Realizing Emancipatory Principles in Information Systems Development: The Case for ETHICS

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Abstract

Information systems development methodologies have been the subject of much attention over the years. A substantial body of research has focused on the need to develop methodologies that support viewing information systems as social constructs, and information systems development (ISD) as a social process. But if development is a social process, what principles/ideals should inform it? Recent research has called for "emancipatory" ideals to be included. This debate can be expanded to explore not only what emancipatory principles might be applied in information systems development, but also how. Existing ISD methodologies only partially embrace emancipatory principles. One of these—ETHICS—seems the most likely candidate to be extended or "reformulated" to achieve emancipatory ideals more comprehensively. Organizations using this reformulated version of ETHICS should make some progress advancing emancipation while at the same time confronting limited resources and the presence of power and authority. The approach undertaken here is generic; researchers can similarly apply these reformulation techniques to other methodologies based on other paradigms.

Keywords: Neohumanism, critical social theory, emancipation, participation, information systems development, methodology reformulation, socio-technical design

ISRL Categories: DD, FA10, FC

Introduction

Most information systems development (ISD) methodologies have traditionally concentrated on producing functionally correct and efficient user requirements, which would then form the basis of system specifications. These methodologies draw upon functionalist assumptions for their theoretical base (Hirschheim and Klein, 1992). However, there are alternative philosophical bases of ISD. One of these is neohumanism. Whereas functionalism espouses the ideals of efficiency and effectiveness, one of the key values of neohumanism is emancipation. The focus on emancipation, however, is not the only principal difference between functionalism and neohumanism, as will be explained later.

While the philosophy of neohumanism is relatively mature and well-developed, its application to the domain of management in general and ISD in particular is very far behind. Based on the reviews provided by Lytinen (1992) and Ngwenyama (1991), we believe that the application of neohumanist principles to ISD deserves considerably more attention than it has received so far. Neohumanism can suggest how to see old issues in a new light and tackle many unresolved problems of ISD in a novel way. Take, for example, the issue of participation. Functionalism recognizes the need for user participation in the analysis, design, and implementation of an information system. Indeed, user involvement is considered paramount to the success of a systems development exercise. Participation is viewed as a necessary but not sufficient condition for suc-
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cess. Functionalism sees it primarily as a means to an end: to get better information on requirements, to build better system specifications, to overcome resistance, to validate design options, etc. All of these are valid concerns and are also embraced by neohumanism. In addition, however, neohumanism insists that participation is even more important for social sense-making to create shared understandings and to meet the ethical imperatives of work arrangements in a democratic society. In fact, participation and emancipation have much in common; they are, so to speak, kindred spirits. In light of this it is not surprising that a number of ISD researchers informed by neohumanist ideas have suggested that in addition to user participation there is a need for some type of emancipatory ideals/principles to be included (Avison, et al., 1993; Lee, 1991; Lyytinen, 1986; Lyytinen and Hirschheim, 1988; Lyytinen and Klein, 1985; Ngwenyama, 1987). We agree with Lyytinen (1992) that neohumanism could help to construct alternative ISD approaches that differ from those currently known, both in their espoused values and goals as well as in the means to achieve these goals (see also Kendall and Avison, 1993).

The purpose of this paper is to introduce emancipatory ideals with reference to their philosophical foundation (neohumanism) and explain how they relate to ISD at the level of the organization. Such a treatment of emancipatory concerns is important because it could contribute to the realization of democratic ideals at the organizational level. It is beyond the scope of this paper to justify the desirability of democratic ideals at all levels of society in terms of underlying ethical theories, but there are possible treatments (see Deetz, 1992 or Rawls, 1971).

The call for neohumanist values to be adopted in IS is not new, nor for that matter is the call for their adoption in other academic disciplines. What has been problematic, however, is how such values can be practically realized. Virtually no published examples exist of how neohumanist values have been implemented in practice. While several approaches to ISD could serve as a point of departure, none places the ideal of emancipation at its center. Without such methodologies, it is unlikely that much progress can be made. Indeed, of the four ISD paradigms identified by Hirschheim and Klein (1989), only the neohumanist paradigm did not have an example of its methodological application. While the goal of developing a methodology from scratch that systemically seeks to implement neohumanist values is laudable, it is also formidable. Fortunately, it is unnecessary to do so. In this paper, we suggest how an already existing ISD methodology could be "modified" to incorporate the ideals of neohumanism.

The modification follows certain systematic principles, which will later be characterized as a "critical reformulation" of methodologies. We see this as a first step for the community, one that would facilitate the gradual adoption of emancipatory concerns in information systems development on a broader scale.

The paper proceeds as follows. The next section provides a concise exposition of some key ideas of neohumanism and how they relate to emancipatory ideals and related themes in management and ISD. The section particularly concentrates on the nature of neohumanist values. We focus on these values because in modern times the ideal of emancipation has been advanced in the philosophical writings of neohumanism, and neohumanism is best explained by confronting it with its principal paradigmatic alternatives: functionalism and social relativism.

The following section articulates our choice of a host methodology that serves as the basis for incorporating neohumanist values within systems development—ETHICS (Mumford, 1983)—and provides a brief overview of ETHICS for those who are unfamiliar with it. We show how ETHICS intrinsically embraces a number of neohumanist/emancipatory ideals. This is followed by a proposed set of modifications to ETHICS inspired by the ideals of neohumanism, suggesting how emancipation could be achieved through systems development.

In the concluding section, we argue that our modification of ETHICS is nothing more than a special case of a more general concept—that of critical methodology reformulation. Critical reformulation involves two steps: (1) performing an assumptions analysis to identify the basic building blocks of a methodology and (2) proposing improvements for overcoming the limitations inherent in these assumptions.
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Emancipatory Ideals in the Context of Management and ISD

Emancipation is typically thought to embrace two dimensions: psychological and organizational. The former calls for the realization of the full creative and productive potential of individuals; the latter refers to the establishment of social conditions, which encourage effectiveness through organizational democracy, specifically overcoming existing forms of authoritarianism and social control if they perpetuate inequities of the status quo in the workplace. According to Ulrich (1983), emancipation refers to freeing those affected by some form of planned change “from being treated merely as means for the purposes of others” (p. 257). While emancipatory principles have a long and rich tradition, their application in the organizational domain has been limited.

Emancipatory ideals in the management context

Historically, management ideology has not embraced the ideals of emancipation but is instead considered to have had a strong authoritarian bias (e.g., Taylorism or “managerialism” as described by Deetz, 1992; cf. Alvesson and Willmott, 1992b; Braverman, 1974; Jenkins and Sherman, 1979). Taylorism, however, has come under attack from at least three directions: the workplace democracy movement (Clegg, 1960; Das, 1964; Herbst, 1976; Lansbury, 1980); participatory design concepts (Lucas, 1976; Pateman, 1970); and, most recently, the notion of social empowerment through teams (Katzenbach and Smith, 1993). The workplace democracy movement emphasizes innovations in the institutional-legal sphere of organizations and society and hopes to influence work details “from the top down” or the “outside in.” Participatory design programs typically operate at the work-place level, where substantial progress with emancipation can be made in everyday practices through the involvement of the workers in decision making (the “micropractice of democracy,” as labelled by Deetz, 1992). Social empowerment programs seek to lessen the direct power of management by turning over control to teams that have decision-making authority and responsibility.

These alternatives have also come under attack. Both participation and social empowerment have been criticized as merely concealing underlying power distortions because they are too narrowly focused on economic rationality and organizational control objectives (cf. Deetz, 1992; Ehn and Sandberg, 1979; Klein and Kraft, 1994). But whether such criticism is warranted depends on the motives and details with which participation is implemented in a specific case.

We believe it is possible to see emancipatory ideals in projects that have attempted to implement democracy in the workplace (Nygaard, 1975), to increase employee participation in organizational decision making (Das, 1964; Lansbury, 1980), or have embraced social empowerment (Hirschheim and Miller, 1993). Although there are numerous critics of such projects, particularly projects attempting to increase worker participation, we believe such criticism is misguided. Deetz (1992), for example, a critic of participation projects, fails to realize the many sincere, emancipatory concerns of participation schemes when he writes:

What is key to their difference is not always the actual practices involved but the motive. While many participation programs are dominated by economic rationality and a strategic interest in control, workplace democracy has focused on the political issues involved. (p. 350).

