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Labor is More Than Work: Using labor analysis to study use situations and jobs

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This paper argues that in order to set the stage for alternative design choices, we need to expand our analysis of use to include labor issues as well as studies of use. Specifically it examines the role of labor issues such as wages, working conditions and division of labor planning for future information system design, making suggestions for focusing on system specifications as a mechanism for addressing labor issues. It is argued that in a period of expanding markets and collapsing time-space concerns it is increasingly important for system developers to adapt an approach which stretches work-oriented and situated design to include a critical analysis of business objectives, customer concerns and labor needs.

Keywords: division of labor, employment, jobs, labor, skill, specifications use, work.

1. Going beyond work as a basis of design

The field of systems development research has learned a lot from studies of computer use, particularly those that center on how work is done. A focus on work has enabled researchers like those in Computer Supported Cooperative Work (CSCW) to provide systems developers with information that is necessary to better fit information systems to the knowledge and work practices of actual users. But such studies of use generally focus on cooperation and communication among workers and managers, and not on direct labor issues like wages, working conditions and the number and types of jobs that remain in a workplace after new systems are installed. The focus in this article is on what we can gain

from research that also includes a labor perspective.

In the academic world in English speaking countries the field of sociology examines *work*, while economics uses the word *labor*. The difference is significant (Greenbaum 1996). Studies of work generally include activities, knowledge, skill and interactions, while labor issues are generally broader referring to sets of employment relations that include how much people are paid and for whom they work. Thus labor issues take in the wider context of economic issues that surround given workplaces and often drive the objectives that are spelled out in specifications and requirement documents.

Specification documents are of course critical to the process of system development for they form the legal foundation of what is to be designed, how it is to be built and when and where it is to be implemented. Traditional systems development methods, which originated in the mainframe era were based on ideas like the Waterfall model that stipulated well-defined stages of development in order to better control the time and costs of development. While newer development models bend away from such linear processes, using prototyping and CASE tools among other techniques, to bring about more rapid implementation, they continue for the most part, to keep the focus on limiting costs and delivering systems that meet the time constraints and economic objectives that exist in specification or requirement documents.

The focus on specification and control of the development process is one of the reasons that graduate Business schools have grown to include courses and research about systems development

methods. Indeed the field of systems development is increasingly being found within Business schools rather than Computer Science departments, particularly in the U. S. and England. Given the management focus of Business schools, systems development research generally assumes an implied management perspective, to the extent that textbooks and articles about systems development do not mention labor issues, except to state that the user needs to be taken into account.

On the other hand, in Scandinavia systems development has been included in Computer and Information Systems departments and has focused not so much on overall development methods, but rather on users in the context of their work. In the 1970s and 1980s, as the next section explains, Scandinavian approaches included issues of skill and knowledge at work and in some cases broadened these work issues to include the rights of workers, including labor process as a basis for research. Yet ironically, while including labor issues the dominant Scandinavian research projects skipped over the economic objectives of specifications and other cost issues that the Business schools have included.

Here I argue that it is time to put together some of the issues that Business schools and Computer Science institutes and Sociology departments are working on independently. The problems brought about by downsizing, outsourcing and insecurity about jobs make it clear that it is time to return to some of the labor issues that influenced the earlier Scandinavian research projects. In this way labor as a issue of rights, jobs and working conditions can be made explicit. Corre-

spondingly, since labor issues represent costs to management, a focus on these costs reminds us to bring the economic objectives that Business schools examine into the picture. An arena where labor issues and business costs intersect is in documents such as specifications and requirements analysis.

This paper addresses the need to include a labor perspective in systems research. Such research could study the consequences of existing and planned information systems in order to set the stage for alternative design choices. By explicitly examining design choices systems developers, working with labor, and with conscious awareness of management objectives could bring about design alternatives that can be more clearly articulated in specification documents and thus have a better chance of being brought through the process of development, and not simply dropped as “nice ideas”. These issues are particularly important in the area of custom designed organizational systems, for it is in the design of such systems that the study of work generally analyzes *existing* work practices, while business plans and development bring about new sets of work practices and planned *future* changes in jobs and employment patterns.

