



“Summary of article by Eileen Appelbaum and Peter Albin: Computer Rationalization and the Transformation of Work: Lessons from the Insurance Industry” in Frontier Issues in Economic Thought, Volume 4: The Changing Nature of Work. Island Press: Washington DC, 1998. pp. 153-157

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## **“Summary of article by Eileen Appelbaum and Peter Albin: Computer Rationalization and the Transformation of Work: Lessons from the Insurance Industry”**

Computer and information technologies are transforming the production of services as well as goods. One version of this transformation is "computer rationalization," using computers to introduce or enhance Taylorist principles of work organization. An alternative possibility is to use these technologies to facilitate the integration of tasks and the decentralization of control and decision-making. These alternatives, and combinations thereof, are now being tried out in the insurance industry, which faces "a broader range of choices than is suggested by any dichotomy such as craft and flexible resources versus mass production and narrowly specialized resources." [249] This article uses four case studies to illustrate the varied implications of computerization.

### **AUTOMATION AND PRODUCTION ORGANIZATION**

The use of computers in the insurance industry differs from that in other "office" industries, such as government or law, in that it has moved beyond traditional support activities to core production activities. During the 1970s, as insurance firms began to use computers more intensively in key production activities, "[a]utomation eliminated the least skilled clerical jobs, such as mail handler, and upgraded entry-level skill requirements; but it also eliminated the most skilled clerical job, that of the rater who determined the price of the policy." [251] Managers increasingly faced a range of options in distributing tasks between workers and machines, and among workers in different occupations. Actual outcomes lie along a continuum whose extremes may be characterized as "algorithmic" vs. "robust" organization.

The goal of algorithmic organization is to increase as far as possible the routinization of work, reducing decision-making to a set of self-contained rules (algorithms) that can be implemented by a computer. The result is an increased number of routinized data entry jobs and fewer highly skilled professional jobs. Although algorithmic organization is often held up as the state-of-the-art use of information technology, this turns out to be harder to implement in the property and casualty segments of the industry than in the life and health segments.

The alternative approach, which depends upon increasing, rather than reducing, the input of human intelligence, is termed "robust" because it "connotes an organizational capacity to adapt to changing conditions." [255] Insurance production organized in this way moves toward the elimination of unskilled clerical jobs and the reduction of routine data entry tasks. The computer is used to spread skills and decision-making down in the organization's hierarchy, while skill requirements in the remaining jobs are increased.

Clerical and administrative support jobs in robustly organized firms require that the workers have a range of skills that had not previously been associated with such work. These include social and communication skills; "managerial skills related to planning, organizing time effectively, thinking more comprehensively about the enterprise, and acting in a strategic manner;" [264] and general computer skills. All of these are transferrable across a variety of specific job-titles and industries, motivating firms to hire them from the outside rather than developing them along internal promotion mechanisms.

At the same time, an important dividing line between algorithmic and robust types of work organization has to do with the role of contextual knowledge, i.e., "the extent to which acceptable performance requires the knowledge of the firm's products, production processes, customers, clients, procedures or regulatory environment." [263] The need for contextual knowledge is reduced as far as possible in algorithmic organizations, where the valued skills relate only to generalized information technology. "The extent of contextual knowledge required for a particular function is generally not technologically determined" [263] -- instead, it is a result of management's decisions about how to use technology. That decision is influenced at many points by the fact that much of the workforce in this industry is female. These workers face, on the one hand, employer expectations about being able to hire women at low wages; and, on the other hand, prejudices about the skills that can be expected from or can be taught to such a workforce.

#### **FOUR EXAMPLES**

A central question in the direction taken by an insurance firm is whether routine data entry is to exist as a distinct job to be performed by a data entry clerk, or whether routine data should be entered as they are generated.

1) Some of the largest insurance firms, such as Prudential, use technology to shift insurance application processing from field offices to large, centralized clerical processing centers. In one firm that exemplifies this approach, personal computers are used to price life insurance products, but not to enter data into the firm's data base or to process applications. The latter, routinized data entry jobs are performed by low level employees -- often mothers who can depend on their husbands' health and other benefit coverage. The chief benefit to the firm is a saving in compensation and other employee costs.

