Social Impacts of Computing

Rob Kling Editor

Power, Politics, and MIS Implementation

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***ABSTRACT:** Theories of resistance to management information systems (MIS) are important because they guide the implementation strategies and tactics chosen by implementors. Three basic theories of the causes of resistance underlie many prescriptions and rules for MIS implementation. Simply stated, people resist MIS because of their own internal factors, because of poor system design, and because of the interaction of specific system design features with aspects of the organizational context of system use. These theories differ in their basic assumptions about systems, organizations, and resistance; they also differ in predictions that can be derived from them and in their implications for the implementation process. These differences are described and the task of evaluating the theories on the bases of the differences is begun. Data from a case study are used to illustrate the theories and to demonstrate the superiority, for implementors, of the interaction theory.*

INTRODUCTION

No one knows how many computer-based applications, designed at great cost of time and money, are abandoned or expensively overhauled because they were unenthusiastically received by their intended users. Most people who have worked with information systems encounter at least mild resistance by those who are designated to input data or use the output to improve the way they do their jobs.

Many explanations have been advanced to account for people's resistance to change in general, to technological change in particular, and most specifically to management information systems (MIS) implementation efforts. Some of these explanations are informal rules of thumb that practitioners rely on in the heat of action; others are purportedly based on social scientific theories or research findings. Some are said to apply in every situation; others are contingent upon a variety of prevailing conditions. Some are mental models that form the basis for actions but are rarely articulated or explicitly examined for consistency and completeness; others are more formal models with clearly spelled-out connections. Familiar comments regarding resistance are:

1. To avoid resistance, get top management support and obtain user involvement in the design process [16];
2. Technically sound systems are less likely to be resisted than those with frequent downtime and poor response time [1];
3. Users resist systems that are not "user friendly" (assertions by EDP equipment vendors);
4. All other things being equal, people will resist change (received wisdom);
5. People will resist an application when the costs outweigh the benefits (received wisdom).

Explanations of resistance are important because, however informal or implicit, they guide the behavior and influence the actions taken by managers and systems analysts concerned with implementing computer-based applications. The premise of this paper is that better theories of resistance will lead to better implementation strategies and, hopefully, to better outcomes for the organizations in which the computer applications are installed. This suggests the need to examine commonly used explanations and the assumptions underlying them in some detail.

Critical examination of implementors' theories regarding the causes of resistance is a process that, according to at least one view of resistance (cost versus benefits), implementors themselves may be expected to resist. Such examination is hard work, and the examiner runs the risk of discovering (a) that his or her mental models are just fine, in which case the effort appears wasted, or (b) that the explanations need changing, which is uncomfortable and requires more hard work. In addition, it is not likely that the commonly held heuristics mentioned earlier (e.g., top management support) can be very far from wrong: in the first place, there is some academic research to support each one of them, and second, many analysts and managers have found that the heuristics have prevented them from making blunders in everyday situations. Consequently, many readers may decide that the uncertain benefits of examining their personal models of resistance are outweighed by the costs of doing so. This paper is written either for those who compute the costs and benefits differently or for those whose behavior is describable by a different explanation of resistance to change.

The argument of the paper follows this format: Three basic theories of resistance are presented and contrasted in terms of their underlying assumptions about information systems, organizations, and resistance itself. Several bases for evaluating the theories are enumerated, including the applicability of basic assumptions, the accuracy of predictions drawn from the theories, and the utility for implementors of the strategies and prescriptions derived from the theories. The paper then proceeds to evaluate the theories using logic and the limited data of a single case. The paper concludes with recommendations for implementors.

TYPES OF THEORIES

Kling [13] has provided a very helpful starting point for examining theories of resistance. He identified six distinct theoretical perspectives: Rational, Structural, Human Relations, Interactionist, Organizational Politics, and Class Politics. Kling shows how these perspectives differ on a variety of dimensions, such as their view of technology and of the social setting into which it is introduced, their key organizing concepts, their ideologies of the workplace and of "good" technology, and their implied theories of the dynamics of technical diffusion. For ease of comparison, he groups the first three perspectives into the category of Systems Rationalism and the latter three into Segmented Institutionalism.

This paper builds upon Kling's work by exploring different theoretical perspectives as they relate to one small aspect of computing in organizational life—the introduction and implementation of computer-based information systems, and the human resistance that so often accompanies them. Since this paper emphasizes the perspectives from the viewpoint of their implications for action, that is, for the implementation strategies of managers and systems analysts, rather than of their theoretical differences *per se*, this paper may group Kling's perspectives differently while liberally drawing on his insights.

Three Theories

An implementor trying to decide what to do about resistance of individuals or organizational subunits may hold one of three divergent theories about why that resistance occurred. First, the person or subunit may be believed to have resisted because of factors internal to the person or group. These factors may be common to all persons and groups or unique to the one being examined. Examples of explanations compatible with this theory are: people resist all change; people with analytic cognitive styles accept systems, while intuitive thinkers resist them.

Second, the person or group may be believed to have resisted because of factors inherent in the application or system being implemented. Examples of compatible explanations are people resist technically deficient systems, systems that are not ergonomically designed, and systems that are not user friendly. A fair amount of research has been done to support the contention that technical and human factors problems are associated with resistance and system failure. For example, Ginzberg [6] reviewed much of the (then) existing literature on OR/MS/MIS research and noted that several studies identified technical problems as a factor related to system failure (over 100 factors were mentioned at least once in the studies reviewed). Alter [1] studied 56 systems and reported that technical problems were related to implementation problems in several cases.

These two theories are clearly divergent, because the first assumes that a person's (group's) behavior is determined internally, and the second assumes that behavior is determined externally by the environment or by technology. Nevertheless, implementors often implicitly hold both theories simultaneously, believing that behavior is determined both from within and from without. An example of such a compound theory is: there is always a tendency for people to resist systems, but, other things being equal, they are less likely to resist ones that are well designed.

The third theory holds that people or groups resist systems because of an interaction between characteristics related to the people and characteristics related to the system. This theory is difficult to define, but easier to describe. The theory is *not* the same as a simultaneous belief in the two previously mentioned theories. The operant word in the definition is "interaction." Examples of explanations derived from the interaction theory are: systems that centralize control over data are resisted in organizations with decentralized authority structures, systems that alter the balance of power in organizations will be resisted by those who lose power and accepted by those who gain it, and resistance arises from the interaction of technical design features of systems with the social context in which the systems are used.

Several distinct variations of the interaction theory can be identified. One, which may be called the sociotechnical variant, focuses on the distribution of responsibility for organizational tasks across various roles and on the work-related communication and coordination around this division of labor. New information systems may prescribe a division of roles and responsibilities at variance with existing ones; they may structure patterns of interaction that are at odds with the prevailing organizational culture. In this light, systems can be viewed as a vehicle for creating organizational change. The greater the implied change, the more likely the resistance. Similar articulations of a variant of the interaction theory can be found in Keen [9], Ginzberg [7], and Kling [13].

It should be noted that this explanation identifies neither the system nor the organizational setting as the cause of resistance, but their interaction. The system-determined theory would predict that a given system be accepted or resisted in every setting because of its design features. The interaction theory can explain different outcomes for the same system in different settings. Similarly, the people-determined theory would predict the rejection of all systems in a setting in which any one system is resisted. The interaction theory can explain different responses by the same group of users to different settings. Compared with a concatenated people-plus-system-determined theory, the interaction theory allows for

more precise explanation and predictions of resistance.

A second variant of the interaction theory can be called the political version. Here, resistance is explained as a product of the interaction of system design features with the intraorganizational distribution of power, defined either objectively, in terms of horizontal or vertical power dimensions, or subjectively, in terms of symbolism. The appendix provides additional details on the political variant of the interaction theory and compares it briefly with other variants. The case analysis given in this paper employs the political variant exclusively.

How are we to evaluate these theories? This is a difficult thing to do, if for no other reason than that there are several ways to do it, each of which may yield different results. Scientists are generally agreed that theories cannot be tested directly, which in our case means that it is impossible to say without doubt that people resist computer applications because of internal factors, external factors, or interaction effects. But the basic assumptions underlying the theories can be examined and compared with facts in the "real world," predictions derived from theories can be tested against observed occurrences, and the implications for action derived from theories can be tested for their usefulness to implementors. This last test may be conducted indepenently of the first two, and implementors may prefer this. Because this paper assumes that good implementation strategies derive from good theories, we attempt to address all three types of evaluations.