We believe the main weakness of participation programs has been that they failed to take into account the political background constraints that most clearly manifest themselves in the institutional-legal context in which organizations operate. Because this context and the associated historically grown organizational practices were often hostile to the goals of participation programs, they were vulnerable to subversion or even plain misuse by vested interests. But this need not be the case. Indeed, one contribution of this paper is the proposal of a theoretical structure for organizing participation of those who are directly involved with ISD. It does not extend this structure to all affected by ISD (e.g., clients or the general public, cf. Ulrich, 1983).

Within the specific context of management theory literature, Alvesson and Willmott (1992a) concep-
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tualize the idea of emancipation in the management of organizations. Their work provides a classification of different types of emancipation that can be pursued by management: questioning dominant forms of thinking; formulating utopian visions; and articulating projects that contribute incremental steps toward emancipation. Questioning refers to the process of criticizing the status quo without necessarily providing an alternative. Utopian refers to the explication of an ultimate vision without specific reference to the current state. Incremental steps falls between the two extremes, providing partial solutions for overcoming oppressive environments. Alvesson and Willmott also suggest how emancipatory studies could be reoriented to make them more useful for practitioners who identify with emancipatory values. A critical review of possible strategies to achieve emancipation in organizations can also be found in Mumby (1988) and Deetz (1992).

In addition to management theory, planning theory has contributed to emancipatory principles by analyzing communicative distortions as barriers to the rationality of action and proposing possible strategies to overcome them in practice (cf. Forester, 1989). Ulrich (1983), for example, in his “critical heuristics,” outlines an approach to formulate planned social systems in a way that allows emancipatory concerns to be addressed in the planning process.

Emancipatory ideals in the ISD context

In the ISD literature, the distinction between workplace democracy, participation, and social empowerment approaches has not always been clearly stated. In principle, emancipatory thinking entered ISD through the participatory design movement, which adapted concepts of workplace democracy to ISD. The emphasis on institutional aspects of emancipation in systems development can be traced at least as far back as the “Iron & Metal Workers Project” undertaken in Norway from 1971 to 1973 under the leadership of Kristen Nygaard (1975). The project evaluated planning, control, and data processing systems from the perspective of the workers. Attempts at embracing emancipatory ideals continued in the DUE project (Kyng and Mathiassen, 1982), DEMOS project (Carlson, et al., 1978; Ehn and Sandberg, 1983), and UTOPIA project (Bødker, et al., 1987; Ehn, et al., 1983; Howard, 1985). These projects extended the notion of evaluation of information systems to place control of development and use in the hands of the workers. The lessons from these projects are embodied in a loose collection of tools, techniques, and principles termed the "collective resource approach" (Ehn and Kyng, 1987). Recently, this approach has evolved to include "cooperative design" (Greenbaum and Kyng, 1991; Kyng, 1991), which is suggestive of a more collaborative effort between designer and user. While these projects and the resulting collective resource approach have their origins in the ideal of emancipation, it must be noted that their view of emancipation embraces the goal of keeping the control of systems development in the hands of the trade unions under the rubric of "democratic planning."

A different emphasis on realizing emancipation in ISD can be seen in the PIOCO model and the MARS project. Both aim at emancipation through social learning. The PIOCO model of systems development (Livari and Koskela, 1987) attempts to reconceptualize the project life cycle as a learning process (Livari, 1983) in order to strengthen critical reflection and self-insight based on feedback from concrete actions. Kerola’s (1985; 1987) expansion of these ideas focuses on superimposing the systems development process life cycle on the stages of knowledge acquisition and learning in Kolb’s experiential learning theory (Kolb, 1984; Kolb and Fry, 1975). This promises to make all participants better aware of the social situation in which systems development takes place, a precondition for successful cooperation. The MARS project (Lanzara and Mathiassen, 1985; Mathiassen and Bøgh-Andersen, 1987) also takes a learning perspective of systems development (and use) but focuses directly on work practices. The starting point is an explicit recognition of the chronic deficiencies of work practices in any group. Various tools (diagnostic, ecological, virtual, historical “maps”) are suggested to help record and reflect upon these practices (Lanzara and Mathiassen, 1985). A more extensive review of the emancipatory potential of these two social learning approaches can be found in Klein and Hirshheim (1993).
Some other methodologies or projects that move in the direction of emancipation through participation are PORGI (Oppelland and Kolf, 1980), SSM (Checkland, 1981; Checkland and Scholes, 1990), FLORENCE (Bjerknes and Bratteteig, 1984), and SAMPO (Auramäki, et al., 1988; 1992; Lehtinen and Lyytinen, 1983; 1984). These all appear to recognize communication barriers and possible therapeutic measures, but they are neither complete nor systematically geared toward emancipatory ideals. It is for this reason that we discuss below our proposed modification of ETHICS (Mumford, 1983). We do not make a sharp distinction between methodologies, approaches, or “projects” (such as UTOPIA or DEMOS, if a project is intended to show a way of developing systems to be followed by others). What we mean when we use any of these terms is an organized collection of rules and tools that serve as resources for people when developing information systems (Lyytinen, 1987; Lyytinen and Ngwenyama, 1992). If the collection of resources is fairly well-structured along the lines of a documented procedure (i.e., codified) with specific tools (e.g., questionnaires, charting standards), we prefer to speak of a methodology. An example is the ETHICS methodology, as outlined in Appendix A.

Methodologies are informed by particular philosophical assumptions or “paradigms” (Hirschheim and Klein, 1992). It is our contention that the paradigm in which emancipation plays the most significant role, and which has theoretically addressed the barriers to achieving emancipation, is neohumanism (Hirschheim and Klein, 1989).

Requirements for an Emancipatory Methodology

In the context of systems development, we propose that the following four conditions are required for a methodology to be considered emancipatory. We state these conditions in our own words based on Alvesson and Willmott (1992a) and then relate them to a domain that has attempted to embrace emancipation—planning theory (Forester, 1989; Ulrich, 1983). We also briefly consider whether and how ETHICS recognizes these conditions.

1. An emancipatory methodology must support an active process for individual-and collective self-determination (Alvesson and Willmott, 1992a, p. 433). This is similar to Ulrich’s (1983) principle that those affected in the planning process “must be given the chance of emancipating themselves from being treated merely as a means for the purposes of others” (p. 257). (This is a direct application of Kant’s (1964) "categorical imperative."). ETHICS recognizes this through its overwhelming emphasis on bottom-up (grass-roots) participation.

2. An emancipatory methodology must support a process of critical self-reflection and associated self-transformation (Alvesson and
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Willmott, 1992a, p. 434). This corresponds to Ulrich's (1983) principle that social design "is not merely a matter of instrumental orientation towards some purpose . . . , but that for socially rational planning it is essential that the planner initiate a process of emancipatory self reflection on the part of the affected" (p. 260). ETHICS is found lacking in this regard but could be modified to include self-reflection and self-transformation.2

3. An emancipatory methodology must encompass a broader set of institutional issues relating particularly to social justice, due process, and human freedom (Alvesson and Willmott, 1992a). Such institutional issues are well-captured in Forester's (1989) distinction of two types of communicative distortions: those that are "socially ad hoc" (e.g., "willful unresponsiveness" by an individual) and those that are "socially systematic" (e.g., "information inequalities resulting from legitimate division of labor"). ETHICS realizes these institutional issues in several forms. Prominent among these are the recognition given to employees' ethical needs, quality of work life, personal autonomy, and the linkage between participation and democracy in general.

