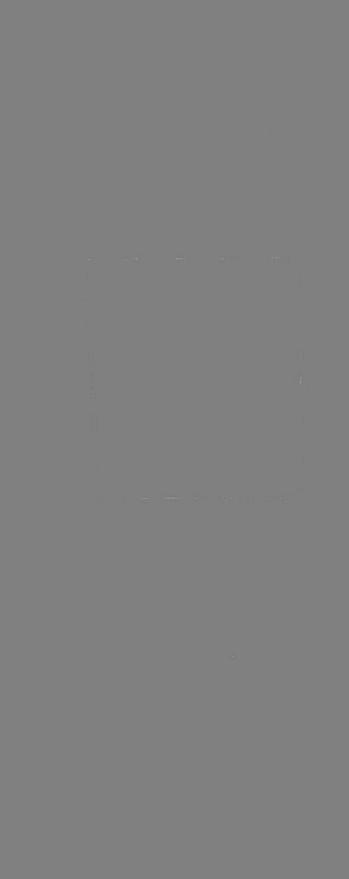SOME ETHICAL CONSIDERATIONS IN DESIGNING AN
ORGANIZATION'S INFORMATION SYSTEM

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Summary

    This paper identifies some ethical considerations for the professional
accountant or engineer who designs an organization's information system. It
does so from the perspective that the construction of the social reality of
the organization is a function of the data an information system makes avail-
able for decision making purposes as well as the changes in organizational
stratgey, structure, productive process and performance evaluation associated
with an information system design. This paper takes very seriously the code
of ethics of both the engineer and the accountant, especially those aspects
of their codes which stress that the professional is responsible to a client's
needs only so far as those needs are consistent with his primary responsibility
to advance the public welfare.

Presentation

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Introduction

This paper explores some ethical problems in a realm where the practice of two professions, Engineering and Accounting, merges into a single but multifaceted process of consultation that applies computer technology to enterprise management. In an information system design project, computer data processing systems are designed to support and enhance both the productive process of organizations and the management decision making that plans and controls that process. This realm in which the accountant's decision making data and the engineer's data processing technology join together is increasingly a key factor in the successful functioning of modern organizations, be they industrial, governmental or not-for-profit.

The design of an organization's information system involves more than just data processing. Because data implies decisions, and appropriate decisions shift as the structure and strategy of an organization changes, the design of an information system touches many aspects of organizational life. In order for a system design project to be successful, it must include not only the computer system, but also the organizational system with its management structure, reporting relations and distribution of responsibilities, the decision making system with its limits of authority and guidelines for action, and the performance evaluation system which provides rewards and penalties for individual and group performance. It would be highly unusual for an information system design project to not alter the structural decision making or performance evaluation systems that constitute an organization. The information system designer is therefore a major influence in creating the character of the organizational worlds in which we find ourselves.

The concern here is not with issues of privacy, monotony or alienation that are often associated with the application of information processing technology, but with the larger scope of an information system's impacts on the operating climate of an organization and on the individuals who must live within it. The issues presented below are based on my own experiences in system design situations and on the experiences of other designers that I have interviewed in the process of developing various case studies.

Perspective Taken

The issues that I identify flow from a particular sociological perspective loosely termed the social construction of reality (Berger and Luckman, 1967). This perspective emphasizes the extent to which the participants in an organization define subjectively the social reality in which they find themselves. Individuals are socialized into a shared set of meanings that are the norms and roles of the organization. These norms and roles can be treated as an objective reality that each individual must confront, but they are also dependent on constructed sets of mutual expectations that the individuals in an organization share as to the appropriate behavior of self and others, the desired social climate of the organization, the avowed style of management, the priority of goals that are sought, and the reward and penalty systems that are employed.

Vickers (1965) refers to this as the appreciative system of an organization--the process by which individuals indicate important aspects of an organization to themselves and apply values they feel are

shared in making judgments of appropriate actions to take. In management writings, the decision making school (March and Simon, 1958; Cyert and March, 1963) has emphasized for some time the importance of language in determining the character of organizational decision making. The language available to managers serves to direct their attention, highlight problem areas requiring action, frame appropriate solutions, and justify the eventual choices of action. The design of an information system plays an important part in defining the official language of an organization. In addition, as a communication device the information system selectively distributes data and standard operating procedures within the organization, and in so doing further guides the premises to be used in making individual decisions.

This paper identifies some ethical considerations for the professional accountant or engineer who designs an organization's information system. It does so from the perspective that the construction of the social reality of the organization is a function of the data an information system makes available for decision making purposes as well as the changes in organizational strategy, structure, productive process and performance evaluation associated with an information system design. This paper takes very seriously the code of ethics of both the engineer and the accountant, especially those aspects of their codes which stress that the professional is responsible to a client's needs only so far as those needs are consistent with his primary responsibility to advance the public welfare.

