed to interview a broad sample of clerks and managers and to determine the sources of these troubles.

The technological change was one among many subjects we discussed during these interviews, but it was the one for which their responses were the most puzzling. Many people voiced distress, describing their work as "floating in space" or "lost behind the screen." They complained that they were no longer able to see or touch their work. Many felt that they no longer had the necessary skills or understanding to function competently. I did not know how to make sense of these comments, but I could not stop thinking about them either.

Within a month I had accepted another assignment, this time with a large daily newspaper. It wanted to understand more about the human and organizational issues raised in the computerization of their typesetting operations, a transition from "hot" type, which depended upon the manual operation of Linotype machines, to "cold" type, which was set with computer keyboards and printed out on photoprocessors. I spent several nights interviewing Linotype operators and hanging out, watching them work. To my surprise, their comments paralleled those of the bank clerks, sometimes quite precisely.

After one such night I left the building at about 9:00 A.M. and paced the city in a state of agitation. I finally ended up in an art museum where there was an exhibit of the sculptor David Smith's Voltri series. These powerfully expressive figures of burnished iron had been created in an abandoned factory workshop in the Italian village of Voltri, for exhibition in the 1962 Spoleto festival. Many of the figures reminded me of old hand tools; some were reminiscent of familiar industrial objects. Extracted from their worldly context, cast in the enduring silence of iron, enveloped by the pure white silence of the museum amphitheater where they were on display, these figures seemed like strangely beautiful fossils, wordless relics of a dying time. Their silence was as tantalizing and poignant as that of the historical documents I had been

reading; it beckoned and pointed but left me yearning to hear them speak.

Before I knew it, I was writing furiously in my notebook. A vision came together for me that morning, one that has been brought to fruition only now, with the completion of this book. I realized that the people I had been interviewing were on the edge of a historical transformation of immense proportions, as important as that which had been experienced by the eighteenth- and nineteenth-century workers about whom I had read so much and imagined even more. I had long fantasized about what it would have been like to take a tape recorder into the workshops and factories of Britain in 1789 or 1848 and had considered the questions I would have asked in order to elicit the kind of insight I hungered for. Now there was an opportunity to do just that. The qualities of knowledge for which I had combed two-centuries-old documents were available here, now, in the hearts and voices of those people who were experiencing these new circumstances of production for the first time.

The statements that had puzzled me in my interviews with the bank clerks and Linotype operators began to make more sense. The material alterations in their means of production were manifested in transformations at intimate levels of experience—assumptions about knowledge and power, their beliefs about work and the meaning they derived from it, the content and rhythm of their social exchanges, and the ordinary mental and physical disciplines to which they accommodated in their daily lives. I saw that a world of sensibilities and expectations was being irretrievably displaced by a new world, one I did not yet understand. The question that held me centered on the nature of the differences between the two. The world of industrialism, its means and methods, was about to succumb to the same silence that had already engulfed the tools of the craftsman's workshop. What kind of world would emerge from this silence and how would we feel in it? Would it be possible, at this early stage in the historical process, to learn enough to frame the choices that would be laid open? Might a clearer grasp of these choices enable us to avoid the worst mistakes of the past? Would it be possible to take hold of new opportunities rather than simply repeat old patterns?

Based on the illumination of that morning, I began to outline the research program whose results are presented in this book. I wanted to

interact with people at every level of a variety of organizations engaged in disparate forms of work. The approach would combine participant observations with semiclinical interviews and small group discussions. I intended to use my clinical skills to help people articulate their still-implicit experiences in the new work settings. With such data it would be possible to identify generic patterns of psychological and organizational experience associated with the emerging technological conditions of work.

I also hypothesized that history would offer only a brief window of time during which such data could be gathered. The jolt of unfamiliarity had to be exploited for the heightened sensibility it brings. I thought of the early American mill workers who expressed outrage at the thought of reporting to work at a fixed hour. Yet in less than a generation, such work rules had become routine. The workers' outrage betrayed a conception of daily life different from our own, one that was only made explicit in the confrontation with an unexpected set of demands. It seemed likely that in the apparently maladaptive responses of workers to computer-based technology (what many called "resistance to change"), it would be possible to trace a lineage of ordinary assumptions that referred back to the realities of the past and their points of disjuncture with the future. Like many other scholars of my generation, I had been struck by Daniel Bell's formulation of the post-industrial society, but discussions of these social changes were frequently limited to sociological abstractions. I wanted to discover the flesh and blood behind the concepts, the interior texture rather than the external form. I wanted to understand the practical problems that would have to be confronted in order to manage the new computerized workplace in ways that would fulfill the lofty promise of a knowledge-based society and to generate knowledge that would be instructive to those charged with that managerial responsibility.

I could not have known in 1978 that it would be ten years between that moment of insight and the publication of this book. The research process proved to be richly studded with opportunities for discovery. My understanding of the phenomena in question continued to change and grow with each year of field investigation, as I struggled to make sense of my data, particularly those that were unexpected or could not be explained with the concepts I had already developed. I learned that while resistance to the new technology is a valuable source of knowledge, it is not the only one. It became equally challenging to under-

stand the indifference or enthusiasm or resignation that can greet the new technological conditions of work. My experience on the faculty of the Harvard Business School further sensitized me to the many complexities of managers' behavior, both as participants in and as proponents of technological change. My continuing efforts as a consultant to organizations teach me never to underestimate the magnetism of the past and the forces of inertia upon which it thrives. As a result, the data presented here reflect not only the emergence of new patterns in the workplace but also the concrete ways in which old patterns and assumptions assert themselves and can dull the impact of change. The themes are those of continuity and discontinuity, juncture and disjuncture, what is past and what is possible.

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I owe an intellectual debt to the philosopher-psychologist Eugene Gendlin and the historian Jonathan Z. Smith, both of the University of Chicago. Smith helped me learn to take the long view, to see phenomena in the context of their histories. Gendlin helped me learn to decipher the interior structure and texture of experience, the play of feelings and situations that gives life its meaning and depth. They understood how to discern a worldly context from a shard or a sigh, and each of their methods is employed here.

Thanks to two colleagues who helped me at an early stage of my work on this book. The social historian Herbert Gutman read an early version of my work on the industrial revolution and insisted that I pur-

sue my approach to the history of the work. Eliot Liebow of the National Institute of Mental Health believed in this project early on and was midwife to a major NIMH grant in 1981 that was vital in expanding my field research.

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And finally, a prayer for my grandfather, Max Miller, who first taught me about the dignity and joy and pain of work.

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The names and identifying characteristics of the corporations discussed in this book have been changed.

INTRODUCTION

DILEMMAS OF TRANSFORMATION IN THE AGE OF THE SMART MACHINE

The history of technology is that of human history in all its diversity. That is why specialist historians of technology hardly ever manage to grasp it entirely in their hands.

—FERNAND BRAUDEL
The Structures of Everyday Life

We don't know what will be happening to us in the future. Modern technology is taking over. What will be our place?

—A Piney Wood worker

PINEY WOOD, one of the nation's largest pulp mills, was in the throes of a massive modernization effort that would place every aspect of the production process under computer control. Six workers were crowded around a table in the snack area outside what they called the Star Trek Suite, one of the first control rooms to have been completely converted to microprocessor-based instrumentation. It looked enough like a NASA control room to have earned its name.

It was almost midnight, but despite the late hour and the approach of the shift change, each of the six workers was at once animated and thoughtful. "Knowledge and technology are changing so fast," they said, "what will happen to us?" Their visions of the future foresaw wrenching change. They feared that today's working assumptions could