4. An emancipatory methodology must incorporate explicit principles for the critical evaluation of claims made throughout the systems development process, e.g., by questioning the knowledge and beliefs upon which these claims are based. This is related to Churchman's (1971) notion of a "guarantor" design; in the words of Ulrich (1983), "[A] source of guarantee presupposed in each design effort (including any designs for inquiry . . . )" (p. 261). In critical social theory, rational discourse (see below) is proposed as the guarantor. Rational discourse should reveal fallacious evidence and other forms of misinformation (e.g., Forester's communicative distortions). In the case of ETHICS, this is realized by an explicit pluralist model of inquiry, which is expanded upon later in the paper.

Implications for ISD Methodologies

For an information systems development methodology to embrace neohumanist ideals, and in particular emancipation, it would have to allow users and developers to build information systems that free their users from unwarranted social constraints and psychological compulsions, both during the learning cycle in which information systems are built and subsequently through their use. A critical aspect is that an emancipatory methodology and the resulting IS should help to overcome communicative distortions.

In practice, communication distortions abound. Distortions typically arise from weaknesses of human personality or from asymmetries in the social context. These may occur through: (1) authority and illegitimate power, which create anxieties and cause people to distort or withhold information in order to protect themselves; (2) peer opinion pressure, which creates tunnel vision for the sake of loyalty, reducing the validity of judgements by suppressing possible validity checks through criticism; (3) time, space, and resource limitations preventing universal access to knowledge, even though in principle it is available (this includes the common situation where knowledgeable people remain silent due to lack of motivation to participate because of work overload or the socially created need to withhold important information unless it is to one's advantage to engage in a debate); (4) social differentiation, in particular differences in the level of education, specialization, and personal values and beliefs; and (5) the bias and limitation of language use, e.g., jargon and cognitive anchoring.

Forester (1989), within the context of planning theory, notes similar types of distortions. His taxonomy classifies distortions into four types: (1) cognitive limits, which incorporate idiosyncratic personal traits affecting communication, as well as random noise; (2) division of labor, which relates to information inequities resulting from the

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2For example, one way in which ETHICS could be modified to support self-reflection is through diary keeping (cf. Jepsen, et al., 1989; Lanzara and Mathiassen, 1984). The diaries would act as a documentary record of an individual's practices. Self-transformation could occur when an individual reflects upon his or her experiences and then changes behaviors accordingly. In this way both successes and failures become important assets for improving the practice. Another way ETHICS could be modified to support self-reflection is through argumentation support, e.g., the incorporation of electronic meeting systems or other decision room-type features, as suggested later.
traditional labor structures, as well as information loss across organizational boundaries; (3) interpersonal manipulation, which encompasses willful unresponsiveness, interpersonal deception, and bluffing; and (4) structural legitimation, which includes monopolistic distortions of exchange, monopolistic creation of needs, and ideological rationalizations.

In psychoanalysis (cf. Bion, 1959; Klein, 1965), various forms of compulsions have been studied that cause people to lose their hold on reality, “to kid themselves,” as is commonly said. These are defensive behaviors (avoiding the issue, blaming others, making up excuses), transferral of conflict, exaggerated anxieties of perceived or real threats, and other neurotic tendencies. All of these cause people to make claims that cannot stand up to informed analysis, yet the actor may not be fully aware of this. At one time or another we all appear to fall victim to illusions and delusions.

The psychopathology of human cognition is usually reinforced by certain external social conditions. Prominent among the sources of external distortions (emanating from the social context) is the information processing bias exerted by authority and other forms of power and ideology. Ideology hides vested interest and power through theoretical constructions (verbal pictures) that portray a state of affairs as natural (and therefore unavoidable) or just, when in fact it is not. Those caught in ideology are led to limit their analysis in such a way that prevailing assumptions and constraints are not subjected to informed critical arguments (cf. Mumby, 1988, for a more detailed analysis of the relationship between ideology and the ideal speech situation). In summary, we may say that tendencies that distort communication will arise from psychopathological emotions and social conditions.

If communicative distortion as explained above is a key issue in emancipation, then the application of information systems could help to mitigate distortions by facilitating the widest possible debate of organizational problems, in particular among subcultures or groups that without such systems would unlikely share their problems and concerns. Whereas it would be unrealistic to assume that such a debate would lead to agreed-upon objectives and policies for achieving them, it could be expected to contribute to an improved mutual understanding. This in turn could mitigate some of the conflicts that would inevitably remain because of inequities in power and/or communication difficulties among socially diverse groupings (Forester, 1989). The goal of information systems development from this perspective is to institutionalize a series of checks and balances that would guarantee this debate to occur, and to occur within the context of “emancipated discourse.” Emancipated discourse refers to communication between two or more individuals where those engaged in the communication deceive neither themselves nor others; in other words, the discourse takes place in an environment free from distortions. (This is also called a “rational discourse” or communication in an “ideal speech situation.”) It would be naive not to recognize that a rational discourse inevitably conflicts with the power structures operating in all social formations (cf. Deetz, 1992; Mumby, 1988). The failure to address the power issue can be traced to the theoretical foundations upon which the rational discourse rests. We will point to some of the strategies proposed to mitigate the influence of power structures in the conclusions of the paper.

The Concept of Emancipatory Discourse

Emancipatory discourse is concerned with defining conditions in which distorting tendencies are absent. These criteria allow us to perform a diagnosis to assess the degree to which distorted...
tions are present in a given situation. Emancipation is concerned with remedies to overcome these tendencies. The first three of the following conditions are primarily concerned with external conditions that facilitate a discourse without undue social pressures; the fourth is concerned with the internal conditions of each participant (cf. Habermas, 1971; 1973; 1984):

1. All participants must have equal opportunity to raise issues by asking questions, making speeches, and giving rebuts or answers to questions and speeches of others. This condition helps assure that distorting effects are perceived and put on the agenda.

2. All participants must be in an equal position to give and refuse orders, to permit or prohibit, to promise or ask for promises, to ask for reasons or offer reasons, etc. This condition aims at diffusing the distorting effects of power.

3. All participants must be in an equal position to call into question the truth, correctness, appropriateness, or sincerity of what is said. Typically this is accomplished by asserting, interpreting, recommending, explaining, and giving reasons, evidence, and counter-evidence. This condition helps maximize the chances that the best available evidence is used to test factual truth, instrumental correctness, or legitimacy (legality) of factual, instrumental, and normative claims.

4. All participants must be in an equal position to express their attitudes, feelings, concerns, doubts, etc. This condition assures that no position can escape scrutiny and, hence, maximizes the chances that illusions and deceptions are uncovered. It also helps mitigate individual differences in the capacity of articulation. Interests that are not well-expressed have less chance of being heard.

The above conditions are primarily of diagnostic value. For emancipatory discourse to occur these conditions need to be met. The implementation of these conditions is through an organizational “inquiry model” consisting of organizational arrangements, procedures, and technological support. Inquiry consists of the various ways of collecting information and data that are needed for the knowledge base that supports organizational activity. Here we are concerned particularly with the organizational activity of systems development and, therefore, with the model of inquiry adopted by IS development methodologies. The assumptions made about what type of knowledge is important for systems development and the ways in which it could be obtained (inquiry procedures) is referred to as the epistemology of a systems development methodology, or, more specifically, of its inquiry model. As will be shown later, ETHICS possesses the most elaborate inquiry model that builds on a dialectic epistemology. However, the technical effectiveness of its inquiry model needs improvement.

Contributing to Emancipatory Discourse

There are a number of possible ways in which information systems could mitigate the distorting influences (noted above) that make emancipatory discourse impossible. For example:

1. As currently practiced, data modeling approaches do not stress checks and balances that could compensate for a number of typical organizational biases and distortions. To address this, the notion of syntactic and semantic integrity checks could be expanded to include a critical analysis of data modeling language bias and other communicative distortions. The purpose would be to achieve “performative integrity,” which is concerned with the actual effects of communication, i.e., whether the use of the data model produces beneficial outcomes.