I do not pretend to present a definitive answer to the issues identified in this paper. At this stage, my purpose is to bring these

issues to the conscious attention of the professional involved. These
issues are not openly addressed in publications with which I am familiar.
Perhaps this is because the area of systems design and especially the
impact of systems on organizational participants falls between the two
professions and is not seen as being relevant to either. Or, perhaps
emphasizing the "factual" nature of data and data systems leads to the
mistaken assumption that they are basically value free. In any case,
these are issues that bother the system designers I have interviewed
and the students I have guided in system design projects. This paper
must be brief, and will be limited to two main areas of ethical con-
siderations that the professional has a responsibility to address.

1) The impact of an information system on organization climate
   and individual behavior, and

2) The impact of uncritically adopting "rational" approaches
   to management systems.

Organization Climate and Individual Behavior

This is perhaps the most frequently encountered ethical consider-
ation in information system design. A common scenario is that a new
manager is brought into an existing organization. He or she suspects
(and perhaps rightfully so) that the organization suffers from exces-
sive "slack" - resources are not being put to their best or most
efficient use, there are a lack of standards for performance, goals
are vague or incompletely specified, there is no clear timetable for
accomplishing organizational objectives and no systematic monitoring
of activities. An alternative scenario is one in which the current
manager of an organization fears or mistrusts his subordinates. In

either case, the system designer is called in to "tighten things up," and design an information system that will allow closer monitoring and control over individuals in the organization. The emphasis is on assuring top management that its directives are carried out and that no deviation from the plan they have handed down escapes their attention.

Chris Argyris has devoted a significant portion of his academic career to studying the organizational impact of information systems beginning with his study of the Impacts of Budgets on People for the Controllership Foundation in 1952, and continuing to the present time. His work reveals some very troublesome implications for an organization's managerial climate and for the psychological impacts on individuals within the organization if the information system designer uncritically accepts the statement of client needs as a basis for an information system design in these situations.

By studying information system designers at work, and by observing managers in actual meetings, he concludes that the "tight" and sophisticated information system being requested creates conditions which tend to increase the mistrust, defensiveness, conformity, fear and secrecy in a management group. Yet, if organizations are to become more capable in sensing and identifying important problems, designing intelligent solutions, and implementing them successfully, there is a need for more trust, individuality, openness, and genuine concern for others. These "tighter" systems which are so appealing to the top manager's individual sense of increased control may actually reduce the level of societal control as organizations become less able to sense their impact on the

environment and human community, and less able to challenge their ac-
cepted ways of doing things. Argyris argues that as formal information
systems strive to make all plans and actions more explicit, individual
managers feel increasingly closed in.

> In psychological language the participants will ex-
> perience a great restriction of their free space of
> movement. Research suggests that a restriction of
> the (psychological) space of free movement tends to
> create feelings of lack of choice, pressure and
> psychological failure. These feelings, in turn, can
> lead to increasing feelings of helplessness and de-
> creasing feelings of self-responsibility resulting
> in the increasing tendency to withdraw or to become
> dependent upon those who created or approved the re-
> striction of space of free movement. (Argyris, 1971,
> p. 273)

Argyris also points out a fundamental contradiction in the design
of an information system in these situations. The designer emphasizes
the need to replace the intuitive, the subjective and the emotional
with the explicit and objective in order to increase the rationality
of the way an organization functions. Argyris has found, however,
that system designers use as much or more intuition, subjectivity and
emotionality in the course of providing an advisory service than the
managers they are so intent on removing it for. Perhaps what is
necessary for designing information systems is equally necessary for
the process of managing, and the emphasis on tightness in system
design is misplaced.

The process of design itself is not neutral. In my own research,
experienced information system designers who used the commonly
accepted approach to structured analysis and design when interviewing
clients, consistently developed certain kinds of ideas about the design

action that they would take. Specifically, they consistently developed recommendations for highly mechanistic, bureaucratic organizations emphasizing worker submission to management domination. In this experiment, the setting was a hospital and the users of the information system were nurses. The system was designed with the computer playing the role of a brain and central nervous system. It was deciding which nurse should perform various activities and when, demanding confirmation of compliance, and periodically reminding nurses who had not reported back on time. This was not the case when other, less traditional methods of system analysis were followed. Using a less structured and less purposeful process of dialogue, designers conceived of systems in which the nurse herself played the role of brain and central nervous system. The computer was then much more passive and served as a communications link between individuals in different departments as they decided on required activities and timings. This suggests that the very processes of designing information systems that are currently being followed have larger societal implications. In this case, they are directly in conflict with modern notions of improving the quality of working life through more autonomous working conditions, and of recognizing the importance of social as well as technical impacts in system design.

Karl Weick (1976) addresses this problem from an even wider organizational perspective and argues that the idea of successful organizations as tightly coupled systems, closely monitored and integrated by top management is a misconception. His work suggests that organizations are more successful in an ecological sense if they remain more "loosely"

coupled. Individuals within organizations that resist the temptation
to "tighten" things up are better able to experiment with novel problem
definitions and solutions, and feel a freedom to fail without recrimi-
nation that is necessary for learning and adapting to changed circum-
stances.