BASIC ASSUMPTIONS OF THE THEORIES

In order to perform the first type of evaluation, it is necessary to identify the assumptions that underlie the theories. Kling's list of theoretical perspectives yields two that are especially relevant for comparing theories of resistance with computer-based applications: assumptions about the nature of technology (in this case, information systems) and assumptions about the nature of the setting in which the applications are introduced. A third assumption can be added—beliefs about the nature of resistance. The first two dimensions, the people-determined and system-determined theories of resistance, are similar and easily contrasted with the interaction theory.

Assumptions about Information Systems

Information systems can be described and categorized in many ways: by type of processing technology—interactive or batch; by type of data (numbers, text, graphics, audio, video); by degree of centralization, distribution, or decentralization. One analytic scheme that proves especially fruitful for examining resistance is that of system "purpose," which refers to the intentions of system designers. Purpose is a tricky thing to pin down, because systems can be viewed from many angles, and users may describe a system's purpose differently than designers. Rather than haggle about whose view is right, one can infer system purpose from system design features and other clues to the designer's goals, values, and intentions.

Generally speaking, system purposes can be lumped into two classes, depending upon whether the purposes are consistent with the Rational Theory of Management. Very briefly summarized, the Rational Theory of Management holds that organizations have goals and that they behave in ways that are consistent with achieving these goals. For many businesses, a major goal is to achieve a specified profit subject to certain constraints. System purposes that are consistent with the Rational Theory are: to rationalize work (achieve predictable outputs with consistent units of input—a goal of many operational systems), to enhance managerial decision-making and planning, to control and motivate the performance of employees toward agreed-upon goals, and to improve communication and coordination among people in the organization or between the organization and aspects of its environment (customers, suppliers, competitors, etc.).

Without denying the existence of these Rational purposes for systems, some researchers and theoreticians have pointed out that other purposes of systems can be identified. Kling [10] and Markus and Pfeffer [19] have described systems whose purpose is to appear as though they were intended to rationalize work or to improve decision-making without having any real impact on organizational procedures or outcomes. Systems with this purpose can be useful in attracting outside funding or in discouraging external intervention. Another non-Rational purpose of systems is to change the balance of power inside a firm. The system described later in this paper can be argued to have had the purpose of creating a power shift among organizational subunits, although great pains were taken to make the system appear as if the only motivations for it were Rational ones. Still another non-Rational purpose is to gain control over or reduce dependence on members of a different occupational group. Noble [22] has described particular designs of numerically controlled machine tools whose purpose, he argues, was for managers to wrest control over production from the hands of shop floor machinists. These purposes are not consistent with the Rational Theory, and hence are called non-Rational; there is considerable evidence to suggest that at least some systems are partly, if not totally, intended to achieve non-Rational purposes [12, 13].

Assumptions about Organizational Contexts of Use

The organizations in which information systems are used can be described by

Structure: functional, divisional, matrix, centralized, decentralized;
Culture: power-oriented, cooperative, Theory Z;
Employment contracts: professional, bureaucratic, semiprofessional.

For purposes of understanding resistance, it is most useful to describe organizations in terms of the degree to which the people and subunits affected by the proposed information system are believed to have congruent goals and values or divergent ones.

The view of organizations that most frequently coexists with the Rational Theory of Management and with beliefs in the Rational purposes of information systems is that all organizational members share common goals for the organization and that, generally speaking, they will collaborate to achieve these objectives. In contrast, the non-Rational view assumes that different individuals or subgroups in the organization have different objectives depending upon their location in the hierarchy and that, in general, they can be expected to try to achieve these local goals rather than global organizational goals whenever differences exist. Some empirical work has described the existence of competing intraorganizational goal systems (Dalton [5] and Crozier [4] are classics), and analysts of the "class politics" persuasion take chronic conflicts of interest between workers and managers as an article of faith [3]. Thus, there is reason to believe that, at least in some organizations at certain times, there are situations that do not conform to the Rational perspective.

Assumptions about the Nature of Resistance

Quite apart from one's view of the cause of resistance, people can hold different assumptions about the nature of resistance and the role it plays in organizations. As used in this paper,

resistance is defined as behaviors intended to prevent the implementation or use of a system or to prevent system designers from achieving their objectives. However, careful inspection of the trade press and even some MIS scientific literature will reveal that the term is also applied to behaviors that may not have these intentions. For example, the label "resistance" is frequently applied to all cases of nonuse of a system, even when nonuse may reflect ignorance of the system's existence, inadequate training in system operation, or personal fear of the computer. This author would make the following distinction: where one individual's use of a system is not critical to the operation of a system, that individual's choice not to use the system cannot be considered resistance. Data entry is a use critical to the operation of a system; use of a decision support system to evaluate a stock portfolio by one analyst in a department of 20 is not. Resistance is easiest to identify when a person engages in behavior that may result in the disruption or removal of a system that is interdependently used by others as well as by that person.

Social scientists are justifiably leery of any concept that requires an attribution of intention, for two reasons. First, behaviors can be observed, but intentions cannot. Second, the act of attributing intention often indicates more about the person doing the attributing than about the person to whom the intention is attributed. In other words, many people who identify a behavior as resistance are really saying, "they are not doing things the way I want them to." This implies that resistance is a relative rather than an absolute behavior. It can only be defined in the context of two or more parties, each with desires and intentions. Party A intends to introduce a change of certain design; party B intends to prevent this from happening. Consequently, resistance can only be believed to be bad or undesirable if the intentions of the designer or implementor are accepted as good or desirable.

In the people-determined and the system-determined theories of resistance, the objectives and intentions of designers and implementors are never identified or analyzed. The implicit assumptions are either that designers' objectives are good, or that, whether good or bad, the intended users of a system do or should accept these objectives. Consequently, both of these theories tend to regard resistance as a negative result, which must be avoided or overcome.

In contrast, the interaction theory does not examine resistance out of the context of designer's intentions. The interests and intentions of both users and designers are identified and compared. When these interests are very similar, resistance rarely occurs. As the difference between their interests widens, the possibility of resistance increases. Resistance is viewed as neither good nor bad, unless you align yourself with the interests of either party. Resistance can be destructive, because it generates conflict and ill-will and consumes time and attention. But resistance can also be functional for organizations, by preventing the installation of systems whose use might have on-going negative consequences (e.g., stress, turnover, reduced performance).

Table I summarizes the underlying assumptions about information systems, organizations, and resistance for each of the three theories. One basis for evaluating the theories is the degree to which data from real-world cases can be found to be consistent with the assumptions of the theories. If the assumptions are shown to be unrealistic or inoperative in natural settings, the theories may be rejected on this account. One case study from the author's research is presented to illustrate the application of the theories and to serve as a basis for preliminary evaluation.

Background of the FIS Case Study

The methodology employed in this case research study was historical reconstruction of the initiation, design process, design content, installation, and use of information systems in large manufacturing firms [18]. Sources of data included interviews with over 30 designers and users of the systems and documentary evidence about the systems and the organizations. The documentary evidence included corporate annual reports (spanning, in the case of a financial information system (FIS), 15 years from 1964 to 1979), organizational charts, system training manuals and design documents, and internal correspondence about the systems. Our account is organized

TABLE I. Theories of Resistance: Underlying Assumptions.

	People-Determined	System-Determined	Interaction Theory
Cause of resistance	Factors internal to people and groups	System factors such as technical excellence and ergonomics	Interaction of system and context of use
	Cognitive style Personality traits Human nature	Lack of user-friendliness Poor human factors Inadequate technical design or implementation	*Sociotechnical variant*: Interaction of system with division labor *Political variant*: Interaction of system with distribution of intra-organizational power
Assumptions about purposes of information systems	Purposes of systems are consistent with Rational Theory of Management, can be excluded from further consideration	Purposes of systems are consistent with Rational Theory of Management, can be excluded from further consideration	*Sociotechnical variant*: Systems may have the purpose to change organizational culture, not just workflow *Political variant*: Systems may be intended to change the balance of power
Assumptions about organizations	Organizational goals shared by all participants	Organizational goals shared by all participants	*Sociotechnical variant*: Goals conditioned by history *Political variant*: Goals differ by organizational location; conflict is endemic
Assumptions about resistance	Resistance is attribute of the intended system user; undesirable behavior	Resistance is attribute of the intended system user; undesirable behavior	Resistance is a product of the setting, users, and designers; neither desirable nor undesirable

as follows. The system is briefly described. Then the context of system use is examined to see whether the three theories apply. First, are there differences between resistors and nonresistors? Second, are there technical problems with the system? Third, what is the political context of system use? Subsequently, we evaluate the theories in the light of case data.

