Information Systems Development:
A Study in Communicative Action•

Marius Janson
Professor of Information Systems
College of Business Administration
University of Missouri-St. Louis
St. Louis, Missouri, United States of America
mjanson@umslvma.umsl.edu

Dubravka Cecez-Kecmanovic
Professor of Information Systems
University of Western Sydney
Sydney, Australia
dubravka@uws.edu.au

Ann Brown
Associate Professor of Information Systems
City University Business School
London, United Kingdom
a.p.brown@city.ac.uk

Abstract

Participative information systems (IS) development is often motivated by social reasons, including better work environments, democratic decision making, and alleviating worker alienation. Nevertheless, it seems reasonable that participative ideals will find a better reception when both company owners and employees stand to gain (Mumford, 1997).

This article presents a case study of a European company that practices participative IS development motivated to a significant degree by social objectives and by a pressing economic necessity of realizing a profit. The company's focus, however, extends beyond participative systems development and also concerns the emancipatory and democratizing potential of these ISs after implementation.

This case suggests that computer-supported communication increases the likelihood of successful participative IS design. Furthermore, participation in company activities such as decision-making will help employees develop the skills necessary for successful participative IS design.

The data gathered during our study were analyzed within the context of Habermas's (1984) social theory of communicative action. The analysis resulted in practical suggestions for guiding company management and workers toward more successfully instituting participative IS development and operation.

1. Introduction

Increasing numbers of publications on IS development focus on success criteria other than merely financial gain such as emancipatory and democratizing ideals, and overcoming worker alienation (Bjerknes, G., and Bratteteig, T., 1995; DeLone and McClean, 1992; Ehn and Kyng, 1987; Ehn and Sandberg, 1979; Hirschheim and Klein, 1994; Lyytinen and Hirschheim, 1987; Nielsen, J. R., and Relsted, N. J., 1994; Mumford, 1997). These ideals motivated *participative* IS development that proposes philosophical, ethical and practical arguments for involving all workers affected by the system in the process of its design and implementation.

Nonetheless, Ehn and Sandberg (1979) stated that many IS design methods are characterized by an "engineering philosophy" that introduces a systematic bias which favors the interests of stakeholders who control the process, usually top management and systems professionals. They termed this development process 'authoritarian' and 'undemocratic.' Ehn and Sandberg (1979) asserted that IS development should indeed create systems that are efficient and effective in business terms, but these systems should also improve the quality of working life for the individuals who use and are affected by these systems. This implies that not only should IS development itself be emancipatory, but the ISs so developed should be emancipatory and democratizing forces.

Participative IS development has however been criticized as idealistic and even promoting a 'totalizing discourse' (Wilson, 1997). Which organizational members are really motivated to pursue participative IS development? Managers and IS professionals approach IS development as any other organizational activity that they undertake under pressure to increase efficiency and effectiveness of operations, rationalize the workforce, and thereby assure profits. Managers and IS professionals are neither motivated by nor skilled in participative system development. In fact, in many instances the introduction of ISs results in demands for higher employee output, increased levels of managerial control, loss of privacy, disruption of established social relations, and corporate downsizing. If ISs reinforce economic rationalism and provides ever more efficient means for "The exploitation of living human labor [and] produces overwhelming negative consequences for the working class" then the question arises why users should want to participate in IS development at all (Briers, 1978).

The major problem with participative IS development is the assumption that its underlying philosophy, namely that emancipation and democratization in the workplace, conflicts with economic and market realities. In this paper we problematize this assumption. We present a case of a retail company that demonstrates how democratic ideals and worker participation are not necessarily in conflict with company economic interests. Moreover, our case analysis shows how participative IS development as part of a broader participative culture contributed to company growth, profitability and sustained economic success.

More specifically, this case suggests that communication between IS users and designers is necessary to create consensus about system requirements among design participants. Computer-supported communication enhances its effectiveness in bringing about consensus and, hence, the likelihood of successful participative IS

design. Because communication and emancipatory ideals are critical to participative IS design we adopted Habermas's (1985) critical social theory to analyze the case materials.

The remainder of the article consists of six sections. Section two presents the major points of participative IS design, section three describes Habermas's (1973, 1979, 1984, 1989) social theory of communicative action, section four explains the research approach, section five provides company background, section six details the company's achievements in conceiving, developing, and implementing successful ISs, section seven discusses guidelines and conditions that further socially responsible IS design methods and practices, and section eight presents the paper's conclusion.

2. Participative IS Development

The terms "user participation" and "user involvement" have at times been used interchangeably. Newman and Noble (1990) defined user involvement as a process of *interaction* between systems specialists and users. Barki and Hartwick (1989) defined user participation as the behaviors, assignments, and activities that users *perform* during IS development.