If the insights of these researchers, based on field work in func-
tioning organizations, have any validity at all, professionals who
accept their responsibility to act for the public welfare cannot avoid
the ethical considerations in these all too frequent design situations.
Will they accept the client's specifications for a "tight" information
system or will they make ethical judgments as to the kind of world they
are building, and resist the client's desire for a top-down unilateral
control system?

To summarize this first set of impacts on the organization climate
and individual behavior, the engineer or accountant who designs an
information system has an important responsibility that goes beyond
its technical and economic performance. The organization presents a
certain type of environment to its participants. The internal environ-
ment will vary in the free space of movement available to an individual,
the trust and openness implied by the performance monitoring and reward
techniques, and the "tightness" of linkages between different segments
of the organization. The designer, acting as a professional, has a
responsibility for the impact of an information system on these aspects
of an organization. To meet this responsibility, the designer must see
the information system from an organizational design perspective. One
cannot just design a data processing system, one is always faced with

the responsibility for designing an organization, and in this sense, for designing the world.

Use of 'Rational' Models to Guide System Design

The second type of ethical problem involves the uncritical application of rational models as a guide in system design. This type of problem can best be illustrated by a specific example. The organization in question is a large, not-for-profit film rental library. The stated objective of the organization is to enhance the educational process through the use of film. Once again, a new manager precipitates a system design project, and this time stresses his desire to improve the functioning of the library by borrowing images and goals from profit making organizations. The primary image borrowed in this situation is one of growth. The growing organization is a strong organization. It is a successful organization that secures a leadership role in its industry. Growth is a sign of rationality, and is directly related to prestige and influence for both the organization and its participants. What could be wrong with that?

Briefly, let us follow just two aspects of the information system design project in this organization. First, to facilitate growth, a structural change is made and a marketing department is established. Along with the marketing department comes a new set of decision making activities and performance evaluation measures. The new department emphasizes a search for users of film. Since educational budgets are down, new market niches are identified. As advertising campaigns are developed the emphasis is on what "sells" and entertainment quickly

supplants education as the operative goal for the organization. By applying rational models of growth, the designer has in essence changed the organization's relationship to society. Is this a change for the betterment of the public welfare?

A second problem is the related impact on film acquisition decisions. The new information system evaluates library performance by the rate of film turnover, and as a result the frequency with which a film will be rented is given priority over its quality as an educational vehicle in making film acquisition decisions. Under the new information system, rational decisions are safe decisions. Buying from established film producers with good brand name recognition by film renters helps insure that only films that sell will be aquired. This means avoiding the purchase of films by less known, independent producers that will not be as easily marketed.

In this situation the system designer may well ask what the long term impact on the use of film in education will be as his client adopts rational management practices in this organization. In this situation it seems clear that growth is in direct conflict with "fostering the use of film in education," and even the availability of educational films may suffer as independent, experimental efforts to develop better uses of film are stifled.

Above I argued that the information system should be viewed as an important component in determining the internal climate of an organization. As such, the designer is responsible for the environment he creates within our formal organizations. But this emphasis on designing environments is, alone, too static in its emphasis. Here a

dynamic aspect is added to the impacts of an information system design. The models of appropriate decision making processes that are used to guide a system design project give a direction to the movement within the organizational environment. Using the data made available by a system to make the decisions it implies sets in motion a goal seeking process characteristic of the models originally used by the designer. The designer has a responsibility for the course an information system guides an organization along, as well as the internal environment it creates. Socialized models of rationality are inherently inadequate as a sole basis for system design, and must be countered by a vision of an ideal future held by the designer, and used as a perspective to view the appropriateness of a particular information system.

Conclusion

Generally, an information system designer, especially if he is an outside consultant, feels his proper role is to serve his client's decision making needs as freely specified by his client. He respects his client's right to determine proper decision making activities for the organization and appropriate structural and strategic changes to implement them. The purpose of this paper is to argue that both accountants and engineers participate as responsible professionals in these system design projects, and should address information system design as a significant ethical problem for their respective professions. There is a fine line between respecting a client's decision making rights and acquiescing to the design of organizational processes which can reasonably be expected to elaborate into situations that are detrimental to the public good.

Professional ethics should view information system design as an important moment in the construction of our social and economic world. As such, the professional has a responsibility to consciously assess the secondary impacts of his systems on the distrust, fear, submission and psychological failure of individuals who live in them, and on the pursuit of public purposes by organizations that adopt them. To do so requires two ethical commitments on the part of an information system designer. The first is to the kind of organizational environment that the designer is striving to create, and the second is to the vision of an ideal future that the designer is striving to achieve. The responsibility of the professional designer is to subject any immediately perceived design problem to two forms of justification. The first is a situational justification in light of the designer's commitment to a particular kind of organizational environment, and the second is a temporal justification in light of the designer's commitment to a particular kind of organizational future. These are the two faces of the organizational world that information system designers create. The question of the type of environment and future they are committed to is an open one, but one they are responsible for making and for justifying.

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