2) A different approach is taken by a smaller firm that sells its policies through direct-mail advertising rather than relying on agents. The firm's automated mail handling and filing have eliminated nearly all of the least skilled clerical jobs, as policies are entered on-line, and underwriting and rating is entirely computerized. Meanwhile two new types of highly skilled clerical jobs have been created: customer service representatives and claims representatives. This approach has reduced upward mobility within the firm, as college-educated professionals are hired directly (rather than through internal promotion ladders) into the upper management ranks. It has also reduced the size of the workforce: within three years employment at the company's main location shrunk by more than one-half, from about 5,000 employees to about

2,300. Dramatic productivity growth is shown by the ability of this greatly reduced workforce to handle more business than the company had done at its previous peak.

3) Increasingly competitive market conditions in property and casualty insurance lines led the property-casualty division of one of the largest U.S. firms to turn to computer rationalization to reduce costs and improve efficiency. In marketing its products, the company now relies on independent agents and brokers employed by independent agencies on a commission basis. The firm's goal is to reduce its sales force by 90 percent, and also to eliminate most jobs in clerical processing of commercial lines products. Many underwriters' jobs are being eliminated, but those that remain have more responsibility, as they are expected to manage the nominally independent agents in the field. The agent's job has become more professional, but their actual independence is questionable. Hierarchy in this firm appears to imply close monitoring; in the personal lines side of its production, electronic surveillance of clerical workers' keystrokes per minute was considered as a way of increasing productivity. The expected benefits to the company include

increased market share in commercial commodity insurance because of improved marketing capability and the ability to tailor policies more precisely to client needs, and to achieve substantial cost savings through the elimination of clerical and most underwriting support jobs for this type of risk. [257]

4) A large, established company that was late in taking automation beyond the mainframe stage has drawn lessons from the experiences of competitors, and "views its goals as a computer-assisted rather than a computerized production process, by which it means that it does not intend to establish clerical processing centers to deal with personal lines of insurance." [257] It has organized an operations unit at each of its 42 branch offices to provide all clerical support required. As the firm decentralizes, jobs in these operations units span a wide range of skill levels. With skilled clerical jobs increasing there is job mobility within clerical work, but it is no longer possible to move from clerical to professional positions. Decentralization has led to large reductions in home office employment at all levels; the home office now provides support for the branches.

## **OUTCOMES AND IMPLICATIONS**

In the examples of the algorithmic approach shown above, technology is utilized to separate the entry of data from the processing of applications. Removing the latter work to remote locations is an extension of the Taylorist organization of work that began with early computer rationalization. Productivity gains have been realized in the period immediately following computer rationalization, but are then exhausted. Firms then find themselves with few options for further increasing productivity or reducing costs; while workers feel increased stress, which shows up in sickness, absenteeism and turnover.

"In contrast, more robust alternatives proceed by increasing the amount of information available to workers at every level within the organization." [260] Decision-making is decentralized and the decision-making capacities of all workers, including clerical workers, are enhanced. The robust organization is designed to promote and value employee learning, flexibility, and adaptive

behavior. Often, however, these job characteristics are "accompanied by a loss of autonomy, increased stress and more stringent regulation of working time. Clerical workers who are required to handle clients in a given number of minutes and nominally independent sales agents who are now monitored by company employees are obvious examples." [261] Such a structure include high investments in human capital and high costs for the required internal communication. However, increased costs per worker are often offset by sizable reductions in the workforce. The robustly organized firm gains additional competitiveness in rapidly changing circumstances where it can take advantage of its increased adaptiveness.

Thus, it would appear that "the choice of organizational structure reflects managements' evaluation of the trade-off between higher costs in the present and the potential for higher productivity, higher quality or greater flexibility in the future." This rational calculation tends, however, to be affected by a number of other considerations including: uncertainty (e.g., the difficulty of evaluating future gains); managers' attitudes toward and expectations of a largely female workforce; a distaste for relinquishing control, and/or a distrust of lower-level workers, evidenced, for example, in "[r]esistance to providing training to clerical workers" [262]; the managers' own objectives, their sophistication, and their prior experience with change; difficulty in promoting trust among various segments of the work force, such as carriers and marketers; the climate created by public policy; and the preferences and influence of workers and unions.