The next section revisits a brief history of some of the social and technical debates which have touched on these issues before in order to shed light on how we can address the problems on both a pragmatic and a political level. Section 3 then looks at a bank case study, which when seen through the lens of labor process analysis gives us pointers to what we miss when we focus too closely on work, instead of labor. Clearly labor process study is not offered as a prescription for

how systems should be designed, nor is it offered as a working method in the tool box of designers. Rather, it is presented as an area for further research about work, labor and design. These issues are addressed in terms of system development research issues in the last two sections which look at how researchers and designers can go about integrating labor studies in the development of specifications and other system documents. As the case study illustrates, labor-oriented questions can be included in interview and observation guides in the analysis of a workplace. It also shows the need to gather some background data in order to better understand the jobs in question and possible changes to them that result from business and system design.

2. Skill is not the only question

Academic literature on upskilling in 1980s held out the promise that newer jobs with more integrated tasks and broader job responsibilities could bring about more job satisfaction (see Zuboff 1988, Adler 86). Management literature added to this claim, by emphasizing that flatter organizational hierarchies would enhance many jobs with new decision-making power and enable “high-performance” workplaces—those where workers benefited from their increased productivity (see *Nine to Five* 1992). While we lack studies on job satisfaction among workers in current white-collar jobs in the U. S., available data, case studies and statistics indicate that wages, working conditions and job security in new job categories, are being pressed under intensified labor processes (see Herzberg *et al.* 1996) like those in the

bank case study I present here. What does this mean for those of us who study workplaces and for those of us who use studies of work to further system design alternatives?

The early projects in Scandinavia realized that designing for workplace democracy was not something that could be done within the profession alone. Using political coalitions they fought for and won laws which gave workers the right to co-determination in decisions involving technology. They also realized that workers as users needed more and better training in order to participate in design. This gave rise to a second generation of Scandinavian research projects in the 1980s which took an analysis of labor-capital relations a step further, using labor process analysis to explicitly design for increasing skill (see Ehn 1993, Greenbaum & Kyng 1991). These projects designed for specific groups of workers, supporting their interests and including their tacit skills in design principles for future systems. (see Greif 1988). But these projects were smaller in scope and lacked the political clout to bring about changes in the professions and workplaces that they studied. While they did result in a third generation of projects which focused on better system design tools and techniques for cooperating actively with users (see Greenbaum & Kyng 1991), they did not address designing for skill nor did they directly focus on bringing about enhanced workplace democracy.

The lessons learned from these projects could be useful now as business and information system design is more closely integrated. The first two generations of projects were inspired by Braverman's (1974) analysis of labor

process changes which illustrated that management, in its attempt to control labor and labor costs, was on a road toward rationalizing, separating, specializing and deskilling the labor force. Certainly this was true of the management practices in the 1970s, and it was reflected in the kinds of mainframe information systems developed to support this divided labor (Greenbaum 1995). But Braverman's labor process analysis had a wider message than one of deskilling the labor force, for his aim was to show that while management strategy can take many forms its overall objective is to control the labor force and to lower what economists call the overall wage bill. This means that upskilling some groups of workers, noticeably knowledge workers, is economically feasible as long as the work can be done by fewer of them. It also means that, as the bank case points out, wages can be separated from skill as long as the labor market conditions produce a ready supply of available skilled workers.

The example used here is taken from a research case study of a large U.S. bank. It was originally conducted for the National Council of Employment Policy which was interested in banks as examples of "high-performance" workplaces where newly trained workers carried out a wide range of tasks using a variety of new technologies in order to enhance productivity.¹ The objectives of the study were to influence employment policy, but here the economic analysis is presented as a way to highlight labor as well as work issues in a study of use in an organization.

3. High performance jobs

The job of telephone customer service representative is a growing one as U. S. banks open 24 hour centers to handle banking functions (Herzenberg *et al.* 1996). Formerly customer representatives had worked in center and branch banks doing a range of functions from opening new accounts, to answering queries and transferring funds. The large bank that we studied like many others was engaged in doing away with what one Vice President called "brick and mortar" banking, instead replacing the in-bank representatives with telephone service line representatives. The representatives were highly trained and highly skilled. Over one-third had college degrees and close to another third were working toward their degrees. Their jobs involved sitting in front of a computer screen and a telephone unit, and quickly anticipating callers needs as they flipped through screens and carried out a great deal of problem-solving activity in a short period of time.

The customer service representatives that we interviewed and observed were in jobs far from the routinized, specific task-oriented work that characterized back-office bank work in the 70s and early 80s. Each representative had to know a long list of banking regulations, stay up-to-date on current policy changes, and of course be versatile with a computer system made up of three different applications that could be accessed in a number of different ways. The computer applications had recently been redesigned with their input, and did not have the problems of the menu-based and sequential, step-by-step screens that the prior system had. Instead the applica-

tions screens showed representative-suggested prompting icons on the bottom, frequently used data access windows on the side, and a large screen for retrieving whatever information was needed by the caller. Representative suggestions about computer application design included more than screen displays. Data access and links between applications and databases were also modified based on their suggestions.