The FIS System

A financial information system collects and summarizes financial data for the Golden Triangle Corporation (GTC) (see Figure 1). The inputs to the system are transactions involving revenues and expenditures, assets and liabilities. The outputs are monthly profit and loss statements for each division and for the Corporation as a whole; balance sheets are produced by the system. The information managed by FIS is primarily used for external reporting purposes (to the SEC), although profit and loss information is relevant to managerial decision-making.

Obviously, financial reporting was not a new function at GTC, but FIS, installed in 1975, incorporated some innovative features. Prior to FIS, divisional accountants collected and stored transaction data however they saw fit, but reported summary data to corporate accountants in a standardized format (see Figure 2). With FIS, divisional accountants entered their transactions into the system (identified and retrievable by a 24-digit account code) which specified the type of transaction (asset-office furniture, expense-travel) and place of origin (group, division, plant). FIS automatically summarized these data into reports for corporate accountants and for the relevant division (see Figure 3).

The idea for FIS originated in the corporate accounting department around 1971. A task force was formed to evaluate the need for such a system and to estimate its costs and benefits. This task force was composed entirely of people from within the corporate accounting group, some of whom had considerable data processing experience.

In 1972, after the necessary investigations and approvals, the task force arranged for the purchase of a financial accounting package from a software vendor (much to the chagrin of GTC's internal data processing department who would have preferred to build it themselves). The package purchased was designed so that it mirrored almost exactly the way in which financial accounting was then performed at GTC (see Figure 2), except that formerly manual databases were computerized, inconsistent summarization procedures were standardized, and consolidation was automated. Nevertheless, the FIS task force decided to modify the package, ostensibly to make use of modern database management techniques. In the process of modification, however, which took over 2½ years, the design team also replaced separate divisional databases with a single corporate database (see Figure 3).

The task force members did not solicit information from divisional accountants about the design of FIS until 1974, when it was time to set up the database. Divisions were, however, invited to attend presentations describing the need for FIS and the benefits to be derived from it. Implementation of the system was to be done in phases. FIS task force members had decided to solicit a volunteer for the first division to "go up" on FIS. After the initial division had found it workable, the other divisions would be required to use it. FIS was meant to be *the* corporate financial system.

Resistance to FIS

The largest division of GTC volunteered to pioneer FIS in January 1975. In October 1975, an accountant from this division wrote a memo complaining that

> ... Except for providing more detailed information, the FIS system has not been beneficial to us.

In response to complaints from this person and other individuals in several divisions, a study team was created to explore problems related to "system inefficiency." The study team

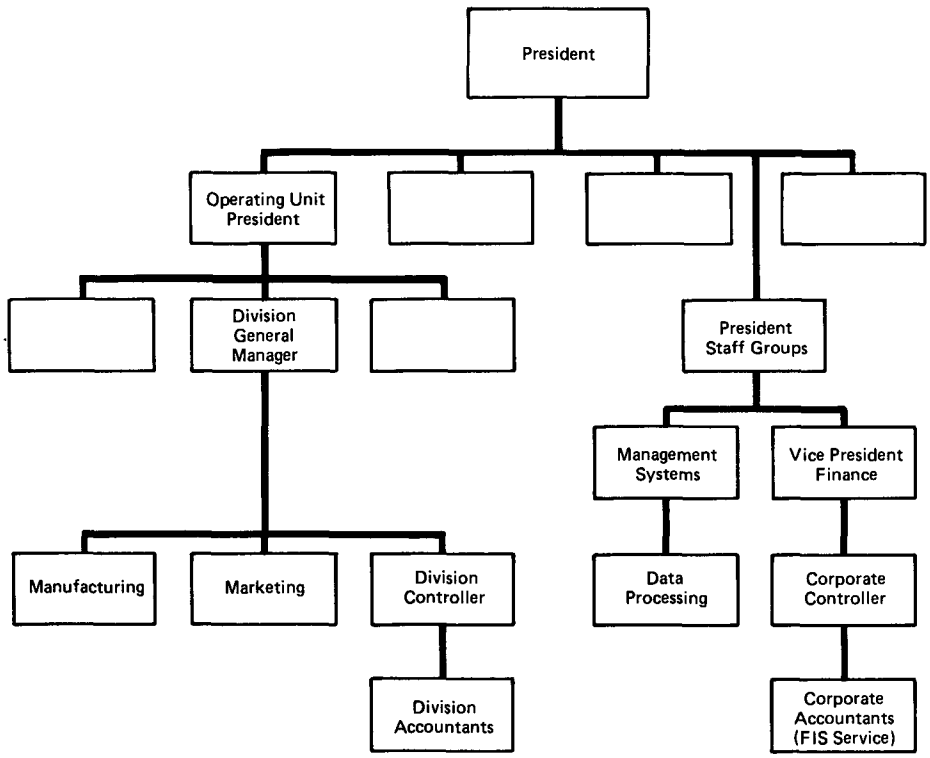

FIGURE 1. Golden Triangle Corporation, 1978.

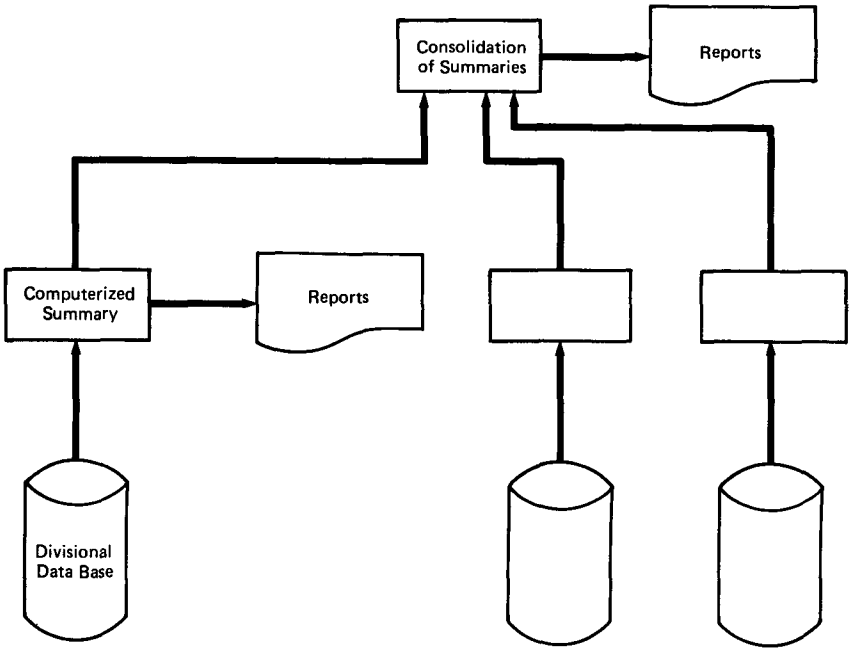

FIGURE 2. FIS Purchased Package Design.

met for several months and made technical recommendations to the data processing department. These changes proceeded slowly, and were set back in early 1977, when the data processing project leader quit.

In the meantime, other divisions had started up on the new system; all major divisions were using FIS by the end of 1975. This was surprising in light of the problems experienced by the initial FIS-using division, especially since participation in the system was supposed to be voluntary. Many accountants on the central corporate staff later pointed to this fact with pride as evidence of the success of FIS, but one person explained the incongruity as follows:

> Participation was voluntary on the surface, but there was a hidden inducement to participate. Those who wanted to wait to join FIS could do so, but they had to provide the same information manually. This would have been quite burdensome. So it really wasn't all that voluntary.

There is evidence that later divisional users were no happier about the new system than the original division. One division kept on using its old accounting methods after it started using FIS, even though this required twice the effort. There were frequent discrepancies between the two sets of books, and the staff of this division claimed that its system (thick manual ledger books!) was accurate and that FIS was at fault. The staff of this "recalcitrant" division persisted in this behavior for two years, until a member of the corporate accounting staff actually carried the old ledgers away. Some divisional accountants also admitted to slight "data fudging" to circumvent the technical and human factors problems with the system.

> If it turned out that an account we needed had not already been defined to FIS, rather than wait for the special account creation run, we might change the plant code, just to get the data in. After all, we knew what the numbers really were!

At the same time, corporate accountants, who used the system for corporate consolidation, were delighted with it. FIS automatically performed tedious tasks of calculation and reporting that they had formerly done by hand. In addition, FIS provided several totally unanticipated benefits for them, such as automated tax accounting. Corporate accountants could not account for the resistance of the divisions' staff members. They bitterly denounced the "troublemakers." One said:

> I can't understand why the divisions don't like FIS. There are so many benefits.