Barki and Hartwick (1994a) explicated further that user participation has three dimensions: *responsibility*, *hands-on activities*, and *user-IS relationship*. Responsibility includes being accountable for system success and cost estimation. Hands-on activities include specific physical design and implementation tasks. IS-relationship refers to communication between users and IS staff, the approval granted the IS department to go ahead with system development, and being kept informed about the design progress (Barki and Hartwick, 1994b).

Ives and Olson (1984) expected participation to improve system quality, to establish a more complete view of user information requirements, and to satisfy the users' need to influence the design process. However, as mentioned by Barki and Hartwick (1994a), research results concerning the benefits and effectiveness of user participation are contradictory.

In her article on socio-technical design of computer assisted work Olerup (1989) delineated some of the expected benefits of participative design: *resolving conflict*, *improved design*, and *easier system implementation*. However, Olerup (1989) also pointed out that the literature fails to seriously consider the "conditions that must be present to allow real users influence and not just manipulation."

There may, however, be reasons other than those mentioned above for introducing user participation. For example, management might be motivated to allow worker participation because of humanistic reasons and democratic ideals, or out of necessity to get the job done. Mumford (1981) in particular advocated user participation because "people have a moral right to control their own destinies and that applies as much in work situations as elsewhere."

However, upon studying the relevant literature on participative design we noticed a lack of attention to the effects on workers caused by ISs that were designed with user participation. The question, which we think deserves attention, is whether such ISs

have the socially desired effect of improving the quality of working life for users and increasing the emancipatory and democratic potential.

McKeen et al., (1994) mentioned two expected relationships between user-developer communications. Drawing on their research they suggested "it may be that user-developer communication plays a moderating role on the participation-satisfaction relationship only when task complexity is high." These authors further observed "it may be that user influence plays a moderating role on the participation-satisfaction relationship only when the system complexity is low." However, regardless of its definition or the conditions under which it can be practiced, it should be clear that worker participation requires much communication between individuals (Barki and Hartwick, 1994a).

Because the above discussion combines worker emancipation, democratization, and communication we suggest that the critical social theory developed by Habermas (1973, 1979, 1984, 1989) provides a useful lens through which to view and evaluate the communicative processes practiced by a European company (Lyytinen and Hirschheim, 1988). Critical social theory posits that individuals are intelligent agents capable of independent rational action and able to take a full and responsible role in all actions that concern them, though within the constraints imposed by power relations, economic and market forces, organizational culture, and so forth. Habermas's communicative action theory offers guidelines on how to analyse these constraints and explore actual practices of participative IS development and its implications.

In the next section we introduce the reader to aspects of Habermas's (1973, 1979, 1984, 1989) communicative action theory that are essential to our aim, which is to provide a basis for anti-authoritarian, democratic, and participative IS development.

3. Social Action Types

Habermas (1985, pp.127-128) discussed six concepts, i.e., *instrumental action*, *strategic action*, *normatively regulated action*, *dramaturgical action*, *communicative action*, and *discourse* or *discursive action*. However, Lyytinen (1986) pointed out that dramaturgical action is of marginal interest to information systems design. Thus, we analyze our case study with a focus on *instrumental*, *strategic*, *normatively regulated*, *communicative*, and *discursive* action. Furthermore, these five action types also provide insight into the requisite skills analysts and user should have to practice participative design (Table 1).

3.1 Instrumental Action

When actors behave according to technical rules derived from empirical knowledge or theoretical models, they are said to engage in *instrumental action*. The actor aims to bring about a goal by selecting and implementing means that promise results in a particular situation. The key concept is the realization of a goal by selecting one among a set of alternative actions. That is to say, the actors' orientation is teleological and success oriented. This implies that actors engaged in instrumental action seek to reach their goals in an effective and most efficient fashion employing predictions drawn from physical and behavioral models (Habermas, 1985, pp.127-128). Table 1

shows that actors relate to an objective world consisting of facts, states of affairs, and people. While engaging in instrumental action actors in effect instrumentalize other individuals and view their behavior as governed by social, psychological, and behavioral laws or models.

3.2 Strategic Action

Strategic action occurs when two or more individuals aim to realize a desired condition in a most efficient and effective way, given the particularities of the situation at hand (Habermas, 1985, pp.127-128). By engaging in strategic action each actor assumes a rational counterpart, i.e., each adapts his strategic acts to accord with the acts of his counterpart. A prerequisite for successful strategic action is that the actors have an accurate set of facts and a correct picture of the relevant relationships (Table 1). Strategic action is purposive and rational, and the actors' interests are advancing their personal interests (White, 1995).