Another example of an inquiry model that aimed at implementing an emancipatory discourse is found in the organizational development approach METAPLAN. In the start-up phase of METAPLAN (Metaplan, 1988), a large pin board is used to elicit perceptions of issues, questions, proposals, and emotional reactions. This can be seen as a device to implement conditions 1, 3, and 4. A variant of this method was applied in the start-up phase of a large computerized bank teller system (Kyng and Ehn, 1985). It was recognized that the users had insufficient levels of knowledge and confidence to be meaningful participants. To overcome this, the union organized group sessions among the users, all of whom were roughly from the same organizational level (in line with condition 2) to express their concerns, feelings, and attitudes toward computerized banking systems. Examples of comments recorded during these sessions were, “Computers make you feel that you are an expendable part in a big machine,” “I do not like to receive instructions and orders from a machine,” and so forth. The justifiable and unwarranted components of these comments were then carefully analyzed by drawing on relevant industry experience.
2. Proper organization of the systems development process could provide rational motivations for participating, sharing, and eliciting missing information. This could be done by incorporating teamwork incentives into the project organization to work against non-participation and withholding of intelligence (Wilensky, 1967).

3. Computer-based networks could help overcome the limitations of time and space, which contribute to intelligence failures. An example of this is described by Visala (1993).

4. Electronic meeting systems could motivate people to contribute their expertise by advertising agendas and making it easy to append comments and suggestions while at the same time either keeping track of credits for contributions or granting anonymity if this improves the quality of the debate.

5. Highly interactive, user-friendly designs could help overcome educational and skill differences of the systems development participants by providing help functions, articulation support through easy information retrieval, and tutorial features.

6. Proper security controls could protect individual rights through anonymity, motivating people to communicate criticisms and radical change proposals by shielding them from the threats of those in power, as is emphasized in the group decision support literature.

The above discussion amounts to an agenda for achieving emancipation that can be implemented in different ways. Each of these ways will not necessarily realize to the same extent the requirements for an emancipatory methodology discussed earlier. We shall follow the tenets of the neohumanism paradigm to detail how emancipatory ideals could be realized in the ETHICS methodology.

Design Challenges and Objectives of the ETHICS Methodology

After reviewing several candidate methodologies that embrace emancipatory ideals to a limited extent, we chose the ETHICS methodology (Mumford, 1983) as the host of our exercise because it offers a reasonable starting place for outlining an emancipatory ISD methodology; relative to other approaches it has the strongest participatory component, embraces a wide set of explicit values for ISD, and advocates structured debate to resolve conflict, which is similar to the rational discourse notion of neohumanism.

A general outline of the ETHICS methodology is given in Figure 1 and is further explained in Appendix A. The following sections focus on the fundamental principles of ETHICS that embrace emancipatory concerns and on ways to strengthen the emancipatory features of ETHICS. It should be noted that the original design objectives of ETHICS did recognize several important social objectives that relate to emancipatory concerns. These, however, need to be broadened and strengthened to realize the key elements of neohumanist ideals as described above.

According to Mumford (1981; 1983), the four fundamental objectives of ETHICS are to:

1. Encourage participation ("system design for, by, and with the users," cf. Briefs, et al., 1983);

2. Improve the general conditions of work under the label "quality of work life improvements";

3. Produce systems that are "technically efficient and have social characteristics which lead to high job satisfaction";

4. Follow the socio-technical philosophy of trying for joint optimization, "making the best use of people, the best use of technology" (Mumford, 1983, p.10).

In order to encourage participation and overcome practical obstacles to its implementation, ETHICS notes four key aspects of participation: structure, content, process, and obstacles. The structure of participation is concerned with different forms of its realization, from political institutionalization via pressure groups to enlightened management policy. Both direct and indirect forms of participation (through intermediaries) need to be considered in complex organizations. The issue of "token-participation" or its misuse for manipulative purposes along with a number of typical obstacles are also recognized (cf. Mumford, 1984). The content of participation involves the consideration of the decision boundaries for
Step 1: Identify problem
Step 2: Identify system boundaries
Step 3: Describe existing system
Step 4: Specify key objectives
Step 5: Identify key tasks
Step 6: Identify sets of tasks
Step 7: Identify information needs
Step 8: Identify variance
Step 9: Diagnose job satisfaction needs
Step 10: Forecast future needs
Step 11: Set and rank efficiency and job satisfaction needs
Step 12: Identify technical and business constraints
Step 13: Identify social constraints
Step 14: Identify technical resources available
Step 15: Identify social resources available
Step 16: Specify priority technical and business objective
Step 17: Specify priority social objectives
Step 18: Check that technical and social objectives are compatible
Step 19: Take technical decisions
Step 20: Take social decisions
Step 21: Set out alternative technical solutions
Step 22: Set out alternative social solutions
Step 23: Set out compatible socio-technical solutions
Step 24: Rank compatible pairs of socio-technical solutions
Step 25: Prepare detailed work design

Figure 1. Schematic of the Stages of the ETHICS Methodology
participation, i.e. what subjects are to be decided participatively. This includes the complete systems development life cycle (SDLC) from initiation and problem formulation to the evaluation of a working system. Under the process of participation, integrity issues are considered. One of these involves knowledge acquisition and learning "so that decisions are taken from an informed position" (Mumford, 1983, p. 26). The other issue is power. ETHICS calls for power equalization to prevent bias by one-sided influence. This recognizes one of the key issues in rational discourse. On the whole, we can say that ETHICS, through participation, strives to realize the so-called "ideal speech situation" (Habermas, 1984) that is a necessary condition for emancipatory discourse and can easily be strengthened to encompass the missing concerns. Among the obstacles to participation are lack of trust, conflicts of interest, time pressures and stress, low morale, effects of authority, and communication gaps (Mumford, 1983, p. 31). ETHICS uses the role of the facilitator to help overcome these obstacles by ensuring that everyone contributes and is listened to.

The value of participation is in its process. ETHICS, however, appears to say little regarding system requirements that need to be realized beyond the broad constraint that new systems should enhance rather than limit participatory forms of work organization. More concrete values for system design are introduced under the labels quality of work life and technical efficiency.

Quality of work life (QWL) requires the designing of systems that support a work organization with interesting and rewarding jobs. The criteria for this are variety, autonomy, challenge, opportunities for social contacts, learning, and career advancement. ETHICS recognizes the larger

significance of meaningful jobs: work is an important form of personality expression and self-realization. If people are "trapped" in meaningless jobs (be it only by economic pressures) or "dehumanized" eight hours a day by being forced to work under poor social or physical conditions, this must cause alienation and personality deformation. In order to put QWL concerns into practice, ETHICS has a special framework to analyze the fit of a system to meet social needs and tools to diagnose job satisfaction requirements (Mumford, 1983, p. 37). Social needs are classified broadly into needs associated with personality, task structure, employee values, or ethical needs. Personality needs are met by opportunities to use and enhance knowledge and skill to earn respect, status, self-esteem, and career advancement. Task structure needs are realized if "employees are not required to undertake anything that they regard as too onerous, too demanding, too dull or too simple" (p. 48). Ethical needs are met if employees through their work can achieve what they believe in and if the organizational policies on communication, consultation, and participation meet the employee’s expectations (p. 52).

Technical efficiency embraces the kind of concerns that are the strength of functionalist methodologies. ETHICS needs improvement in the tools and methods serving this objective. Because technical and social design criteria and alternatives are explored separately, it is easy to strengthen this part of ETHICS by using the functionalist tool kit for the realization of technical design objectives. In addition, ETHICS contributes the method of variance analysis (also called discrepancy analysis) from socio-technical systems design to control deviations from quality and efficiency norms of work in process. A distinction between key and operating variances is made. The former are systemic and cannot be fully eliminated but hopefully can be kept within reasonable bounds (Mumford mentions the example of sales departments who tend to experience difficulties in communicating with customers or production departments). The latter are deficiencies to be corrected by the new system.