Most representatives were "all-rounders" handling all incoming calls from simple account balances (although most of these were routed through automated voice response units) to multiple transaction callers. Representatives were organized into teams and the teams were encouraged to try to increase their productivity as well as come up with new suggestions for how computer applications and work station materials could be handled more effectively.

In the course of 39 hour work-weeks, they were each expected to handle 22 inquiries per hour, and were monitored through three on-line screening procedures for clarity in communication, curtsey and accuracy. The banks motto was to be "service minded" and representatives were asked to visualize the customer and help them at all times. Monitoring coaches listened in to a certain percentage of calls each week, meeting with representatives afterwards to discuss ways to increase accuracy and of course productivity. Most representative thought that 22 calls per hour was a generally not an unreasonable number, despite the fact that this had been raised from 18, and despite the rumor that it would probably be raised again.

Without a doubt the new job of telephone customer service representative

was an example of a high-skilled, and what is commonly called “high-tech” job that allowed the representatives to use their judgment and knowledge, and at the same time allowed the bank to increase productivity. By these criteria the job met the characteristics of being part of a “high performance” workplace, and was supported by what appeared to be a well-designed set of computer applications which were modified and maintained by local systems analysts assigned to the center’s teams. Even the fact that the jobs were monitored did not present much concern to the representatives since they felt that they could learn from the feedback and “after all, the customer is the main concern”.

But representatives and would-be representatives faced another set of concerns that bothered them more. Entry level representatives were paid \$19,000 a year, with top salaries in the range of \$26,000; low salaries by the standards of the metropolitan area where they lived, and low, in the opinion of the Vice President in charge of operations, compared to the skills and knowledge that representatives used on the job. Additionally, promotions and transfers out of customer service jobs were getting more difficult as the bank downsized its operations and cut out more and more of the branch banks and special function units. The fact that several levels of middle managerial positions had been removed left representatives with few promotional opportunities.

The unemployment level for white collar workers in their region was hovering around 5%—a relatively low number—yet double the number that it had been two years before when a large aerospace company and its core of con-

sulting and supporting companies had been in business. Now engineers, middle managers, lawyers and business school graduates competed with high school graduates for each incoming class of service representatives trainees. There were 350 customer service representatives in the center, including one-fourth who were part-timers. The bank had laid off several thousand tellers and in-bank representatives in the last few years as it closed branches and consolidated functions following a merger, and in preparation for acquiring another large financial institution. From a labor process perspective the job of telephone customer service representative, which is high-skill and “high-tech”, was neither a high-wage one nor did it offer a relatively secure future. Yet the labor market conditions of the region keep a steady supply of new recruits ready for the possibility of this “toe-hold” in banking.

4. Cooperation and control

In the U. S. high performance workplaces are touted in management literature as examples of a “high-tech, high skill, high wage” scenario. Countries in the European Union have looked to such scenarios as an alternative to solving the high unemployment problem in a reasonable way rather than relying on the creation of insecure, low wage jobs as is typically found in the States. Yet, closer examination shows that these so called “high performance” jobs have many of the characteristics of insecure and low waged work, for while they involve a wide range of skills and knowledge, the pay is low, monitoring is intense and job mobility is significantly reduced as a result of

a flatter organizational structure. These characteristics are not the result of a few mean spirited managers (indeed the upper and middle level managers at the bank had great respect for the work and the workers), but come about as a continuation of former policies of division of labor.

Older forms of division of labor broke specific jobs down into separate tasks, and in the 1960s, 70s and 80s information system design was based on “automating” these tasks into a flow of procedures and data. Now, however, management theory and information system design can be based on the concept of reintegrating tasks and jobs and using design strategies of coordination and communication to integrate and redivide labor. In the current period this redivision is marked by upper-level management’s ability to *separate work from place*, since newly integrated jobs can be re-divided spatially rather than by specific functions. In the later part of the 1980s this took the form of outsourcing the more routine back-office functions like payroll, accounts receivable, and transaction processing. But in the 1990s as managerial practices, sometimes under the rubric of Business Process Reengineering, began to redefine entire products and industries, even front office, formerly customer-based work, was prepared for outsourcing. In banking for example, the service or ‘product’ that telephone-based customer service representatives provide is quite different from the face-to-face transaction or ‘product’ that customers were used to with branch banking. The same is true for computer services where the customer liaison person on the “help line” is not expected to know or see the customer calling with

the problem. In fact almost every service industry from postal delivery to travel arrangements has changed their definitions of product so that the relations between customer and worker are not dependent on in-person services. What takes place of course is an increased standardization of the product, as, for example in the types of “services” the banks handle online. And with increased standardization of product comes greater flexibility for management to both increase the range of tasks and responsibilities a single worker can do, and to physically move the work.