3.3 Normatively Regulated Action

Normatively regulated action occurs when members of a social group act in accordance with commonly accepted values. Group members expect that their counterparts will behave in a particular way under certain situations (Habermas, 1985, p.127). Habermas (1985, p.127) pointed out that normatively regulated action refers to members of social groups whose actions are informed by commonly accepted norms. Normatively regulated action involves objective and social worlds consisting of facts, states of affairs, and societal norms (Table 1). Normatively regulated action is success oriented within normative constraints determined by the society to which the actors belong.

3.4 Communicative Action

Habermas (1985, p.128) stated concerning *communicative action* that the actors' plans are not determined by egocentric profit calculations. Instead, participants strive to use language as a medium for reaching common understanding. This shared understanding concerns states of affairs, organizational realities, and prior decisions (Ngwenyama and Lee, 1997). Shared understanding is closely tied to agreement on essential aspects of social reality and it occurs when the actors agree on a common definition of the objective reality of facts and events, the social reality of norms, and the internal reality of intentions, emotions, and personal needs (Table 1). The claims participants make concerning the three worlds can be criticized as to their validity claims: truth of facts, rightness of norms and sincerity function as the validity claims for communicative action (Kunneman, 1986, p.230).

Koningsveld and Mertens (1992, p.77) described the essential difference between instrumental, strategic, and communicative action: in the case of instrumental and strategic action the actors focus on the realization of their own particular interests, whereas in the case of communicative action the actors focus on a mutual understanding of the action situation. The coordinating mechanism for instrumental and strategic action is the profit motive of the individual actors. The coordinating mechanism for communicative action is the common interpretation of the action situation.

3.5 Discursive Action

As pointed out above, during communicative action the participants seek a consensus about the situation at hand. This consensus then forms the basis on which the participants coordinate the execution of their subjective action plans. The actors have several options when the aforementioned consensus breaks down; they can (1) each go his way, (2) relapse into strategic action, or (3) attempt to resolve the dissent by making the validity claims the center of attention.

Discursive action in this context is defined as criticizing validity claims and it enables a negotiated consensus about the situation at hand (Table 1). One actor demands of the other that he redeem validity claims by showing that statements are either true, right with respect to commonly agreed to norms, or sincere. Such a negotiated consensus requires conditions free of threats in which all participants are able to question validity claims and that all listen to reason, so that the "better" argument wins (Habermas, 1985, p.151).

Habermas has been criticized about the concept of an "ideal" situation free from threats or domination. However, Ludwig (1997) pointed out that anyone engaged in practical day-to-day communicative action assumes the existence of an "ideal" communicative situation; otherwise real consensus would by definition be impossible. However, Ludwig (1997) also cautioned that ensuring an "ideal" speech situation requires constant effort at minimizing power imbalances.

3.6 Requisite Skills

The discussion and explanation of Habermas's five action types allow us to derive some skills that analysts and users need to be able to practice participative design (Table 1). First, in the case of *instrumental action* the analyst or user should have a good knowledge of his objective world and the physical laws and regularities that determine its behavior. Second, in the case of *strategic action* the analyst and user should have a solid grasp of the physical world and of human action. With the aforementioned knowledge types the analyst and user can predict the behavior of the physical world and of a strategically acting counterpart. Third, in the case of *normatively regulated* action the analyst and user need a solid understanding of the prevailing social and organizational norms. Fourth, in the case of *communicative action* the analyst and user need to know what governs actions in the physical and social worlds and also appreciate their own and their counterpart's subjective worlds. Finally, in the case of *discursive action* the participants need to know when to problematize social practices, beliefs, and normative claims. They need good discourse, argumentation, and rational skills.

For an individual to function effectively within an organisation conforming to communicative action ideals, he would need in-depth knowledge of the organisation's business, an understanding of the organisation's culture and staff relationships, and the interpersonal skills to engage in effective debate required during communicative and discursive action. In addition to the aforementioned skills the individual would need the necessary knowledge to perform his job assignment and he should be able to use information technology in his day-to-day work.

4. Research Approach

The purpose of our project is to gain an understanding of participative IS design as it is practiced in a European company that, in our view, has been quite successful in implementing ISs developed in-house. We collected data in the form of on-site audio taped interviews with company senior and middle managers, and workers. We also obtained data in the form of company documents, letters, annual reports, Union reports, and newspaper articles. We further compiled data on various company-developed ISs, including their emancipatory and democratizing potential, and their success or failure status.

Because understanding and interpreting human action is key to our project, an interview-based interpretive research method suited our purpose best (Antill, 1985; Cavaye, 1996; Klein and Myers, 1999; Lacity and Janson, 1994; Nissen, 1985; Remenyi and Williams, 1996; Walsham, 1995).