According to Davis (1972) the concept of joint optimization states "that when achievement of an objective depends on independent but correlated

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5 It has been pointed out to us by Enid Mumford that the current implementation of ETHICS is now dedicated to obtaining more detailed system requirements. She states: "Questionnaires, if used, are based on the Stafford Beer 'Viable System Model.' Also, the facilitator will try and ensure that the Beer five levels are covered in the discussions that take place. ETHICS, when used as a basis for building or choosing an MIS, starts with a questionnaire to encourage the participants' 'self-reflection.' The desired information system is later described in terms of the Beer five levels. The socio-technical 'variance analysis' is essentially Beer's level two anti-oscillation level" (Mumford, 1993).
systems, such as a technological and social system, it is impossible to optimize for overall performance without seeking to optimize these correlated systems jointly” (p. 167). ETHICS attempts to implement joint optimization by redesigning tasks in such a way that through the sharing of subtasks the value of work is increased. The value of work includes considerations relating to the quality of work life for those performing the work within the organization, but at the same time it improves productivity from the perspective of market competitiveness. The goal of joint optimization is realized in the synthesis phase of ETHICS (steps 23-24 in Figure 1).

The strength, and the inherent difficulty, of ETHICS is that it does not seek to realize such valuable objectives at the expense of economic efficiency. It assigns equal importance to both and argues that in many, if not most, circumstances, systems with high QWL will also lead to superior quality and efficiency. This at times may be very difficult to achieve, and ETHICS ultimately relies on a negotiated compromise.

Realization of Neohumanist Emancipatory Concerns in ETHICS

In order to provide an indication of how some of the important neohumanist concerns could be implemented in ETHICS, the following considers four fundamental issues generally associated with neohumanism and, more specifically, with emancipation. The discussion is in terms of fundamental principles and general strategies rather than in terms of detailed methods and tools. The exclusive focus on ETHICS in this section should not be misread as an implicit claim that other approaches are unable to address emancipatory concerns through appropriate modifications. Historically, however, ETHICS appears to have been the first to incorporate both emancipatory ideals (such as its valiant insistence on authentic participation) and principles of critical inquiry that come close to the conscious implementation of a rational discourse.

The four issues selected for further exploration are:

1. What is the inquiry model of ETHICS? Following from that, how does ETHICS implement an approximation of rational discourse?

2. How does ETHICS address efficiency and effectiveness (i.e., technical) concerns?

3. How does ETHICS contribute to improving mutual understanding (i.e., communicative concerns)?

4. How does ETHICS contribute to emancipation?

These questions, along with the theoretical concepts that inspired them, provide a framework for observing and organizing the emancipatory features of ETHICS. It should be noted that in its published form, there is no mention in ETHICS of the concepts of an inquiry model, reality construction (sense-making, mutual understanding, hermeneutics), emancipation, or rational discourse. However, if the features of ETHICS are analyzed with these concepts in mind, it is possible to see how they are embedded within the methodology. Hence, our framework provides a new lens through which to view the body of knowledge coded into the ETHICS methodology. This also serves as a theoretical safeguard for misapplying ETHICS in manipulative ways, as has been criticized by Ehn and Sandberg (1979).

The same questions can also be applied to any methodology. For example, if they were applied to structured analysis, they would reveal that its emancipatory features are much less pronounced than those of ETHICS. This could become the starting point for its further development. Hence, the point of our contribution is that the theoretical basis that we apply to ETHICS is independent of any particular methodology. Here, ETHICS is restated in terms of this theoretical basis, thereby changing its character. Insofar as participation is strongly related to emancipation, the following necessarily contributes to the extensive discussion on participation. It also adds to the debate on the importance of different design perspectives, e.g., technical-economic, strategic, participatory or emancipatory, or conflict vs. harmony (cf. Mumford, 1984; Nygaard and Sorgiaard, 1987; Wiseman, 1988).
Inquiry model of ETHICS and its application of rational discourse

Basically, an inquiry model is the set of procedures recommended to collect and check the knowledge needed in analysis and design. Because neohumanism has major epistemological differences with other paradigms, a methodology’s inquiry model is of fundamental importance for a neohumanist approach to ISD. Therefore, special attention is given to the inquiry procedure of ETHICS.

The most prominent feature by which ETHICS distinguishes itself from other methodologies is that it advocates pluralist or dialectical inquiry. It insists on setting out technical and social criteria and solutions separately from each other (cf. the two lines of parallel inquiry in Figure 1). Currently, ETHICS assigns the role of proposing technical solutions to one part of the design group and the role of proposing social solutions to the other part of the design group, i.e., the users. It is in keeping with the spirit of ETHICS to assign these two lines of inquiry into alternative technical and social solutions to separate teams that then report back to the design group for the process of ranking and synthesizing the relatively best solution. This on the one hand recognizes the existence of professional bias and on the other hand uses it constructively to improve the information and knowledge available to the design group. The features of dialectical inquiry can easily accommodate other important concerns that are better handled in separate task forces. This would generalize the principal dialectic between social and technical concerns to pluralist inquiry into any concerns identified during the introductory stage of ETHICS.

Several accompanying measures are taken to safeguard the free flow of information in inquiry:

1. A broad range of interests is to be included in the design group both from within the organization (Mumford, 1983, pp. 51-52) and appropriate external groups, such as customers or suppliers (p. 86). To make this practical, permanent and temporary participation in the design group are considered (p. 85), and (permanent or temporary) co-optation is recommended (p. 54) when it becomes obvious that an important interest group has been overlooked.

2. Conflicts are seen as legitimate and brought out in the open to minimize hidden agendas. Generally, a climate of openness and owning up to ideas and positions is encouraged (pp. 27 and 88-89).

3. The importance of an equal power distribution is recognized so that negotiated compromises are not one-sided (p. 26). In cases where providing information could lead to reprisals, confidentiality is assured through anonymity (p. 77). ETHICS’s discussion of possible structures for participation contains explicit hints on how to get around practical difficulties with this condition (pp. 24-31). For example, if there is a lack of suitably qualified direct participants, the vehicle of institutional representation (i.e., having someone else represent a disadvantaged group as a spokesman) can be used to safeguard this extremely important condition.

4. A third group—the steering group and the facilitator—give general guidance to the process. We propose to broaden their role to serve as a two stage “court of appeal” if severe conflicts arise or individual members or outside parties jeopardize the integrity of inquiry by using their power to affect design decisions in a way that contravenes the spirit of ETHICS.

These measures are seen to institutionalize the four conditions of rational discourse (or ideal speech situation) as discussed earlier. The rational discourse feature of ETHICS could be further strengthened by using group decision support systems concepts, which help overcome communication barriers (cf. Dennis, et al., 1988; Vogel, et al., 1990).

Besides implementing a sophisticated approximation of rational discourse, ETHICS takes steps to assure that hard data do not suppress “soft information.” ETHICS’s inquiry model is aimed at using not only measurable data (empirical analytical knowledge) but also qualitative subjective knowledge, as is typically gleaned in personal discussion. In particular, ETHICS places more emphasis than other methodologies on inquiry into pertinent values and ethical concerns. It does so by administering special questionnaires that inquire into the personal knowledge of those affected by system design regarding their expec-
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The questionnaires are aimed at converting individual feelings into shared social knowledge about the work situation, which can become the basis for design objectives and evaluating alternative design options. In particular, ETHICS's instruments aim at eliciting (cf. Mumford, 1983, pp. 51-52 and 77-82):

- Personality needs (knowledge needs met by opportunities for developing and enhancing knowledge and skills; psychological needs met by esteem, security, and advancement)
- Work role needs (support services and general conditions that allow the doing of a good job, e.g., task structures that are motivating and challenging)
- Ethical needs (equitable personnel policies and granting of respect and recognition on all levels)

On the whole then there is strong evidence that ETHICS's inquiry procedures are sufficiently broad and critical of the underlying assumptions so they can deliver the general knowledge and concrete information needed for emancipatory systems development. Its inquiry model can easily be strengthened in several places. Some of these were already indicated and others will suggest themselves in the following section.

Realization of technical concerns

ETHICS is able to accommodate a broad range of efficiency and effectiveness criteria because it is in part founded on a functionalist frame of reference. It seeks to support the four key organizational functions defined by Parsons and Shils (1951): (1) objective-setting and attainment, (2) adaptation, (3) integration, and (4) stabilization (what Talcott Parsons called "pattern maintenance"). This is not inconsistent with neohumanist concerns as long as the continuation of existing patterns and goals is not used as an excuse to prevent fundamental change. If the participatory inquiry structure of ETHICS is allowed to work as intended, this is unlikely to happen. Moreover, in the social domain there is a heavy emphasis on overcoming existing patterns, i.e., adaptation and setting objectives to reach beyond the status quo are given more priority than integration and adaptation during the early stages of systems analysis.