But the divisional accounting staff apparently did not perceive these benefits, even after substantial experience with FIS. Here is an excerpt from another memo written by the accountant who first complained about the system in October 1975. This memo is dated August 1977.

> After being on FIS for several months, I expressed the opinion that the system was basically of little benefit. After two years and seven months, my opinion has not changed. Even worse, it seems to have become a system that is running people rather than people utilizing the system.

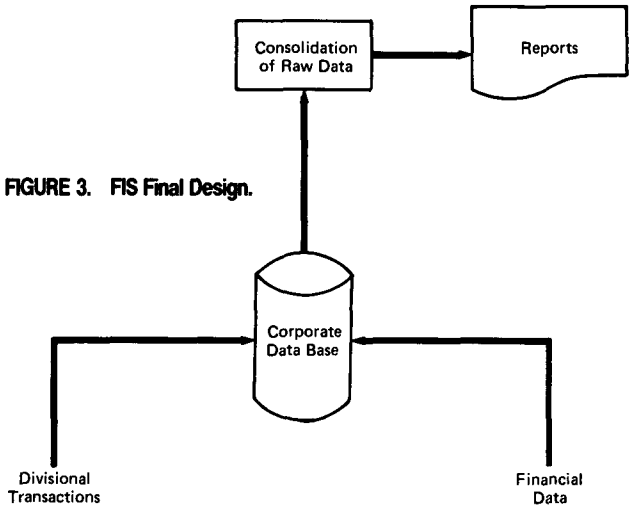

FIGURE 3. FIS Final Design.

When this author visited GTC, well over one year after that memo was written, many divisional accountants reported that they were still very unhappy with FIS.

Differences Between Resistors and Nonresistors

From the preceding description, it can be seen that those who could be said by their behavior to resist FIS were divisional accountants; those who accepted it and liked it were corporate accountants. According to the people-determined theory of resistance, resistors and acceptors should differ psychologically or cognitively in some significant way. In fact, several corporate accountants interviewed in 1979 subscribed to this notion: their stated explanation for the resistance was the personality characteristics of the resistors, who were "troublemakers." Although this author did not administer any psychological tests, there are some factors that lend credibility to the hypothesis that differences between the groups accounted for the resistance.

First, corporate accountants performed tasks that can be described as "financial accounting." They dealt with historical data, largely for purposes of external reporting. In contrast, divisional accountants, who reported to divisional general managers, can be described as "managerial accountants." They saw their role as one of providing future- and profit-oriented information to managers. Second, prior to 1975, there was little mobility between corporate and divisional accounting groups. Mobility would probably have encouraged more homogeneity in outlook; lack of it undoubtedly led to greater differences in outlook.

These differences, however, are not the inherent cognitive style differences usually studied by information systems theorists [26]. Rather, they are cognitive differences derived from status and functional location within a firm's hierarchy and division of labor.

Technical Problems with FIS

According to the system-determined theory, resistance can be traced to human factors and technical design features. Evidence can be found in the FIS case to support the reasonableness of this contention.

Part of the reason for the complaints of early FIS users can be found in a series of technical and human factors problems with the system. The database management system chosen for this application did not work well with the computer's operating system, and there was insufficient main storage to meet the applications requirements. Consequently, downtime was frequent and reports were often late. At the same time, the schedules of monthly closings were not relaxed to accommodate the problems. In addition, the data entry procedures were cumbersome. For example, FIS represents accounts with 24-digit account codes; the system it replaced had 8-digit codes. New accounts had to be created almost daily, but to do so required a special computer run. In the special run, once weekly, the new account had to be related to the other accounts in the hierarchy. This was not quite as difficult as might be inferred from the 10^{24} possible accounts, but the rules for doing it were difficult to learn and not documented in a user manual. Transactions were entered into the system daily; those intended for an as-yet-undefined account wound up in a suspense account. Given the weekly periodicity of the account creation run, the suspense accounts often grew to staggering amounts.

Political Context of FIS at GTC

According to the interaction theory, resistance can be attributed to an interaction between the design features of the system and features of its organization and social context of use. One aspect of this context is the intraorganizational politics and power dynamics between corporate and division accountants. Sufficient data exist in the FIS case to provide a basis for the plausibility of the interaction theory.

GTC is a major chemical and energy products manufacturing concern, with sales from its international operations exceeding $3 billion. It is currently decentralized into a staff group that includes corporate accounting and four operating groups with relative autonomy over marketing strategy and investment decisions for their product lines (see Figure 1). Within each operating group are several divisions, headed by general managers. Divisional accountants report directly to these general managers with only a "dotted line relationship" to the corporate accounting group, whose role is to provide "broad policy guidelines."

This organizational structure dated back to about 1968. In 1967, Golden Chemical Company had merged with two energy product concerns to form GTC. In the restructuring, the old parent company was subjugated to a new corporate entity. This subjugation was reflected in the creation of a new staff group, corporation accounting, interposed between corporate management (which was disproportionately staffed with non-Chemical Company people) and the Chemical Divisions (see Figure 4). A Chemical Company manager (Howard) was chosen to head the corporate controller's office. Whether by

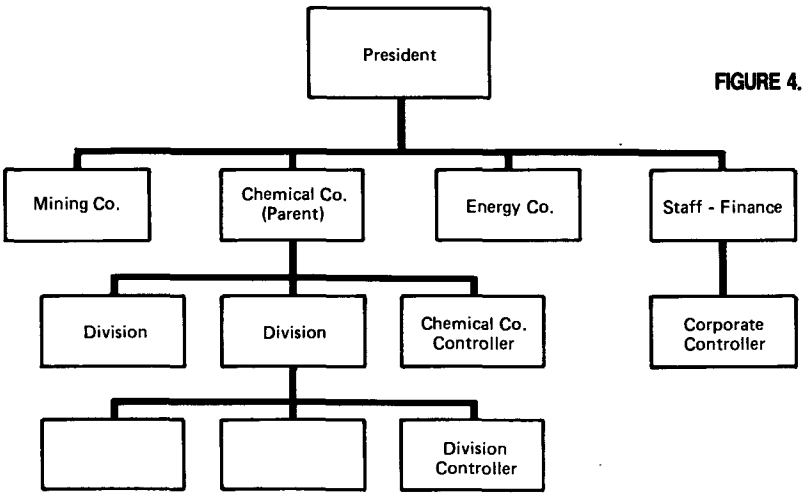

FIGURE 4. Golden Triangle Corporation, 1968.

TABLE II. Theories of Resistance: Predictions.

	People-Determined	System-Determined	Interaction Theory (Political Variant)
Facts needed in real-world case for theory to be applicable	System is resisted, resistors differ from nonresistors on certain personal dimensions	System is resisted, system has technical problems	System is resisted, resistance occurs in the context of political struggles
Predictions derived from theories	Change the people involved, resistance will disappear	Fix technical problems, resistance will disappear	Changing individuals and/or fixing technical features will have little effect on resistance
	Job rotation among resistors and nonresistors	Improve system efficiency Improve data entry	Resistance will persist in spite of time, rotation, and technical improvements Interaction theory can explain other relevant organizational phenonema in addition to resistance

accident or by design is unknown, but Howard was the rival of the head controller for the Chemical Company divisions (Spade). (Spade had hired Howard many years before.) Respondents described the relationship between the two men as "strained at best," especially during 1972–1973, about the time that FIS was initiated and designed.

Howard found himself in an unenviable position. He had before him the task of creating an important and influential staff group where none had previously existed. Furthermore, his charter called for him to provide broad policy guidelines to all divisional accounting units, but he had no authority over them other than dotted-line relationships. Finally, because of his bad relationship with the Chemical Company controller, Howard was uncertain whether he had an accurate picture of reality: all data came to him through Spade.

> Corporate accountants felt the divisions were lying to them. And maybe there was some withholding of data on our side.
>
> *Divisional Accountant*

> Howard felt that the divisions were doing things behind his back, and that he needed a better way of ferreting out how the knaves were doing in the trenches. A large part of the reason for initiating FIS was to provide this information.
>
> *Corporation Accountant*

All three theories, then, appear at least plausible in the context of FIS since some data can be found to support their basic assumptions. It remains to demonstrate how well predictions drawn from each theory account for subsequent events in the case.