The delinking of work and place has severe implications for *the decoupling of labor from labor contracts*, as more and more standardized products can be “produced” by outsourced workers, freelancers and people who have only a contingent connection to the firm selling the “service”. It is generally estimated that at least one out of four workers in the U. S. are contingent or supplemental—roughly 28% percent of the workforce (du Rivage 1992). While the U. S. Bureau of Labor Statistics has just begun to collect data in this category, their 1993 estimates put the number of contingent workers at 39 million with another 21 million workers listed as part-time (Calem 1993). As noted, this characteristic of insecure employment relations in the U.S. is one of the key characteristics driving the European Union discussion about not solving the high unemployment problem in the typical “American way”.

These two major shifts—the separation of work from place and the separation of labor from labor contracts—are indicative of the economic change from the industrial period to the current post-industrial era. Characteristics of the post-

industrial period include the fact that developed countries produce more services than products, shifting the emphasis from factories to offices and service-sector work like hospitals, restaurants, hotels, travel services and delivery services. Clearly computer systems designed for post-industrial economic needs have a different focus from those in the prior period. The following chart illustrates a few of the major differences.

TABLE 1. Post industrial systems compared to Industrial characteristics

<i>Industrial Era Systems</i>	<i>Post-Industrial Systems</i>
Detailed division of labor	Integration of labor
Centralized work-places	Decentralized workplaces
Automation	Coordination and communication
Flow of information	Spread of information

In both the industrial and the post-industrial periods management's focus on the cooperative nature of work has not been an interest in cooperation, per se, but rather an extension of viewing how divided labor processes could be reassembled through management practices supported by information systems. This is an outcome of the fact that cooperative work is an extension of the social character of production. Marx saw this and explained it this way:

When numerous laborers work together side by side, whether in one or the same process, or in different but connected processes, they are said to co-operate, or to work in cooperation. (p. 325)

But the real nature of cooperation, he argued was:

The direct motive, the end of the aim of capitalist production, is to extract the greatest possible amount of surplus-value, and consequently to exploit labor-power to the greatest possible extent. ...

Moreover, the co-operation of wage-laborers is entirely brought about by the capital that employs them. (p. 331)

The exploitation Marx wrote about had a direct economic base—to bring about lower labor costs and to increase productivity. Information systems combined with reorganizing work accomplishes similar end results, although one can argue that exploitation is not discussed and that the jobs themselves are an improvement over the conditions of early industrial period factory jobs.

Essentially in the industrial period detailed division of labor had two main benefits for management: it heightened productivity through specialization, repetition and routine; and it created divisions in the working class which kept people apart (Braverman 1974). In the current period, the first reason has resulted in management practices and work organization that are too slow to respond to rapid market changes. Indeed detailed division of labor, like bureaucratically centralized decision-making, are cited as failures by management in the 1980s (see Peters 1992). But the second function of division of labor—that of divide and conquer—is very much alive in current labor market and labor process restructuring. Professional and administrative support workers may be closer together in the range of tasks they perform, but new divisions split the labor force by: full-time vs. part-time status; payroll vs. contract work; and corporate offices vs.

home office, among others. And for all occupational groups, the pressure from “temps” and outsourced groups keeps the lid on wage growth (see Head 1996). Thus information systems can be designed to support “cooperation” among groups of workers in different places and under different contractual arrangements, but it is very much a cooperation that feeds into the mechanism that bureaucracy used to provide—control and coordination of diverse forms of labor.

Cost-benefit analysis examines strategies for gaining control over distributed labor. Such analysis can result in ways to increase productivity and create lower waged jobs, which in turn can be designed into business reorganization plans. And the outcome of cost analysis appears in various forms in system specifications although they are generally not explicitly stated as such when they reach the specification stage.