ETHICS has special instruments to realize efficiency and effectiveness in three areas: (1) the use of physical resources (through discrepancy analysis), (2) human resources (through the five "fit dimensions"), and (3) organizational control. Discrepancy analysis shows concern for cycle time and total quality by systematically recording and analyzing deviations from standards. The fit model postulates that high job satisfaction and productivity will result if the job requirements, as defined by the organization, match the employees' job expectations (Mumford, 1983, p.40) in five areas: (1) using personal knowledge and skills; (2) realizing personal interests; (3) meeting equity standards of remuneration and control; (4) providing challenge, autonomy, and variety of tasks; and (5) having a corporate culture that does not contravene personal convictions and standards of integrity (e.g., a pacifist employee in the defense industry). Improvement of organizational control is based on modeling of organizational processes. The modeling focuses on key information needs for problem prevention, coordination, organizational development (areas that need improvement), and reconciliation.

The dual structure of the inquiry process and systems life cycle (Figure 1) can serve as a warrant that effectiveness and efficiency concerns are pursued vigorously and competently.

Realization of communicative concerns

The foundation for all communication is interaction. Therefore, ETHICS's strong emphasis on participation is the most important feature that supports mutual understanding and helps maintain a general orientation toward agreement through consensual problem solving. In addition, ETHICS employs at least four other devices to further communicate concerns.

First, there is the formation of relatively homogenous groups to stimulate technical vs. social problem solving. This by itself facilitates in-group communication. In order for this communication to stay on target, ETHICS provides the groups with special data that are collected through questionnaires. These data focus the discussion on efficiency needs for the group (im-
proving efficiency) and job satisfaction needs for the group (improving the quality of work life) (Mumford, 1983, pp. 74 and 76).

Second, ETHICS recognizes the limits of written forms of documentation. It therefore suggests that each member of the design groups meet in small groups with his or her constituents. The agenda for these face-to-face discussions includes interpreting the meaning of the questionnaire results, checking their accuracy, discovering the reasons for job satisfaction problems, and collecting suggestions on how these might be easily avoided or corrected (pp. 77 and 82). All this creates a positive atmosphere for consensual problem solving.

Third, ETHICS counteracts the communication gap that tends to emerge between diverse groups by institutionalizing synthesis and compromise. This is achieved by making it clear to all participants from the very beginning that the results of each group are merely partial; there will be a need for separate meetings in separate phases of ETHICS for deriving a global solution later (cf. the first three phases in the center of Figure 1). Along with these phases go attitudes that favor compromise and are oriented toward reaching consensual agreement. These are shaped by the expectation that the final solution must incorporate multiple objectives (pp. 13, 20, and 27), the achievement of which is supported by appropriate methods and tools in ETHICS. This counteracts the suspicion that only lip service may be paid to some of these objectives, whereas others are considered "really important."

Fourth, a device by which ETHICS safeguards communication is the concept of a facilitator. His or her role is to move the process along, removing barriers to good communication as they emerge, and to watch over the integrity of the process so that the atmosphere of mutual trust and confidence does not suffer.

None of this is, of course, a guarantee that cooperation will be forthcoming, but it sets a tone and atmosphere in which it is most likely to occur.

The above vehicles for maintaining and improving mutual understanding and consensual agreements could be strengthened further through applying some of the ideas of expansive and cooperative prototyping (cf. Bødker and Grønbæk, 1991; Greenbaum and Kyng, 1991; Grønbæk, 1989). These appear highly compatible with the spirit of ETHICS and could easily be incorporated into its middle stages. They would serve the double purpose of facilitating learning and of better understanding through hands-on experience, thereby serving the social needs. They could also serve as a means for requirements quality assurance and thereby improve the technical quality of the design proposals.

Realization of emancipatory concerns

A systems development methodology is emancipatory if it helps overcome constraints to human well-being due to physical (natural or technical), psychological, or social conditions or forces. The two most important prerequisites for emancipation are free inquiry and democratic practices. ETHICS explicitly addresses free inquiry through its inquiry model. Democratic practices are implemented in ETHICS through its emphasis on participation. ETHICS's inquiry model suggests several measures to safeguard the conditions of ideal speech under which emancipatory discourses can flourish. These were discussed in some detail earlier. The previous treatment of participation focused primarily on its hermeneutic function; in this section we need to expand on its significance for emancipation.

Mumford (1983) links the importance of participation to the evolution of democratic forms of government in the nation state:

[It] was seen as committed to ideas of justice and freedom, its problem was how to realize these. Parallel notions were concerned with the rights of individuals and the importance of personal autonomy which could only be secured if men could decide for themselves what they wanted to do (p. 23).

This passage leaves no doubt that ETHICS recognized the emancipatory role of participation from the outset. It sees participation as a fundamental value and not just as a means to secure compliance, to elicit detailed requirements, and the like. Clearly, along with recognizing the need of participation for communication and problem

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6 In fact the, XSEL project was based on the building and testing of prototypes until the user group decided the system could be released for general use (Mumford and MacDonald, 1990).
solving, ETHICS already has a truly emancipatory vision of the importance of participation.

First, participation is important to emancipate the individual from the alienating isolation that has been caused by the rigid division of labor. Second, when seen in the psycho-analytic context of group dynamics (cf. Bion, 1959; Klein, 1965), participation is important to maintain a healthy psychological balance by countering sub-conscious forces that lead to regression, anxieties, and reality distortions. Hence, continuing participation is a prerequisite not only for the realization of democracy but also for maintaining emotionally stable, self-confident and creative personalities:

...it assists people to develop active, non-servile characteristics and democratic personality structures, and also enables them to broaden their horizons and appreciate the viewpoints and perspectives of others (Mumford, 1983, p. 24).

This makes it clear that participation has emancipatory effects in both the social and individual personality sphere, in addition to its fundamental hermeneutic role.

It can be seen that emancipation produces positive consequences for effectiveness and efficiency concerns: stable, self-confident personalities are the pillars of a stress-resistant work force; individuals confidently expressing ideas is the bedrock of creativity needed to meet competitive demands; and only people accustomed to autonomous, responsible action can be expected to take initiative when things go wrong, which increases the organization's flexibility and capacity to deal with uncertainty.

Critical inquiry and genuine participation set the stage for two other emancipation strategies: QWL and authentic forms of life.

QWL concerns are emancipatory because they are aimed at helping large numbers of people overcome alienation through rewarding work. Work alienation is typically caused by estrangement from: (1) human contacts at the work place, (2) satisfying use of skill (craftsmanship), and (3) sharing in the possession of the end-product. Together with authentic participation, socio-technical systems design (which fundamentally informs ETHICS) seeks to overcome all three sources of work alienation. It is through the concerns for QWL that ETHICS, too, contributes to emancipation from physical constraints because it focuses on how to make the most beneficial uses of new technology.