Antill (1985) cautioned researchers to be aware and to take account of their own biases. Our bias as researchers is that we are intrigued by what Habermas's social theory of communicative action offers toward more participatory, emancipative, and democratic relations between individuals. Our position is that participation of all organizational members is an ideal worth striving for. We guarded against a one-sided interpretation by taking into account our predisposition during the selection of individuals to interview, formulating interview questions, analyzing data, and writing our conclusions.

Based on the outcome of our interpretive analysis we were able to extract guidelines and conditions that further participatory and democratic development of ISs and that also satisfy management's needs for being financially and operationally successful in a highly competitive business environment.

5. The Company

The case company was founded in 1965 as a single food discount store - a revolutionary concept in Europe at that time. It has been extremely successful experiencing almost continuous yearly growth until the present day. The company's founder had clear philosophical views on the type of company he wanted to create. His views shaped the company at its inception, and many of the company's more unusual characteristics can be traced to his influence.

Since the company's inception its owner and members of upper management worked toward rational discourse, reducing power differences among employees, between company management and employees, and encouraging personal initiative toward action at all company levels. The company's CEO (1993) commented on his views concerning initiative and decision-making at all levels of the organization without ignoring relations between human rationality and emotionality:

"It is very much in the organization's interest to make very, very rational decisions. This requires input of [technical and business] knowledge, but also of intuition and the nonrational. If you push a human to be very, very rational then you should also

develop the other human aspects such as intuition and emotion. [The company] spends great financial resources on [employee] development in the form of sensitivity training, gestalt training, group dynamics, psychoanalysis, etcetera."

The high level of resources invested in staff education, and the nature of the education are, perhaps, the company's most unusual aspects. Seminars are available in self-actualization, self-empowerment, self-expression, decision-making and assertiveness. The seminars have minimal theoretical content but focus in stead on building communicative competence under practical day-to-day conditions. The skills acquired in seminars form the basis from which employees (re)create the company's social structure. The aforementioned seminar program is complimented by courses with coverage on specific job skills and information technology.

In fact, the CEO (1993) placed so much importance on a balance between the rational and emotional that he returned to the topic several times during the interview:

"Rationality by itself does not work the more computers [one] introduces the more one has to pay attention to [human] communication and human relations. [In absence of all this] people will come to behave like computers and that leads to a society that has no place any longer for humans."

The founder's organizational vision for the company accords with participative ideals that he integrated into company culture and norms over a period of thirty years. The founder's view that work should be meaningful and challenging was translated into an expectation that all employees have commitment to the company and that all act in a responsible way and in the best interests of the company. The founder insisted that any subject, including corporate norms, is open for discussion by all staff:

"[Employee] commitment to the company? Yes, but under the condition that the company is willing to change. If many employees attend training sessions, then … company philosophy has to change to integrate the employees who now have different ideas. Members of top management have to attend these training sessions also, so that they know what ideas exist among the employees. Members of top management have to change as well, otherwise they cannot relate to employees."

Organizational structures and activities are more supportive of 'ideal speech conditions' than would be found in traditional supermarkets. The power asymmetry of hierarchical structures is reduced through the use of temporary work teams for all projects. Team membership is self-chosen and anyone with an interest in the team's project can join. The firm invests much effort in keeping everyone abreast of business developments so that employees are in a position to know about significant decisions and projects in time to contribute.

The case company not only aims for communicative action ideals but also supports its staff in gaining the requisite skills to function in such an environment. The seminar program is a way by which employees both learn to understand company culture and how to change it. The program also offers individuals help in acquiring the requisite interpersonal skills without which communicative action is impossible. Finally the company is committed to disseminating information about its activities as far and as fast as it can economically manage.

6. Information Systems Design

The case company's history can be divided into tree periods during which the type of IS's selected and the way in which they were designed underwent distinct changes.

6.1 The 1965-1975 Period

During the 1965-1975 period many store functions were informatized, including customer checkout, daily replenishment of stock in the stores, and tracking competitors' pricing policies (Table 2, 3). The company employed about one hundred individuals during the 1965-1975 period who for the most part knew one another personally.

The IS staff consisted of individuals who, for the most part, continued to be active in retailing and whose lack of formal IS training was compensated by a deeply felt interest and a great facility in IS technology of this period. Because IS developers continued to be active in retailing activities they designed ISs based on an in-depth knowledge of the business and its information needs. The ISs were frequently conceived by users, including store clerks, and members from middle and upper management. In addition these systems were always designed in close cooperation with users, be they shop clerks or members of middle and upper management.