PREDICTIONS DERIVED FROM THE THREE THEORIES

The people-determined theory leads to the prediction that replacing individual resistors or coopting them by allowing them to suggest improvements to the system might reduce or eliminate resistance. The system-determined theory predicts that if the technical features and human factors of a resisted system are changed, then resistance will disappear. The political variant of the interaction theory argues that neither of these changes will have much effect on the intensity of resistance if the resistance was generated by patterned interactions among competing groups. These predictions are summarized in Table II.

Actual evidence from the FIS case supports the political variant of the interaction theory and gives no support to the other two. The test of a single case is not a strong proof, nor is it so intended here. But it can be a useful illustration. Consequently, the reader is invited to try out any version of the interaction theory on any familiar situation to test its ability to account for events. However, our exposition of the case does not stop with demonstrating the utility of the interaction theory in accounting for events; we now show the assumptions of the interaction theory to be useful in helping an implementor to predict, to gather data, to explain resistance, and to develop strategies for implementation.

Changing the People

The people-determined theory predicts, among other things, that if some acceptors were moved into positions occupied by the resistors, resistance among divisional accountants would diminish or vanish. While hardly a scientific test of this prediction, such an event did take place accidentally within GTC.

After 1975, GTC encouraged more mobility among corporate and divisional accountants for career development purposes. Under this policy, one of the corporate accountants who had participated in the design of FIS in the original design task force became the controller in one of the divisions. According to one informant, this accountant rapidly became convinced of the problems with FIS (at least as seen by divisional accountants) and became an active and critical member of the second efficiency task force formed in December 1977 to improve FIS.

Further, while it surely does not conclusively refute the people-determined theory, behavioral evidence and interview reports show that resistance continued. It persisted in 1979, four years after the introduction to FIS. Evidence to support this statement will be given shortly.

Fixing Technical Problems

The system-determined theory predicts that fixing technical problems eliminates resistance. The second FIS efficiency task force was formed in December 1977, composed of several "resistors" (divisional accountants) in addition to data processing specialists. This task force made technical recommendations similar to those of the first task force, but also speculated about whether FIS should be scrapped and replaced. Before it could complete its deliberations on the latter issue, the second task force was disbanded in March 1978.

This date coincided with the completion of the technical recommendations from the two task forces. The Data Processing Department had purchased and installed a larger computer with a more powerful operating system. This technical change improved the efficiency of FIS. In addition, the processing mode of the system had been changed from a batch to

a transaction (on-line) basis; together, these changes reduced downtime to an acceptable level. Changes were made to the method of data entry, from remote batch to on-line, and the method of creating new accounts was simplified.

In spite of all these improvements in technical features and human factors, divisional resistance to FIS did not disappear. In fact, when data were collected for this study, about one year after the last of these changes was installed, informants in the divisions still spoke resentfully of FIS. Many felt strongly that the system should be replaced because FIS was inadequate as a tool for managerial accounting, even though it (now) functioned adequately as a tool for performing financial accounting. (Managerial accounting was the chief concern of divisional accountants.) Corporate accountants, however, maintained that FIS was more than adequate for managerial accounting (not their specialty), and they were increasingly pressuring divisional accountants to use FIS for this additional purpose.

Organizational Politics

The interaction theory predicts that neither changing people (by removing them, by educating them, or by attempting to coerce them), nor changing technical features of the system will reduce resistance as long as the conditions which gave rise to it persist. Resistance-generating conditions are mismatches between the patterns of interaction prescribed by a system and the patterns that already exist in the setting into which the system is introduced. According to the political version of the interaction theory (see the appendix), the existing political setting can be identified as follows.

Corporate accounting had little formal organizational power and no independent information on which to base its attempts to develop and administer broad policy guidelines. An obvious solution to this problem was to develop a system by means of which the necessary information would flow directly to Corporate Accounting without the intermediate step of manipulation by the divisions. This is precisely what FIS did, as can be seen in Figures 2 and 3.

The way in which FIS was designed implied a major gain of power for corporate accountants relative to their prior position *vis á vis* the divisional accountants. Prior to FIS, divisional accountants summarized raw data on the transactions in their divisions and sent the summaries to the corporate accountants for consolidation. Divisions retained control of their own data and exercised substantial discretion in summarizing it. This allowed them to "account for" unusual situations before reports reached corporate accountants or divisional general managers. After FIS, however, all financial transactions were collected into a single database under the control of corporate accountants. The divisional accountants still had to enter data, but they no longer "owned" it. FIS automatically performed the divisional summaries that both divisional and corporate accountants received. At any time, corporate accountants had the ability to "look into" the database and analyze divisional performance.

Corporate accountants designed and used FIS to create a substantial change in the distribution of, or access to, financial data, a valued resource. It is not surprising that those who gained access (corporate accountants) were pleased with the system and that those who lost control (divisional accountants) resisted it by writing angry memos, maintaining parallel systems, engaging in behavior that jeopardized the integrity of the database, and participating in a task force with the public objective of eliminating FIS and replacing it with another system.

Given the details of the design of FIS, it is likely that divisional accountants would have resisted it even if the loss of power implied for the divisions had been accidental. But there is some evidence that the corporate accountants acted deliberately in their design of the new financial accounting system. First, as mentioned above, they had sufficient motive to try to shift the power balance. Second, they clearly felt powerless in their dealings with the divisions. They staffed the FIS project team without any representatives from the divisions, who might voice objections to its design details. This group selected a package, which conformed in overall design principles to the existing information flows at GTC, and modified it deliberately[1] into a design that would alter the power balance between the two groups. Furthermore, some observers with GTC were willing to ascribe the motivation behind FIS to political reasons. For example, the man who was Data Processing Manager in 1975 (long since gone to another company when interviewed in 1979) said,

> FIS was definitely established for political reasons . . . Howard wanted to take over the whole world . . . Therein started the wars between the Chemical Company and Corporate.

A design for FIS that entailed a power loss for one group and a power gain for the other could be expected to strongly affect power dynamics between the groups. Once the resistance of the divisional accountants is understood in this way, it is common sense as well as derivation from theory to hypothesize that changing human factors and even replacing a few key actors would do little to resolve the resistance. In fact, changing them did not eliminate the resistance.

UTILITY OF THE INTERACTION THEORY TO IMPLEMENTORS

At this point, the superiority of the political variant of the interaction theory has been established based upon the ability of predictions drawn from it to account for the resistance to a system in one case. Rather than stop at this point, the case example can be extended a bit further to show what additional facts and data can be uncovered and explained by an analyst who uses this theory. These additional facts and data may be useful in designing an implementation effort. In the case of FIS, there are two additional relevant "events": a reorganization of accounting within GTC that occurred in mid-1975, shortly after the start-up of FIS, and the on-going (in 1979) debate about what (else) should be done to or done about FIS.

In 1974, Spade retired. In the next year, his old position as Chemical Company Controller was first moved under the direct line control of corporate accounting and then eliminated the following year (see Figure 5). Similar changes were *not* made in the Energy Group of GTC. A member of the corporate controller's staff cited this as an example of what FIS was intended to accomplish:

> If (the corporate reorganization in 1975 which eliminated Spade's job as Chemical Company Controller) had occurred several years previously, FIS might never have been instigated. The reorganization eliminated much of the need for FIS.
>
> *Corporate Accountant*

It may seem as though FIS caused this structural change. But it is probably more accurate to view the reorganization as

[1] The modification was optional, not mandatory, since the package was quite operational as purchased. The modification required a negotiated agreement with the vendor and was originally estimated to take six months to complete. (It actually took over two years.) To proceed in this way was, therefore, a deliberate decision on the part of the project team.