Authentic forms of life concern personal autonomy and being able to do what is considered right and just. The incorporation of ethical standards into an ISD methodology is important because emancipation necessitates that employees should be able to do what they believe in (within reason, of course). Etzioni (1968) points out that it is the dilemma of our age that many people are made to believe what they know to be irrelevant or of questionable validity and cannot do what they feel to be right and important. Breaking this double bind is an important emancipatory concern. For this, ETHICS's conception of the “ethical fit” (that ethical needs are met if the organization meets the employees' expectations) needs to tightened. Expectations must be based on an informed standard. Hence, the inquiry into ethical needs should, from time to time, follow the same fundamental pattern as the dialectics between technical and social needs. Ethical needs must be determined by a debate between those who engage in fundamental criticism and those wishing for gradual reform of the status quo.7

Conclusions

It is our contention that this paper contributes to the intellectual discourse on information systems

7 The ideological difference between the critical reformers (fundamental criticism) and gradual reformers (incrementalism) is well-known. When considering ethical issues, strong opinions are typically held. In ethical matters, radical reform often makes the situation worse because it is almost impossible to anticipate the consequences (cf. Popper, 1957). A good example is prohibition. In addition, too much change may be alienating, especially for people used to the status quo. Thus, if a situation is perceived as tolerable, it is perhaps prudent to only gradually change. On the other hand, if the status quo is only tinkered with, then there is the risk of myopia, missing any opportunities for real reform. Hence the need for radical (fundamental) criticism to see the options. But there is also a need for people to question and/or slow the reform to prevent hastiness, even negligence. The result should be a debate between the radical reformers and gradual reformers to determine the prudent rate of change. This debate should be organized dialectically, possibly following Toulmin’s (1958) structure. Albert’s (1966) bridging principles could be used to help break some of the ties, as there is unlikely to be compelling enough arguments where the “force of the better argument” notion (Habermas, 1984) could be used to resolve ties (see also Klein and Hirschheim, 1992).
development in three major ways: First, it articulates the concept and importance of emancipation. Second, it shows how IS research could address emancipatory ideals through methodology reformulation. In this vein the paper also makes a modest contribution to the philosophy of neohumanism, which is strong on utopian vision but short on principles for implementation, i.e., it lacks the idea of incrementalism. The paper suggests an incremental approach to address emancipatory concerns that supplements the utopian critical vision of neohumanism which is very inspiring but not helpful for dealing with the practicalities and imperfections of every day work life. Third, it presents an example of methodology reformulation.

Methodology reformulation

This paper can be read from two viewpoints. One, as the introduction suggests, is the argument for the credibility and implementability of emancipatory ideals through systems development. The other, more subtle but also more general, is that this paper constitutes an example of a "critical reformulation" of a methodology that is applicable not only to emancipation but to other perspectives as well. Critical reformulation proceeds in two steps: (1) assumption analysis, which identifies the basic building blocks of a methodology and reveals the dependence of their validity on the acceptance of underlying philosophical principles; and (2) the proposal of improvements for overcoming the limitations inherent in the assumptions.

Our methodology reformulation is critical in two senses. The first sense of critical is that the reformulation establishes a connection between concrete principles of action (as captured in the methodology) and an underlying theoretical rationale, which we term "derivation." The derivation, and, therefore, the reformulation, can be called critical insofar as the underlying philosophical principles have passed the critical scrutiny of the relevant informed community. The second sense of critical is that it reminds us of the name of the social theoretic basis upon which we drew in this paper: critical social theory (or, more specifically, neohumanism, which is its paradigmatic form).

The contribution of the critical reformulation process is that it offers a way of testing whether the knowledge base captured in a methodology is as adequate and penetrating as possible. We know of no other way to achieve such a testing but by relating the core principles of a methodology to the current state of informed opinion about the factual and normative content with which the methodology deals. This is exactly what we mean by critical reformulation. It is only through critical reformulation that the connections between the procedures of a methodology and its theoretical basis are revealed, thereby becoming the subject of informed criticism. It is only through such criticism that ways and means can be found to overcome the biases and limitations of current practice.

A corollary of this thesis is that a critical reformulation contributes to broadening the scope of current methodologies. These methodologies may unduly restrict the consideration of all factors that are important for the success of systems development projects. Insofar as the narrowness and rigidity of a methodology is a cause for IS failure, critical reformulation redresses one of the reasons for IS failure. Hence, methodology reformulation not only makes explicit the implied theoretical basis but also may contribute to improving the methodology. For example, many methodologies have evolved over time in response to practical issues. These issues have guided the methodologies architects. But in addressing these practical issues the architects often ignore or are unaware of the theoretical foundations upon which their assumptions lie. Indeed, we should not necessarily expect the architects to carry the burden of formulating a methodology's theoretical rationale in addition to constantly improving its workability. It is our belief that IS researchers can cooperate with practitioners on such methodology evolution in a fruitful way.

Demonstrating the power of these ideas in a concrete example using ETHICS also pointed out a shortcoming of neohumanism, namely its failure to consider how the process of emancipation can be advanced under the constraining circumstances of limited resources and the presence of power and authority, a necessary consideration in the organization of social life in general and work organization in particular (cf. footnote...
3). This paper shows how, through incremental changes in which information systems are designed and implemented, at least some progress could be made with emancipation in practice. This contention, of course, needs to be tested further. It needs to be followed up with field observations and action research.

Finally, this paper presented a concrete example of methodology reformulation. Its main contribution lies in the moving of four key features of the ETHICS methodology center stage and suggesting a new way of presenting not just this methodology but any methodology with some emancipatory potential. The four key features discussed in the ETHICS methodology provide a framework for assessing the emancipatory potential of any approach to ISD.

Whereas the ETHICS example presented in this paper exclusively dealt with a reformulation based on neohumanism, in particular critical social theory, the approach followed is much more general. As noted earlier, it can be applied to methodologies based on other paradigms. However, it is our contention that neohumanist principles are preferable for the critical reformulation of methodologies because they direct attention to what we consider to be the key issues in overcoming oversimplistic notions of many textbook methodologies. These include: how systems development affects the situation of user groups, how it fits into the general organizational atmosphere, how to pay sufficient attention to power and politics, how to give credit to tacit knowledge of organizational expertise, how to encourage rather than inhibit organizational sense-making and informed value choices, and finally, above all, how to treat people as ends in themselves rather than merely as means to achieve organizational goals. This is the true meaning of emancipation.

**Limitations**

Although we advocate emancipation, we are not so naive as to believe this can be achieved by simply modifying an existing ISD methodology. Reality is, of course, much more complex. Indeed, our analysis contains two principal limitations. First, it is exclusively focused on methodologies. But as is clearly known from many implementation studies, methodologies by themselves, no matter how well-conceived, are not enough to change working practices, be they for the purpose of addressing emancipation or other concerns. Kling's (1987) web model reveals that information systems are like social institutions in that they are embedded in a complex web of social norms and practices. It depends on the particulars of these contextual factors of the organizational environment as to how a methodology will be applied and how the resulting IS will be used. Hence, the same methodology and the same IS (technically) may produce very different effects in different organizations. The emancipatory potential of any methodology in a concrete situation must be judged in this light.

The second limitation is that critical social theory does not point to effective ways of handling the darker side of organizational life, which blocks the road to emancipation, in particular the distortions arising from vested interests and power. Hence, the realization of rational discourse and good participation in practice may be fraught with many more difficulties than have been acknowledged in our previous analysis. We see some consolation in the suggestion by Forester (1989) that the analysts (or planners) are not completely powerless in that they have more opportunity to influence decisions than those merely affected by the change but not involved in its design. The analysts (planners) have access to information and can control certain agendas. Moreover, analysts can leverage their power to mediate distorting influences by anticipating the effects of power and conflict. Forester provides an extensive systematic analysis on the practical issues of information control, misinformation, and distorted communications, with possible counterstrategies for all planners. These could be adapted to the realm of ISD.

This paper has focused on theoretical ideas. Nevertheless, they should serve as a guide for investigating the potential emancipatory (and repressive) effects of different approaches to ISD in practice (as is, for example, proposed in Klein and Myers, 1993). The ideas presented in this paper also provide a theoretical framework and rationale for an action research project to test their implementability and actual effects.
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Appendix A
ETHICS

This brief overview of ETHICS divides the discussion into four sections: (1) purpose and rationale, (2) focus, (3) phase structure, and (4) special methods and tools.

Purpose and Rationale
ETHICS, an acronym for Effective Technical and Human Implementation of Computer Systems, is a methodology developed by Enid Mumford at the Manchester Business School and has been evolving over the past 15 years (Mumford 1983). It is quite different from the traditional approaches to information systems development in that it is based on the ideals of socio-technical systems (STS). A key aspect of the methodology is that it views participation not only as a necessary device to obtain valid requirements, or stimulate commitment, but as an intrinsic right or end in itself. Consequently, users play a very large and important role in systems development. While user involvement is important in any methodology, it is absolutely vital in ETHICS.