The situation sketched above combined with a corporate philosophy that stressed rational discourse, reduced power differences among employees and management, and encouraged personal initiative toward action at all company levels, creating an opportunity for communicative action (Habermas, 1973, 1979, 1984, 1989).

To illustrate the high-risk nature of these information systems we focus on the store inventory replenishment system. Its precursor had been designed and implemented during the period in which the company was a wholesaler and supplied small stores with inventory. To increase reordering and restocking efficiencies small storeowners were asked to enter daily sales figures on keypunch cards. At regular intervals sales people would collect the keypunch cards, which were then used to reorder supplies (CIO, 1993). This inventory replenishment system became a total failure because it was inherently at odds with the way small-store owners operated. As the CIO (1993) noted:

"[The] project failed the first day we tried to implement [the system] because the electronic data processing (EDP) manager had [failed] to consider the way shopkeepers work. It was easy to tell [shopkeepers] to fill out keypunch cards but [shopkeepers] are tired at the end of the day and so they postpone the task until the next day, and [then] it never gets done."

The CIO (1993) went on to explain that the inventory information system's failure became a vehicle for learning about system design. It was recognized that effective participation by users, including store clerks, was necessary to IS success.

The CIO (1993) correctly identified the cause of system failure with his remark, "The EDP manager had [failed] to consider the way shopkeepers work." It is likely that the

designer engaged several small-store owners with instrumental action to obtain design requirements. We further deduce from the CIO's quote that strategic or communicative action did not take place. Had the designer engaged small-store owners with a mixture of instrumental, strategic, and communicative action the likelihood the system meeting small-store owner information needs would have been significantly higher (Habermas's, 1973, 1979, 1984, 1989).

6.2 The 1975-1985 Period

During the 1975-1985 period the case company continued to informate. For example, at the checkout stations an IS was implemented that recorded the time customers waited for service (Table 2, 3). However, the corporate environment changed significantly during the 1975-1985 period. The company had become larger by opening additional stores and employed several thousand individuals. The IS department had also been professionalized and had grown from very few to eighty employees (CEO, 1993). This meant that the orientation of IS users and designers was now different and it was not always the case that IS designers had an in-depth knowledge of the business.

The increased number of employed individuals and the creation of a separate IS department caused a subtle but important shift in the IS development process. During the 1965-1975 period system development was a process that had involved individuals who were similar in status, thought alike, understood the retailing process first hand, and shared a similar lifeworld. The shift during the 1975-1985 period toward a more formal IS design group loosened these close relations between users and IS designers.

The company's CEO explained that many ISs were designed that were technically satisfactory but that frequently were unsatisfactory from the point of view of meeting business needs. In fact, too often the ISs only partially met users' information requirements or at times did not meet them at all. Concerning this situation the CEO (1993) commented:

"We had the classical approach of approving large budgets for the IS department and [charging it with the] responsibility of informatizing the company. [As a consequence] ISs were designed by [the IS department] that were not used. The problem for top management was allocating enormous IS budgets without knowing whether these were economically feasible. Furthermore, members of top management were divided on the issue – this one favored [an IS project] while others opposed it."

In addition, the types of systems that were designed during the 1975-1985 period were technically more demanding than those developed during the 1965-1975 period (Tables 2, 3). Concerning the discount pricing IS the CEO (1993) commented:

"The most [difficult] program that we [designed] and implemented is the [price] discount system. [This IS] is in use in all our one hundred twenty stores, it contains pricing [information] on all our products and those of the competition from all over the country."

Because of the reasons described above users' opinions were either not sought or not taken seriously. IS personnel assumed they knew best what systems the company needed, and the annual IS budget increased with each passing year. Furthermore, ISs were designed and implemented at great cost and never used.

In response to the above crisis the company reacted by instituting a unique budgeting device (CEO, 1993). As the CEO (1993) explained:

"For example, an accounting clerk may discover that he can work [more efficiently] when he has several numerical data columns displayed side-by-side on his monitor. [This clerk] has to state the financial gain over a seven-year period, the systems development cost, the systems maintenance cost, and the maximum time that system may be operationally unavailable. The clerk then passes this document on to his supervisor, whereupon it is immediately forwarded to the steering group. "

According to the CEO (1993) the form-based approval process was fashioned by the CIO who had first-hand knowledge of the business. The IS approval process requires the following data: a rather complete description of the proposed IS together with its purpose, estimates of financial benefits to the business, development costs, annual operating costs, annual maintenance costs, and the share of the financial budget the systems originator would be willing to contribute towards its development. The reason for the last piece of information is that the systems' proposer could be unable to pay its entire development cost. If the system were potentially valuable to other groups, it could then be justified on overall company benefit. With this approval mechanism the CIO and upper management succeeded in controlling the IS budget and making the systems approval process more transparent.