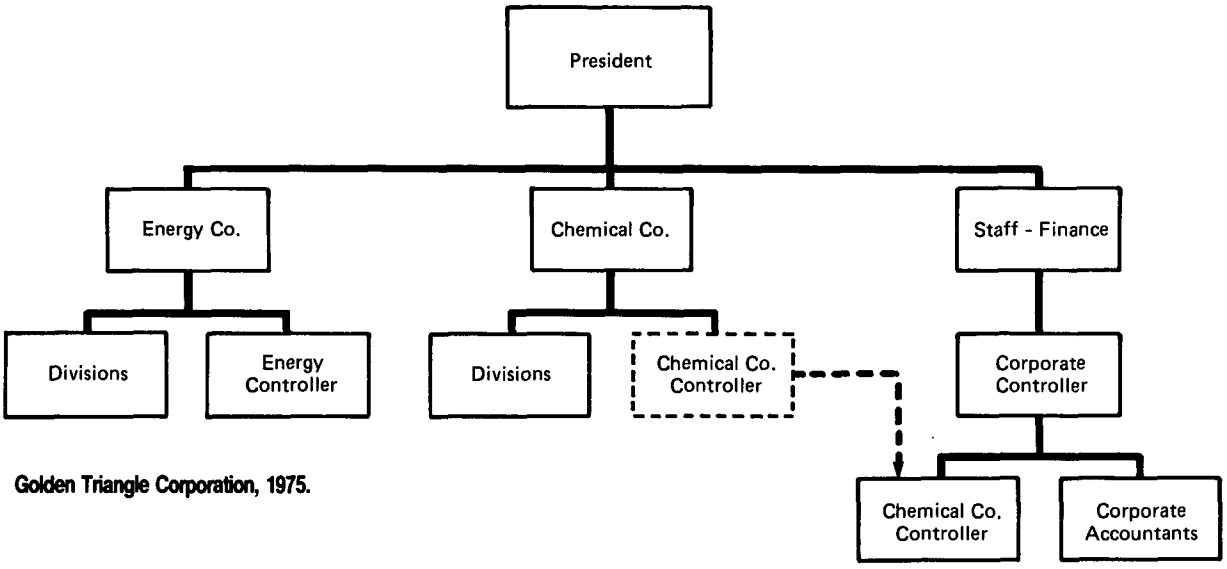

FIGURE 5. Golden Triangle Corporation, 1975.

an outgrowth of the same political situation that created the "need" for FIS. The political variant of the interaction theory, then, helps an analyst understand this event and to explain the resistance it generated.

The political variant of the interaction theory also helps an analyst understand the dynamics of the intraorganization debate about FIS, which continued long after technical problems with the system were fixed. As interviews in 1979 disclosed, resistance to FIS had not disappeared but had changed its form: no longer were the divisions protesting the technical problems with the system (now solved); they were complaining that the corporate accountants were insisting they use FIS for tasks for which the system was inappropriate, namely, managerial accounting.

An administrator reporting to the President of one of GTC's operating groups summarized the feelings of many divisional accountants when he said:

> I think it's about time they realized that FIS is really an operational tool. It just can't do everything.

In this remark, he summarized the view that FIS had been grudgingly accepted by divisional accountants as a tool for performing financial accounting (balance sheets, taxes, and corporate consolidations), but that it was still being resisted as a managerial accounting tool. Divisional accountants argued strenuously that FIS was not useful for managerial accounting.

> FIS does not provide us with the data we need to prepare profit center reports. To prepare profit center reports we must maintain a separate system, the PGP system . . . They tell us we can use FIS for profit center reports! That's garbage! You *could* do it, but I've already told you how you have to enter data into FIS. To get a profit center report, you'd have to enter each transaction by commodity code. There are a thousand commodity codes. This would be a horrendous job. Besides, PGP is our product gross profit report. We've had this system unchanged for almost ten years . . . Naturally, the profit figures from this and FIS should reconcile, but they never do, so we have to make the necessary adjustments . . . .

But an analysis of interview notes, internal memos, and task forces minutes, covering the period from 1975 to 1979, indicates that the difficulty of using FIS was only a secondary complaint; proposed changes in the way managerial accounting would be done was the real issue, one that no amount of technical fixing would solve. Further, this real issue was one of potential loss of power for divisional (managerial) accountants. Consider the following evidence.

First, an early memo about FIS (outlining a presentation to GTC's top management) explained "the direction we are heading" in the design of FIS. This direction represented a major shift in the way GTC did managerial accounting, that is, reporting to management about profit performance on specific products as opposed to the manipulation of aggregated, historical data. The intended shift in direction is clear in this excerpt from a 1972 memo:

> The last item of deficiencies that we list is the inability to analyze results on a total variance basis by business unit or corporate wide. By that, we mean a lack of sales information by principal product and the lack of product line profitability. What was the volume of a given product? What was its price for a given period? What did that product contribute at the gross profit level? To me, the guts of our operation is what we do on a product line basis. In addition, we do not report on a given plant profitability. We feel that all this type of information, as was indicated, should all be part of a Financial Information System and available to management when needed.

Thus, corporate accountants had intended from the very beginning that FIS be used for managerial accounting, not just, as its name implies, for financial accounting.

Second, corporate accountants did not immediately reveal these intentions to the divisions. When the staff in the divisions first heard about it they were surprised. In an October 1975 memo complaining about FIS, the divisional writer noted:

> I think we have to take a good look at what we have right now and improve it before we take *any additional tasks* proposed for the FIS system.

The "additional tasks proposed" referred to product profit (managerial) accounting.

Third, corporate accountants were quite well aware that

the divisions did not see eye to eye with them on the issue of managerial accounting. The second FIS task force was created, it will be recalled, in December 1977 in response to another angry memo written by the accountant in the first FIS-using division. Responding to that memo, a highly placed corporate accountant referred to the heart of the resistance issue in this memo written in August 1977:

> I must say that I am not surprised that your attitude toward the FIS system has not changed . . . That same attitude is shared by the entire financial [sic] staff of your division, and hence, FIS will never be accepted nor will it be utilized fully as an analysis tool by your division.

"Analysis tool" here means a tool to be used in the analysis of managerial-oriented profit data. (Note the use of the term "financial" to refer to the duties of divisional accountants.)

Finally, the divisional accountants themselves were quite explicit in distinguishing between operational and ease of use problems and use of the system for managerial accounting purposes. When the second task force was formed, it was partly "to improve things from a public relations point of view as well as from a technical point of view," according to one corporate accountant. But the divisional members of the committee did not intend to settle for symbolic gestures. "It was never really stated as such but one question we were looking at was: should we look for a new system?" Task force minutes in December 1977 confirm this:

> During the sessions we have had thus far, one complex question already surfaced: is the system capable of being any more than a giant bookkeeping system, e.g., can it ever effectively serve divisional needs for budgeting, reporting, allocations, etc.? Therefore, we see two related issues we will attempt to offer recommendations on: (1) ways to deal with problems so the system can be counted on to operate effectively during month-end over the short-term, and (2) what, if anything, must be done to assure us that, for the long-term, we will have a system usable as more than a consolidator.

Since the task force was disbanded before they could tackle the second question, we will never know what they decided, but interview data suggests that the divisions remained very negative both toward FIS and toward the corporate accountants' proposed "additional" uses for it.

Here is the situation in summary. From the perspective of the divisional accountants, financial accounting is the legitimate domain of corporate accountants. A system intended primarily for financial accounting would have no real impact on the divisions, provided, of course, that it was reasonably easy to use. The FIS system was not easy to use, but it was also not just a financial accounting system. It was intended to encroach upon the legitimate domain of the divisional accountants, that is, managerial accounting. Divisional accountants would resist the use of FIS for managerial accounting even if it were easy to use, and, in fact, their resistance continued beyond March 1978.

Who won? Did the corporate accountants succeed in their attempt to alter the balance of power between themselves and the divisions? The answer is not altogether clear. The corporate accountants did succeed in having the second task force disbanded (the axe man was the Vice-President of Finance) in March 1978, after the technical problems had been solved but before the committee could decide to replace FIS. The divisional accountants succeeded in redressing the more egregious faults of FIS, but failed in having it removed. In all likelihood, the net result was something of a draw: the corporate accountants had better information than before, an important power advantage in their dealings with the divisions, but not quite the total victory they had wished; the divisional accountants had regrouped and entrenched themselves to prevent any further losses.

IMPLICATIONS OF THE THEORIES FOR IMPLEMENTATION

The preceding analysis may have convinced an implementor that the interaction theory, at least in its political variation, has superior explanatory and predictive power. But the true test of the theories for the implementor will lie in their implications for implementation. Interaction theories are distinctly different from the people-determined, the system-determined, and the people-plus-system-determined views of resistance in their implications for action. An implementor holding the people-determined theory of resistance, for example, would find certain tactics appropriate. Among these are: carefully selecting the people who will use a new system or allowing users to self-select after careful explanations about the system; training and educating users to change their cognitive styles or attitudes about computing; getting users to participate in the design process so that they will feel more committed to the outcome; gaining support of the users' bosses who will encourage or demand compliance of recalcitrant users; changing organizational structures or reward systems to conform to the features of the system.

An implementor who believes that systems determine people's behavior will consider some different tactics and some of the same tactics for different reasons. Among these are: modifying packages to conform to the ways people think, work, or do business; training system designers to improve technical efficiency, ergonomic excellence, and a smooth man–machine interface; involving users in the design process so that the design is better than that which would have been developed without user input.