Focus
While the participative nature of ETHICS is often written about in the literature, this facet of the methodology should not be overemphasized. The methodology is a serious attempt at operationalizing the key aspects of the socio-technical systems philosophy. In particular, two design teams are formed, each with a different focus of attention. One is concerned with the technical design of the system, the other with its social design. Another important aspect of ETHICS is its focusing on the job satisfaction needs of the system users. ETHICS’s social orientation is clearly visible throughout the methodology.

Phase Structure
The ETHICS methodology contains six stages, which are further divided into 25 steps (cf. overview in Figure 1).

Stage 1: Essential systems analysis
Stage 1 is the preliminary phase of the ETHICS methodology. The procedures carried out here have much in common with the more conventional methodologies. For example, in this stage the problem to be solved is identified, its boundaries are noted, the current system is analyzed and described, and key objectives and tasks are identified. After the establishment of key objectives and tasks, it is necessary to pinpoint key information needed to accomplish these objectives and tasks. Subsequently, a diagnosis is made of efficiency needs and job satisfaction needs, and a future forecast (“future analysis”) is undertaken. The final step in the first stage is an exercise in which all interest groups rank the list of objectives on a scale of 1-5. (Stage 1 includes steps 1-11 in Figure 1.)

Stage 2: Socio-technical systems design
Stage 2 tries to reconcile the social side with the technical side of systems design. In this stage, the technical and business constraints are set out, as well as the social constraints. Two different groups are formed (one focusing on the social aspects of the system, the other the technical aspects) whose job it is to find technically and socially desirable design options. After identification of the social and technical constraints, the resources available for both the technical and social system are identified and
examined. The objectives and tasks set in Stage 1 for the technical and business side and the social side are set out in priority style. The objectives (in ranked order) are then checked for compatibility before actual technical and social systems decisions are taken. Revision may be necessary before this final step is completed. (Stage 2 includes steps 12-20 in Figure 1.)

**Stage 3: Setting out alternative solutions**

In Stage 3, an examination of any alternative technical and social solutions is undertaken. These are set out in matrix form, evaluating possible advantages and disadvantages as well as overall compatibility with the established objectives. As in the previous stage, each will be evaluated against three criteria: priority, constraints, and resources. Once doubtful solutions are eliminated, a short list of technical solutions and one of social solutions is drawn up. (Stage 3 includes steps 21-22 in Figure 1.)

**Stage 4: Setting out compatible Solutions**

Stage 4 merges the short lists set out in Stage 3 to see which solutions are most compatible. Incomplete solutions are discarded. Technical and social solutions found to operate well together are entered into an evaluation matrix for the next stage. (Stage 4 includes step 23 in Figure 1.)

**Stage 5: Ranking socio-technical solutions**

In Stage 5, the matrix set up in the previous stage is ranked using information generated in Stage 3, while still ensuring all socio-technical solutions meet the criteria outlined in Stages 1 and 2. (Stage 5 includes step 24 in Figure 1.)

**Stage 6: Preparing a detailed work design**

In Stage 6, a detailed list and description of all tasks people would perform under a particular socio-technical solution's implementation is drawn up. Tasks are ranked in terms of simplicity, and attempts are made to provide a balanced spread of required skills and complexity of tasks. Checks are made to ensure that created jobs are as interesting and satisfying as possible using a set of "issues of concern." If the highest-ranking socio-technical solution scores high on these issues while achieving the technical objectives, it is accepted as the final solution. If this is not the case, another short-listed solution is tried in the same manner. (Stage 6 includes step 25 in Figure 1.)

**Special Methods and Tools**

ETHICS adopts a number of special methods for systems development. For example, there is a special diagramming method used for describing work layout. There is also a job diagnostic questionnaire, which is used to elicit views on the job situation. More importantly perhaps, ETHICS employs a facilitator who seeks to find a consensus on the systems development exercise using special questionnaire instruments.

Another special feature is the use of dialectics to stimulate the generation of socially and technically desirable alternatives. Mumford (1983) noted that managers often varied technical solutions after the fact at the implementation stage. She observed that much more could be accomplished to meet social requirements if they were considered at a stage when design was not yet frozen. At that time, social objectives could often be met with little or no extra cost. This gave rise to the split of the development team described in Stage 2 and the explicit consideration of social and technical design objectives as described in Stages 3 and 4.
Appendix B

Four Paradigms of Information Systems Development

We define "paradigm" as the most fundamental set of assumptions adopted by a professional community that allow them to share similar perceptions and engage in commonly shared practices. Because systems developers must conduct inquiry as part of design and have to intervene into the social world as part of implementation, it is natural to distinguish two types of related assumptions: those associated with inquiry to obtain the knowledge needed for design and those associated with the nature of society. Both types of assumptions have affected methodologies, and both types are beginning to change in the recent research literature on methodologies. The new focus on mutual understanding reflects different types of assumptions about the nature of knowledge and how it is acquired. The concern for emancipation reflects different assumptions about the nature of society.

In the modern world, these assumptions have been deeply influenced by the prevailing canons of science. Hence, we would expect connections between the assumptions held by professional communities about science and what these communities consider good practice. (The set of assumptions about what defines good practice of medicine or law and what is quackery is a good example.) Maddison, et al. (1983) note that methodologies came about by practitioners trying to upgrade their standards. If they are correct, it is to be expected that the assumptions about the nature of science in part became embedded in the description and practice of methodologies. Insofar as the assumptions about science would vary between different times or different societies, this in due time should become reflected in different types of methodologies. This is indeed shown by Hirschheim and Klein (1992).

According to Burrell and Morgan (1979), the assumptions about the nature of human knowledge and inquiry can be broken down into four fundamental sets of beliefs: ontological (beliefs about the nature of the world around us); epistemological (beliefs about how knowledge is acquired); methodological (beliefs about the appropriate mechanisms for acquiring knowledge); and human nature issues (beliefs about whether humans respond in a deterministic or non-deterministic, i.e. voluntaristic, fashion). Depending on the precise nature of these beliefs, one can distinguish a "subjectivist-objectivist" dimension, which is more commonly seen as the two extremes of philosophical inquiry. Objectivists hold that the world exists independent of our observation of it and that there is one method for knowledge acquisition, which is the same for both the natural and social world. Subjectivists, on the other hand, hold that the world is socially constructed and not independent of the individual observing it. Moreover, the method for knowledge acquisition in the natural world is not necessarily appropriate for the social world. Clearly, from a subjectivist viewpoint, knowledge arises from human interaction. No set of observations can replace the sharing of ideas from which arise informed opinions. Hence, the importance of sense-making and achieving of mutual understandings throughout the systems life cycle.

The second set of assumptions is associated with the nature of society. Two basic positions can be identified, depending on whether one tends to believe that society is best conceived in terms of order or conflict and radical change. The "order" or "integrationist" view of society emphasizes stability, integration, functional coordination and consensus. The "conflict" or "coercion" view of society stresses change, conflict, disintegration, and coercion.

Both sets of assumptions, those about knowledge (objectivism vs. subjectivism) and those about society (order vs. conflict) can be combined. When these two dimensions are mapped on to one another they yield four paradigms of social science that are also manifest in information systems development: functionalism, social relativism, radical structuralism, and neohumanism (cf. Hirschheim and Klein, 1989).

The functionalist paradigm is concerned with providing explanations of the status quo, social order, social integration, consensus, need satisfaction, and rational choice. It seeks to explain how the individual elements of a social system interact together to form an integrated whole. The social relativist paradigm
seeks explanation within the realm of individual consciousness and subjectivity. It seeks to explain structures, social roles, and institutions through their existence as expressions of meanings that individuals attribute to the world they live in. The radical structuralist paradigm has a view of society and organizations that emphasizes the need to transcend the limitations placed on existing social and organizational arrangements. It focuses primarily on the structure and analysis of economic power relationships. The neohumanist paradigm seeks change, emancipation, and the realization of human potential and stresses the role that different social and organizational forces play in understanding change. It focuses on all forms of barriers to emancipation—in particular ideology (distorted communication), power and psychological compulsions, and social constraints—and seeks ways to overcome them.