ISs often affect company operations to a much larger degree than anticipated by its proponents. Involving all who might be affected by a new system in negotiating its specifications increases the likelihood of satisfied users. Thus, in addition to the rationalized method for requesting new ISs, an instrument was needed to make possible potential for instrumental, strategic, and communicative action. This company-wide communication system, namely the information system for information dissemination (ISID), is discussed in the next section.

6.3 The 1985-1995 Period

The 1985-1995 period was dominated by the development of complex company-wide ISs (Tables 2, 3). Warehousing and Truck Routing are exceedingly complex operations where system design input from management science and operations experts dominates. Hence, it was our observation that in the case of these systems user participation was minimal. The CEO (1993) corroborated our observation:

"A complex piece [of software] takes years [to develop]. [For example], we have several warehouses. Each day three hundred fifty trucks leave these warehouses and we need to ensure that stores unload at most three semi-trucks per day. We have worked three years on this IS and so far we have failed already twice. Hence the demand for very intelligent IS analysts who can take on these problems."

On the other hand the information system for information dissemination (ISID) was much influenced by user participation. ISID is a company-wide system that makes it possible to realize Habermas's (1984) social action types. ISID is the depository of all incoming, outgoing, and internal company documents. Minutes of any company meeting are also stored by ISID. This provides an excellent record of negotiations and shows whether the "ideal" situation that is necessary for communicative action existed.

To illustrate the central purpose of ISID consider, for example, a meat section supervisor who experiences problems with his refrigerator. The supervisor checks ISID for case instances of similar problems together with how these problems were resolved. If a solution to his particular problem is not available, the supervisor creates a working group that may consist of a refrigerating engineer and other meat section supervisors who in the past experienced similar problems. Next a meeting of this working group is organized and announced to every company employee via ISID. Company employees who think they can contribute at this meeting can join the scheduled meeting. Note that attendance is at the discretion of the individual and not determined by the working group leader. This fact helps create the "ideal" speech situation considered necessary by Habermas (1984) for communicative action.

Assuming that the meeting results in operational changes that resolve the refrigerating problem, these changes are then reported to everyone on ISID. Anyone in the company is given sufficient time to respond in case the proposed operational changes would adversely affect his work environment. If the former were to occur, a new round of meetings occurs.

In participatory and emancipatory environments questions arise about how to resolve the breakdown of communicative action. That is to say, communicative and discursive actions fail to establish a common definition of the situation at hand. This in turn means that the individuals involved do not have a basis for carrying out their individual plans of action. The company found an ingenious protocol to resolve a possible stalemate. During any group meeting a consensus forms concerning the person who gets the responsibility to make a definitive decision. This individual participates in the group's deliberations but makes no decision during the group's meeting. Instead he or she considers all opinions offered during the meeting and makes a decision several days after the meeting and communicates it to all group members via ISID. There is a grace period during which the decision can still be adjusted.

The above-summarized description of ISID demonstrates that it supports all aspects of Habermas's (1984) social action types: instrumental, strategic, normatively regulated, and communicative and discursive action. Thus, both company norms and its communication infrastructure support Habermas's (1984) social action types.

7. Discussion

In the case company, the process of proposing and designing ISs was participatory for two out of the three periods described in the previous section, the exception being the years between 1975-1985. The process by which new ISs are proposed and developed since 1985 clearly conforms to the requirements of participative design. Anyone can

suggest new ISs and control their development from design, through implementation, to operation. This section analyzes the circumstances that led up to participative design and considers the extent to which the company's information systems can be said to be emancipatory in their effect.

Our data suggest that the 1965-1975 and 1985-1995 periods were characterized by broad-based communication between system designers and users. During the 1965-1975 period the number of employees was small and system designers and users were intimately involved in the business. However, during the 1975-1985 period the number of employees had become larger, additional stores had been opened, and IS designers were located in a separate department. This had a negative effect on IS designer-user communication. The introduction during 1985-1995 of ISID and of a formal process of user-initiated IS development restored and improved the in-depth communication that existed during the 1965-1975 period. In fact, the IS development process mirrored the way the company conducted other business processes elsewhere in the organization.

ISID is an extraordinary system that plays an essential role in the case company's life. It provides each of approximately five thousand employees control over his or her work and easy access to a vast body of company information without subjecting individuals to inequitable conditions. To illustrate the company's policy on openness, approximately 80% of information contained by the ISID database is accessible to all employees, 15% of the information is accessible to all employees by keyword only, and the remaining 5% is accessible to its originators and members of top management.