5. Creating alternatives in research and design

The following presents suggestions for expanding studies of use and some examples of what could be gained by doing so. The first set of suggestions give broad, but pragmatic rationales for including labor issues in research and design proposals, building on existing research. The next section addresses ways that studies of labor could more specifically include guidelines for analyzing the consequences of system design. It also bring the arguments together by suggesting that it is time to reintroduce the political aspects of a labor perspective.

5.1. Reframing design agendas.

Through analysis of work and labor process conditions, and by using labor market data, researchers and designers can better analyze the *consequences* of technical and organizational designs. Nothing has overridden the need of capital to make a profit from the sale of systems. Cost-benefit analysis is included in upper management plans for introducing new systems. To complement and add to management’s cost analysis, system designers and researchers can influence design rationales through reframing problem statements when developing needs assessments and specification requirements. Needs assessments, feasibility studies and specification requirements are the “bread and butter” of system development and provide checkpoints and documents through which designers can influence overall design consequences. Since this is being done from a management perspective, why not also carry out “bread and butter” research from a labor perspective?

5.2. Analyzing more than use

By focusing too closely on *current* work practices researchers and designers are ignoring what upper management calls their “strategic” objectives, which are often intended to cut out steps, processes, jobs and of course keep wages in check. Business Process Reengineering can result in more upskilled work and more integrated and interesting jobs, but upskilled work doesn’t necessarily mean better wages and promotional possibilities. Designers and researchers are in a position to see the total picture and analyze the explicit and implicit assumptions behind management strategic planning. This can also provide room for

management and labor to rethink the original design objectives, since short term labor savings do not necessarily mean longer term productivity and quality improvements (Bowen 1986).

5.3. *Multiple perspectives and coalitions.*

Feminist theory has emphasized the importance of “multiple voices”—we are not and do not speak as one (see Green *et al.* 1993). The issues of labor process change today are bringing with them a shattering of old boundaries and a possible realignment of new ones. The spreading of jobs over different places and countries means new divisions of labor and also new coalitions. There are more voices than the dualisms that older models examined. Economics is more than the study of labor and capital, and systems development includes more than developers and users. Cooperative and participatory design offer approaches for actively involving users in design situations (see Schuler and Namioka 1993)—situations which now can and should include different user groups within an organization, workers in different companies, and very significantly customers and citizens who use the services.

5.4. *Accountability in design.*

Designers like managers are taught to keep their “professional” distance from what they study and what they effect. But this “detached engagement” leads to what Suchman called “designs from nowhere” (Suchman 1994). Organizations and their objectives are not neutral, and nor are the design contexts of the technology they use. Labor analysis illustrates some of the issues that designers together with managers influence and

thus need to be held accountable for. Within the broader frame of labor theory these include: the number of future jobs, the location of jobs, contractual arrangements with remaining workers, and the intensity of work. Computer system implementation, whether it is the adaptation of packaged applications or the design of customized systems, can be one peg in strategic management plans. Managers are held accountable to other managers and their stockholders, but this doesn’t necessarily mean that designers and researchers need to limit the domain of their work in the same way. As the preceding point highlights, there is a need to recognize multiple perspectives including analysis and assessment for workers, customers and citizens. Accountability for perspectives can be explicitly stated and thus used in evaluating the consequences of design.

One way of better understanding the broad issue of accountability can be seen through the lens of a narrower set of more concrete labor issues. The following suggestions are not offered as a prescription for how systems should be designed, but rather as a guide for how labor issues can be integrated into design and research approaches.

6. Using labor studies as a guide

Specifications generally evolve from long discussions about cost-benefit and cost-related feasibility studies. The original ideas from the early Scandinavian research projects brought about co-determination legislation giving labor, at least on paper, a strong voice in determining policies about technology. Discussions leading up to specification and require-

ment documentation are good places to insert labor perspectives in countries where such legislation exists. In other countries it can be argued that bringing labor issues on to the table in earlier stages of design, as advocated by participatory design theory, can result in more design choice—not just for labor but also for management.

TABLE 2. Labor study guidelines for research

<i>Labor Issues Within a Workplace</i>
<ul style="list-style-type: none"> • Number of projected jobs by category • Job ladders and number of promotional paths • Job security factors such as; <ul style="list-style-type: none"> – Tenure and projected length of work – Ratio of part-time to full-time workers – Number and type of outsourced jobs – Ratio of temporary and leased workers to employees • Work intensity factors such as, <ul style="list-style-type: none"> – Frequency of multi-tasking – Number of concurrent tasks/projects – Transactions/actions expected per time frame – Extended work hours such as evenings and weekends – Monitoring extent and type – Time sheet reporting mechanisms • Projected pay ranges and comparison with similar organizations and job titles

Current studies of use include analysis of tasks, complexity of work and interdependence of tasks and people, as well as use of space and resources. Assessment of future labor conditions can include the

same type of studies, including ethnomethodologies to better understand current work practices, and in addition, assessment studies could include estimates and projections for planned changes, focusing on the characteristics listed in the following figure.