Implementors who hold both people- and system-determined theories simultaneously will pick and choose among the tactics. To these people, user participation in design is the most desirable tactic, because it is consistent with both theories, albeit for different reasons. In the face of prolonged or intense resistance, however, they are often forced to choose between changing people or organizational structures and

TABLE III. Theories of Resistance: Recommendations for Implementation.

People-Determined	System-Determined	Interaction Theory
Educate users (training)	Educate designers (better technology)	Fix organizational problem before introducing systems
Coerce users (edicts, policies)	Improve human factors	Restructure incentives for users
Persuade users	Modify packages to conform to organizational procedures	Restructure relationships between users and designers
User participation (to obtain commitment)	User participation (to obtain better design)	User participation is not always appropriate

modifying the system; and in the process, they reveal their theory of last resort.

Implementors who hold the interaction theory of resistance find that no tactics are useful in *every* situation. User participation in the design process, for example, is clearly contraindicated in cases where powerful authorities have decided that a specific change, unpopular with users, *will* take place (see Markus [17]). In such situations, users are likely to resent strongly a tactic that is meant to make them feel as though they have some say in the matter, when they obviously do not.

One major implication of the interaction theory is that computer-based systems alone cannot accomplish the task of radical organizational change. If radical change is desired, a thorough analysis of the existing situation should be conducted to identify factors that will facilitate or hinder the change. Examples of such factors can be inappropriate reporting relationships among individuals or groups, incentive schemes that do not reward the desired behavior or punish undesired behavior, unclear allocation of responsibility for certain tasks. Changes in these areas should be made before a system is implemented, and the system should be designed to be consistent with the revised organizational procedures. In cases like this, the organizational changes may generate resistance, but once they have been implemented, a system that supports them is unlikely to be the target of resistance itself.

Another implication of the interaction theory is that the specific designs of systems are in part a product of the relationships between users and designers. In the case of FIS, the designers were also systems users, as opposed to systems professionals. But similar cases of resistance have occurred where design objectives and specifics have been set by supposedly "neutral" parties such as operations researchers and systems analysts. According to the interaction theory, no designers are ever completely neutral. Consequently, a great deal of thought and attention should be given to the tasks of structuring the relationships between users and designers and of developing methodologies for designing and implementing systems. For example, many organizations with centralized computing facilities have deliberately decentralized systems development to improve relationships between users and designers.

The most important implication of the interaction theory is that the best prescriptions for an implementation strategy and for the specific design content of a system will follow from a thorough diagnosis of the organizational setting in which the system will be used. At present, system builders are using methods such as structured systems analysis which allow them to describe and analyze only the technical features of a setting which is to be automated. To design systems that will not be resisted or to devise ways to modify resisted systems, this technical systems analysis must be augmented with a social or political analysis of the sort performed for FIS. Table III summarizes these conclusions.

CONCLUSION

The final evaluation of the interaction theory (in whatever variation) is to show how it is useful to the implementor of systems. The theory leads to a model of organizational analysis and diagnosis that can be used to design systems that do not generate resistance or to devise strategies to deal with settings in which resistance has already occurred.

In the case of FIS, an analysis of this sort could have been performed prior to the system analysis and development effort to identify where resistance was likely to occur. Given the facts presented in this paper, the analyst would probably have concluded that divisional accountants would certainly resist design features such as (a) the ability of the corporate accountants to retrieve and analyze raw (unsummarized) data, and (b) the necessity to do profit analysis at a level of aggregation that was meaningless to them. Knowing this and his/her own motives, the analyst could decide upon a course of action that may have included

(1) Altering the design of the system in ways that would be more palatable to divisional accountants;
(2) Sacrificing some of the corporate accountants' objectives for the system;
(3) Allowing divisional accountants to participate in selected aspects or all aspects of the system design process;
(4) "Buying" acceptance of the system by giving divisional accountants some other concessions valued by them;
(5) Touting the system from the start as the ultimate "managerial accounting information system";
(6) Terminating the proposed project.

Once FIS was designed and resistance already apparent, an analysis could have been performed to determine precisely why the resistance occurred and what could be done about it. This analysis would also be useful in helping plan future system implementations involving one or more of the parties affected by the original system. In the case of FIS, one would conclude that for corporate accountants to persist in pressing their view of managerial accounting is probably organizational folly. Furthermore, relations between the two groups are now badly strained. Successful future implementations of financial systems will necessitate either improving these relationships or providing solutions to problems perceived by the divisional accounting group.

The interaction theory has the apparent disadvantage of providing no universal, noncontingent advice to systems analysts and management implementors of systems. But it is more useful than other theories for predicting resistance and for generating varied and creative strategies that will help both to prevent it and to deal with it when it arises. Two observations on the use of the theory are in order.

First, one key to the successful use of the interaction theory is that the implementor consider himself or herself as one of the parties in the analysis. Self-examination of interests, motives, payoffs, and power bases will lend much to the implementor's ability to understand other people's reactions to the systems the implementor is designing and installing.

Second, the analyst should recognize that the goal of the exercise is not to "overcome" resistance, but to avoid it, if possible, and to confront it constructively, if not. In some cases, this indicates that the implementor may have to lose the battle and sacrifice a pet system project in order to win the war. Resistance is not a problem to be solved so that a system can be installed as intended: it is a useful clue to what went wrong and how the situation can be righted. If the implementor can divorce the need to see a system up and working from the need to achieve a particular result, many more degrees of freedom exist. In conclusion, although the process is difficult and time-consuming, the results produced from the application of the interaction theory of resistance are often substantially better than those produced from the application of the universal heuristics derived from other theories.

APPENDIX. DETAILS OF THE POLITICAL VARIATION OF THE INTERACTION THEORY

Several variations of interaction theories are possible; the basic constraint is the notion that resistance is caused by an interaction between organization and system. The specific or-

ganizational concepts an analyst uses may vary. The set used in this paper are concepts of intraorganizational power and politics. Other sets of concepts are also consistent with the interaction theory. One example involves concepts of organizational learning and change (see Keen [9], Ginzberg [7], and Kling [13] for details).

The primary assumption of the political variant of the interaction theory is that information systems frequently embody a distribution of intraorganizational power among the key actors affected by its design. Intraorganizational power is an attribute of individuals or subgroups, such as departments, within the organization; it can be defined as the ability to get one's way in the face of opposition or resistance to those desires [25]. There are a number of ways by which an individual or subgroup can come to have power in an organization, including personal characteristics, such as being an expert or being charismatic, but position in the formal structure of the organization often provides greater access to specific power resources and the legitimacy required to use them. Pfeffer [25] describes the major determinants of power: dependence of others on the power holder, ability of the power holder to provide resources, ability of the power holder to cope with uncertainty and irreplaceability, and ability to affect a decision-making process. All of these determinants of power are relevant to an understanding of MIS implementation, but the most frequently cited is ability to cope with uncertainty.[2] The raison d'etre of MIS is to provide managers with useful information, presumably so that they can cope better with variances arising from their production technologies and from the external units that supply inputs to and distribute outputs from the core technology.

The information required to cope effectively with uncertainty is distributed throughout organizations in a nonrandom way; some people/groups have more access to this than others, and this gives them power. Many management information systems are designed in ways that redistribute nonrandomly the information required to cope with uncertainty; thus an MIS can alter bases of power. For example, a relatively stable balance of power will develop in the relationships between the purchasing, engineering, operations, and production control departments in any manufacturing organization. Sometimes engineering will call the shots, sometimes manufacturing. The introduction of a new logistics system may funnel all key information through the production control department, thus giving them an unaccustomed power edge in their dealings with other groups. The result might be a permanent redistribution in the balance of intraorganizational power,[3] unless something happens to prevent it. The sufficiently powerful "something" is resistance by those parties who stand to lose in the reallocation of power.

The political variant makes some precise predictions about where resistance is likely to occur around the implementation of information systems. Power, as it has been defined here, is a valuable resource. People and organizational subunits may differ in the extent to which they actively seek to gain power, but it is unlikely that they will voluntarily give it up. When the introduction of a computerized information system specifies a distribution of power which represents a loss to certain participants, these participants are likely to resist the system. Conversely, when the distribution of power implied in the design of an information system represents a gain in power to participants, these participants are likely to engage in behaviors that might signify acceptance of it: frequent use and/or positive statements about the system. In general, one would not expect people who are disadvantaged in their power position by a system to accept it (gracefully), nor would one expect people who gain power to resist.