As disseminator of information about the company's activities and a company-wide electronic communications channel, ISID supports two of the three requisite skills needed by individuals in an organization committed to communicative action. ISID's informational role is particularly important when new ISs are proposed. Individuals affected by new ISs learn of them in time to contribute and, when appropriate, alter their design at an early stage.

Through its role as a communications channel ISID acts as a major vehicle for building consensus, and enabling instrumental, strategic, and communicative and discursive action. Not only does ISID make possible employee participation in all company activities, it ensures a far more participative IS development process than would otherwise be possible.

Our data demonstrate an ardent emphasis on communication by individuals we interviewed and in the company's educational program. Employee training and daily practice cover the spectrum of Habermas's (1984) communicative action types. Emancipated and empowered employees cannot be managed in the traditional way. Their views must carry weight, as the CEO's (1993) following observation makes clear:

"The company has to adjust when many [employees have] participated in training. The company cannot maintain the same philosophy [as before the training]. The company is a [collection of] employees, and when they change the company has to change. The alternative would be revolution."

The importance of ISID can hardly be overrated in terms of the company's successful informatization efforts. Holtzblatt and Jones (1993) echo our opinion with their concern about in-depth organization-wide communication between system users and developers.

Participation in general and participative IS design in particular require extensive training to prepare employees to recognize where and how an IS might be useful in a given work situation (Ehn, 1993; Iivari and Igbaria, 1997). Successful participative IS design requires employees who feel free to express their opinions. Furthermore, participative IS design emancipates and empowers employees at all company levels and reduces alienation especially of low-level employees.

Since the company's inception in the 1960s employee participation in company affairs had been the rule. As a result of previous participatory experiences, the demand that they participate in IS design was not significant different from what employees had been doing all along.

We will illustrate the emancipatory potential of ISs by focusing on customer waiting time at the checkout counter. Bravo (1993, p.8) pointed out that data generated by such systems are normally communicated to supervisors who use this information to motivate employees toward higher levels of performance. In effect, such systems increase managerial control and run counter to emancipatory and empowerment ideals. In the case company data misuse was avoided by making detailed customer wait times accessible to the clerk, whereas managers have access to aggregated information. The company's CEO (1993) explained that clerks need the detailed data to see whether they work above or below their normal levels of efficiency during a shift. This system is emancipatory because clerks acquire greater control over their work environment without being subjected to inequitable conditions.

Three of the company's major information systems can be clearly shown to have emancipatory potential (Table 3), the most profound effects being felt by low-level workers. In all cases, the system does not by its mere existence have an automatic emancipatory impact. This comes from the use to which it has been put. In those cases where systems produce decision support information (price discounting, customer waiting time and ISID), the company's culture ensures that these decisions are devolved as far as possible. The pertinent information produced by these systems is made accessible to all staff concerned with the relevant operations, to use in a way they see fit. It is the general availability of the information from these systems and the use to which employees are expected to put it that creates the emancipatory impact. For this company participative systems design was not the driving force behind the development of emancipatory systems. The critical factor was its culture and the attempt to create a working environment that conforms to communicative action ideals.

Our study has limitations concerning its practical implications. We studied a single European company located in a country with strong participative, emancipatory, and democratic ideals where directness in interpersonal dealings is seen as a sign of honesty. Cultures exist where indirectness is preferred over directness. It would therefore be inappropriate to generalize our findings to another company in the same country, and even more foolish to generalize to a different country. The previous

statements appear to be corroborated by Child and Lovebridge (1990) who postulated that the efficacy of user participation depends on cultural and societal supports.

However, there are findings that appear to have some universality. Participative IS design cannot be an isolated example of worker emancipation and participation. We suggest that participative IS design can only occur in an organizational environment already characterized by emancipated and empowered ideals. Similarly we suggest that only organizations with this type of culture will develop ISs that have emancipatory impact.

8. Conclusion

Based on our case analysis we conclude that participative IS development is hardly possible unless the organization has aims consistent with communicative action ideals and a corporate culture that goes a long way in achieving these. To practice emancipatory IS development one must gain the active and intelligent contribution from all individuals who could be affected by the IS under consideration. Since one never knows who might have an interest in or be affected by a new system, staff members throughout the company must be able to contribute. This requires staff members who are communicatively competent (Habermas, 1984) and knowledgeable about the business, the company's overall aims, their own operational situation, and information technology. Furthermore, the company must enable communication by providing the necessary technical means (such as ISID).

The company's experience of systems development and use shows that quality of working life is likely to be positively impacted from the use to which systems are put as well as by the method of their design. Most of the example systems discussed in previous sections offer significant job control to the appropriate staff members by giving them access to the system and the information that it processes. These systems informate staff members (Zuboff, 1988) and encourage them to use this information to improve their performance. The emancipatory impact of informatization of the case company depended on the existence of a culture conforming to communicative action ideals as well as the design of appropriate systems.