In addition to the on-site characteristics of labor conditions, data can also be gathered from business surveys and government statistical sources for:

- Unemployment by category and region
- Changes in employment patterns in last 1-2 years
- Employment patterns (part time, temporary, etc.)
- Wages and contractual agreements by region

The above list of work and labor conditions can be used to shed light on not just skills and work practices, but wages, working conditions and labor relations. From a *pragmatic* standpoint including labor issues in the development of specifications can bring about more design choices, thus putting alternatives forward that both management and labor can evaluate. Business school studies tend to look at management's role in developing specifications and design documents, and studies of use generated by computer and information science departments tend to focus on work activities rather than the cost-related and broader labor issues. This article gives a rationale for bringing these two types of research together. Further it offers arguments for bringing research back into a *political* frame by suggesting that researchers who are interested could go beyond a pragmatic standpoint by taking

the side of labor in generating new design alternatives.

Note

¹U. S. Department of Labor Contract. No. 41 USC2552C#, conducted together with Cydney Pullman and Sharon Szymanski of the Labor Institute, New York City. While this one case is presented here, the data and analysis are based on two years of research reflected in (Greenbaum 1995).

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References

- Adler, P., (1986). *New Technologies, New Skills.*, California Management Review, 29, No.1.
- Bannon, L. and K. Schmidt, (1989). CSCW: Four Characters in Search of a Context. In *Studies in computer Supported Cooperative Work*, Bowers J, and Benford (eds), Amsterdam, North-Holland, 1991.
- Bowen, W., (1986). *The Puny Payoff from Office Computers*. Fortune, May 26.
- Braverman, H., (1974). *Labor and Monopoly Capital : the degradation of work in the*

- twentieth century*. Monthly Review Press, NY.
- du Rivage, V., editor, (1992). *New Policies for the Part-Time and Contingent Workforce*. NY: M.E. Sharp.
- Ehn, P., (1993), *Participatory Design: Principles and Practices*. In *Participatory Design*, Schuler and Namioka (eds). Hillsdale, NJ: Erlbaum Associates.
- Ehn, P., (1989), *Work-Oriented Design of Computer Artifacts*, Hillsdale, NJ: Erlbaum, Associates.
- Green, E., J. Owen & D. Pain, editors, (1993). *Generated by Design: Information Technology and Office Systems*, London: Taylor and Frances.
- Greenbaum, J., (1996). Back to Labor; Returning to labor process discussions in the study of work, In: *CSCW Proceedings*, ACM, 1996.
- Greenbaum, J., (1995). *Windows on the Workplace—Computers, Jobs and the Organization of Office Work in the Late Twentieth Century*. Monthly Review Press, Cornerstone Books, NY.
- Greenbaum, J., (1994). The Forest and the Trees. *Monthly Review*, Special Issue on Braverman, Nov. 1994.
- Greenbaum J. & M. Kyng, editors, (1991). *Design at Work: Cooperative Design of Computer Systems*, Hillsdale, NJ: Erlbaum Associates.
- Greif, I., editor, (1988). *Computer-Supported Cooperative Work: A Book of Readings*, Calif: Morgan Kaufmann.
- Head, S., (1996). The New, Ruthless Economy. *New York Review of Books*, 29 Feb. 1996.
- Herzenberg, S., J. Alic & H. Wial, (1996, forthcoming). *Better Jobs for more People: A New Deal for the Service Economy* Twenty Century Fund, Wash
- Marx, K., (1967; 1867). *Capital*, Vol. I. International Publishers, NY.
- Nine to Five, Working Women Educational Fund, (1992). *High Performance Office Work: Improving Jobs and Productivity*, Cleveland Oh, 9 to 5.

- Peters, T., (1992). *Liberation Management: Necessary disorganization for the naosecod nineties*, NY: Knopf.
- Schuler and Namioka, editors, 1993, *Participatory Design*, Hillsdale, NJ: Erlbaum Associates
- Suchman, L., (1994), Working Relations of Technology Production and Use. *CSCW*, 2(1):21-40.

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