Testing these propositions might involve comparing distributions of power bases before a system is installed with the distributions implied in a system's design, that is, identifying the winners and losers if the system were to be used exactly as designed. Clearly, however, there are some problems with this procedure. Necessary conditions for resistance (acceptance) in the hypotheses as stated are that people perceive the system to represent a power loss (gain) and that people's behavior adequately represents their feelings. In some cases, people may misperceive the loss (gain) they receive as a result of the system. In other cases, people may feel it is not to their advantage to engage in behaviors that could be labeled resistance: criticizing the system, avoiding it, trying to bring out changes [25]. Most of these factors argue that, of the people or subunits who lose power in an objective comparison of new system with former conditions, only some of these are likely to resist, or to resist with any strength. Strength of resistance would appear to be strongly related to size of the loss and its perceived importance.

Some of the specific conditions in the design of an MIS that will spell objective losses or gains in power can be spelled out. It is important to note that a single system can represent a power loss for several individuals or subunits, and at the same time, a power gain for several others. Access to information is probably less important as a basis of power than is the ability to *control* access to information or to define what information will be kept and manipulated in what ways [10, 14, 23, 24]. When a system centralizes control over data, the individual or subunit who gains the control is likely to accept the system readily, while those units losing control are likely to resist, even if they receive access to larger amounts of data in return. Similarly, decentralization of control over data is likely to be resisted by the formerly controlling unit and to be accepted by units gaining control.

If control over data (whether centralized or local) has prevented certain groups from obtaining needed or desired access to it, distribution of data, even unaccompanied by control over it, will provide those receiving it significant power gains. Their dependence on the controlling group will be reduced, since they will have an alternative source of data. They are likely to accept a system which accomplishes this distribution. On the other hand, those whose data monopoly is threatened in the process are likely to resist. Distribution of data that makes the performance of a subunit more visible, hence subject to control attempts by other units, is likely to be resisted by the group whose performance is exposed [15] and accepted by those who would like to influence the others' performance.

The strength of resistance is also likely to be affected by the organizational position of the person or subunit to whom one loses power. If the "winner" is located in a vertically superior position in the hierarchy, resistance is much less likely than if the winner is a peer. Formal authority relationships tend to make power differences between superiors and subordinates more legitimate than similar differences among groups at the same horizontal level in the organization.

At this point, the philosophical stance of the political variant toward resistance should be clear. Resistance is neither good nor bad in and of itself; whether or not it is so labeled usually depends on the vested interests of the person or group

[2] The ways in which information systems affect the organizational balance of power either through their symbolic aspects or through their effect on the decision process is described in detail in Markus and Pfeffer [19].

[3] Such redistributions have been documented by Kling [11], Hedberg et al. [8]; research on this topic has been reviewed by Bariff and Galbraith [2].

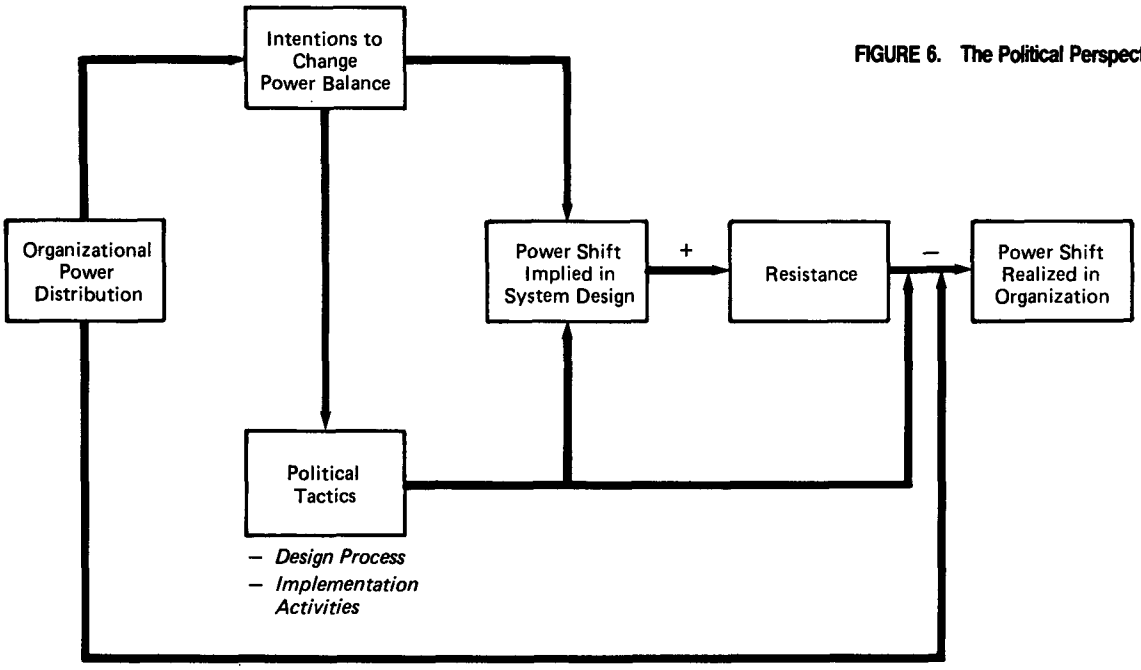

FIGURE 6. The Political Perspective.

doing the labeling. Resistance can be an important, even organizationally healthy, phenomenon by signaling that an information system is altering the balance of power in ways that might cause major organizational dysfunctions. The political variant assumes that systems have no inevitable impacts on the organizations which employ them; ultimately, impacts will depend upon the choices made by people about how to use them. Some of these choices are exercised in the design process; others are expressed in the form of resistance, when previously unforeseen consequences that negatively affect a legitimate group of users come to light. Noble [22] makes a similar point about the impact of technological change generally. Specifically, people can alter management information systems as they use them and thus prevent the realization of implied power distributions by sabotaging the system, providing inaccurate data, not using the system at all, keeping other sets of records, circumventing the intent of the system while obeying the letter, and many other ways. Mechanic [20] describes some of the bases of power available even to people very low in the organizational hierarchy that could give the ability to affect the final outcomes of an MIS, and Strauss [27] describes other tactics that have been used laterally between horizontally related subunits.

The degree of resistance generated by the introduction of a computerized information system is seen, then, in the political variant as a variable intervening between the degree of change in the intraorganization balance of power designed into a system and the degree of power shift actually realized in the organization. Obviously, resistance is not the only factor that could intervene here. Systems in practice rarely match perfectly the intentions of designers, partly because of imperfections in the translation and partly because use contributes to learning about how the system ought to have been designed in the first place. Even more important is the degree to which powerful organizational actors, who may directly benefit from others' loss in power and who may actually intend such loss, are motivated to try to overcome the resistance. The preexisting balance of power and the relative adeptness of various groups at the use of political tactics for avoiding and overcoming resistance will largely affect the net outcome for the organization. These considerations are summarized diagrammatically in Figure 6.

The fact that the political version of the interaction theory is only one of several raises the question, when is the political variant more likely than others to be appropriate for understanding MIS implementation? Pfeffer [25] has discussed the circumstances under which organizational decision-making is likely to be accompanied by politics. While the process of designing information systems is not the same as organizational decision-making, it is probably a special case; at least, some of the decision-making processes reported by Mintzberg et al. [21] bear a strong resemblance to the front-half of the information system life cycle. This implies that the political variant is most appropriate when conditions likely to produce political decision-making obtain: when there is disagreement about organizational goals and values; when uncertainty exists about the means required to produce the desired objectives; when resources are scarce; when the decisions are important [25].

Translating these factors into the information systems context suggests that the political variant is the most appropriate analytical framework when organizational participants disagree about the nature of the problem that a system is proposed to solve, when there exists uncertainty about whether a particular proposed system will solve the problem, and when the power bases allocated are highly valued and in short supply. These conditions are most likely to be met when the information system cuts horizontally across several diverse organizational subunits and has many different types of users. Thus the political variant may be more relevant to understanding the implementation of integrated operational information systems, whereas some other perspective, such as one based on concepts of organizational learning, may apply better to single-user decision support systems. However, although the political variant may not be most appropriate for every case, it considerably enhances the ability to explain and predict events surrounding the introduction of management information systems into complex organizations.

Acknowledgment. The author wishes to thank the many people who have made comments on the multiple incarnations of this paper and the ideas contained in it, especially Rob Kling and Jeffrey Pfeffer.

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CR Categories and Subject Description: K.4.3 [**Computers and Society**]: Organizational Impacts
General Terms: Human Factors, Management
Additional Key Words and Phrases: resistance, intraorganizational power, politics, implementation.

Received 9/18; revised 1/82; accepted 7/82