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Table 1. Five Social Action Types and Their Use in Participative Design

Action Type	Action Description and Related World(s)	Action Orientation	Participative Design Application
Instrumental	The actor relates to an *objective* world consisting of objects, states of affairs, and people who have been instrumentalized.	The orientation is *teleological*. The actor seeks to realize his goals in the most *efficient* manner using predictions derived from physical and behavioral models.	Analyst treats the user as a source for obtaining IS information requirements.
Strategic	The actor relates to an *objective* world consisting of objects, states of affairs, and people who have been instrumentalized. The actor knows that his *counterpart adjusts her actions in response* to his actions.		Analyst views user participation purely as a tool to manipulate the user, i.e., the user is an opponent who needs to be manipulated into cooperating. No meaningful user input into IS design takes place.
Normatively Regulated	Actors relate to *objective* and *social* worlds consisting of objects, states of affairs, and societal norms.	The orientation is constrained by mutually accepted *norms*, in accordance with which actors behave.	Analyst and user accept the company's normative system that dictates participation.
Communicative	Actors relate to *objective*, *social*, and *subjective* worlds consisting of objects, states of affairs, norms, and subjective feelings. Actors tacitly assume norms, social practices, and beliefs of everyday life.	The orientation is *consensus* seeking about the situation at hand. Actors execute their individual consensus-based action plans.	Analyst and user recognize that true consensus about the ISs purpose and its requirements is essential to success. This is particularly so when the IS is intended to support communicative action. Analyst and user tacitly assume everyday norms and social practices such as participation and cooperation.
Discursive	Social practices, beliefs, and normative claims are *problematized*. Actors seek to redeem validity claims truth, rightness, and sincerity through argumentation.	The orientation is a willingness to come to an agreement motivated only by the force of the *better argument*.	Analyst and user resolve differences that may occur about the nature and extent of participation and cooperation.

Table 2. Major Company Information Systems

System	Technical Success	Period of Conception	Implications for Business			
			Purpose	**Benefit**	**Technical Risk**	**Cultural Risk**
Point-of-Sale	Yes	'65-'75	Capture customer sales	Very High	High at inception	Customers need to be able to read.
Inventory	Yes	'70-'75	Control distribution costs.	Very High	High at inception	Low, employees embraced system.
Discount Pricing Information (Under continuous development)	Yes	'65-'75	Control pricing	Very High	Moderate	Customers need to be able to read.
Basic Accounting	Yes	'75-'85	Produce standard accounting reports	High	Low at inception	Accounting personnel opposed to accounting information system.
Customer Waiting Time	Yes	'75-'85	Reduce customer waiting time	High	Moderate at inception	Low, employees embraced system.
Information System for Information Dissemination	Yes	'75-'95	Improve company communication.	Very high	Very high at inception	Employee resistance, potential misuse, employees need proper communication skills, need for norm creation.
Warehousing	Yes	'85-'95	Control distribution cost	High	High at inception	Low, employees embraced system.
Truck Routing (Under development)	No	'85-'95	Control distribution cost	Potentially very high	Very high at inception	Low, employees embraced system.

Table 3. Major Company Information Systems and their Organizational Impact

Type of System	Time Period	System Impact on Quality of Working Life			System Emancipatory Potential			Degree of Participative System Development
		LLW*	MLM*	TLM*	LLW*	MLM*	TLM*	
Point-of-Sale	'65-'75	High. Increased customer contact.	High	High	Low	Low	Low	High (Small Company)
Inventory	'70-'75	High. Eliminates need for daily inventory count.	High. Optimal stock rotation.	High. Increased ability to negotiate price reductions.	Low	Low	Low	High (Small Company)
Discount Pricing Information	'65-'95	High	High	High	High	Moderate	Neutral	High (Small Company)
Basic Accounting	'75-'85	Moderate. Stress reduction.	High. Increased accuracy and timeliness.	High	Low	Low	Low	High (Small Company)
Customer Waiting Time	'75-'85	High	Moderate	Low	High	Moderate	Low	Low (Large Company & Centralized IS Dept.)
Information System for Information Dissemination	'75-'95	Very High	Very High	Very High	Very High	Very High	Very High	High (Revised IS proposal procedure)
Warehousing	'85-'95	High. Task simplification. Stress reduction.	High	Low	Negative	Low	Low	Low (Complex System)
Truck Routing (Under development)	'85-'95	Depends on use	Depends on use	Low	Depends on use	Depends on use	Low	Low (Complex System)

*LLW=Low Level Worker, MLM=Middle Level Management, TLM=Top Level Management.