The User/Information Systems Relationship: A Study in Power and Attitudes

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ABSTRACT

Antagonism between non-technical managers in business (users) and the technical experts who develop computer systems (information systems staffs) has been an ongoing organizational concern for more than 20 years. The enduring and widespread nature of this problem suggests that the user-IS relationship is more complex than has traditionally been supposed. Most explanations for this problem examine only the features of the relationship (e.g., poor communication) and not its underlying social and organizational causes. Social theories suggest that power influences the way groups interact, particularly when one group is in a more powerful position than than the other. However, problems in conceptualizing power have meant that very little empirical research has been done in this area.

This study explores how power influences the attitudes of users and information systems managers toward each other in a large Canadian corporation. It uses a contextual conceptualization of power which enables examination of attitudes at three different levels of analysis: social, organizational and individual. Its findings show that power, and the context in which it operates, does influence attitudes in each group but in different ways. User-information systems attitudes appear to reflect the unequal distribution of power between these groups in this organization. This would suggest that attempts to improve user-IS attitudes will only work if they somehow alter their power relationship.

INTRODUCTION

As long as computers have existed in business there has been antagonism between non-technical managers (users) and the technical experts who develop the computer systems they use (information systems staffs, or IS) [4,5,43,54]. Problems in the user-IS relationship have been widely documented in the literature [24,25] and in trade journals. The author has also observed them firsthand in the course of 14 years' work and research in a variety of businesses. These problems can lead to major difficulties in the development, implementation and use of computer systems. Thus, the user-IS relationship appears to be an extremely critical and sensitive one in a large number of organizations today.

Causes of user-IS conflict are unclear. They have been variously described over the years. Some of the more common explanations include: a communication gap [25], a misalignment of MIS and business goals [21], credibility problems [13], or, the result of poor system design [5]. Markus [35,36] and Kling [27] have suggested that the conflict stems from not one, but many individual, organizational and systems factors that interact with each other. While this seems the most reasonable explanation for a complex problem, more empirical research is clearly needed to identify the factors involved and to determine how they interact and why they exacerbate or mitigate user-IS conflict.

A significant feature of the user-IS relationship is that the antagonism appears to be largely one-sided — from users toward the IS group. In fact, while the information systems industry is continually making efforts to improve its poor image with users [32,50], the failure of many of its solutions is only too well-known [33,42]. It seems that as fast as one complaint is addressed, another replaces it. The question is, why?

The features of user-IS interaction tend to be similar to other problem relationships described in the literature — line-staff, interdepartmental or professional-bureaucratic relations [7,8,12,40,51]. Differences in goals, hostility, lack of trust and frustration with the other group are characteristics of any conflict relationship. However, describing the symptoms of a poor relationship does not explain its underlying causes, especially the role that organizational or social conditions can play. Moreover, user-IS conflict has been demonstrated between staff groups (in the present study) and with other highly professional groups [36]. Because this suggests that line-staff or professional-bureaucratic differences cannot explain this antagonism, a more critical look at the relationship is indicated.

Crozier [8] and Hickson, et al [22], have found that unequal power relationships can lead to lack of cooperation between organizational subunits and highly dysfunctional behavior. Since control of the technology on which an organization depends is a well-accepted source of power [6,8,38,45],

it would seem reasonable to suppose that IS is becoming a powerful subunit in the organization and that information systems personnel would therefore exercise considerable power over users in their interactions. As the balance of power in the organization shifts from users to IS, conflict and hostility would be a logical outcome.

Several studies have begun to explore the role power plays in the behaviors of people and organizational units involved in developing and using computer systems. Markus [36] concludes that the strength of user resistance to a new system is closely related to the power gains or losses which are implied in the system's design. Awareness of the goals of key persons and subunits in an organization is also crucial to understanding this resistance [30]. In systems development, politics have been found to be as important to the process as the rational assumptions of systems development methodologies. [14].

In fact, Robey and Markus [48] conclude that rational systems design is largely a ritual to mask the private interests of the participants. Even user participation in systems development does not guarantee that a system will meet user needs or interests. Kling and Scacchi [27] concluded that it can be merely symbolic when outcome decisions are specified by those in control. These "political" perspectives reflect a growing awareness of the importance of understanding the social context in which technology is created [29].

While the notion of the IS group's power seems "intuitively correct " [37], empirically demonstrating the role of power in the user-information systems relationship has been difficult because of problems in conceptualizing power itself. For example, Danziger [10], and Kraemer and Danziger [11] have concluded that the IS unit has power because it has substantial control over its own activities and the premises which guide it are primarily its own. However, using Hickson's [22] theory of "strategic contingencies," both Lucas [34], and Saunders and Scammell [49] have found that IS departments were perceived by others as having relatively low levels of power. These studies have focused on two common features of power: its sources, and an awareness of its use.

In a recent article, Markus and Bjorn-Andersen [37] point out that these may not be the only ways of viewing power in the relationship. They note that the exercise of power and the results of this exercise may be more important to understanding the power of IS over users. "It is possible for IS (dp) professionals to exercise power over users without users perceiving it. In fact, the very lack of users' awareness of the use of power may indicate an especially effective (i.e., powerful) exercise of it." They suggest that IS power is exercised in two contexts: through specific development projects and through general IS policy. As well, power can be used not only to affect factual issues and tangible resources such as hardware or system design features, but also to change people's values and attitudes regarding, for example, a system's objectives or the ideology of the workplace.

WHAT IS POWER?

Power is a concept which has strong negative connotations. To many, it implies Machiavellian machinations and megalomania. Perhaps because of this, organization theory has largely tended to avoid addressing power directly [8,23,38,45,55]. Usually, euphemisms such as "control over resources," "influence," or "dependence" are used instead [3]. As a result of this hesitation, Mintzberg [38] notes that there are huge gaps in the literature on power, especially in empirical research. While power is discussed extensively in social science theory, it is in such an abstract fashion that it is extremely difficult to explore empirically.

As a result of this confusion, power in the organization is still a poorly understood concept. At one level, the organization is seen as the battleground for class struggle [e.g., 1,2,9,16,18,20,46]. At another level, power is seen as a function of the organization's structure. One group has power because it can control contingencies (i.e., its dependence on other units) [22]. At still another level, power is considered an attribute of individuals. Certain people in organizations have power as a result of their position, authority, or charisma [15].

The difficulty with these conceptualizations is that each level of analysis is independent of the other levels. Although we know that individuals work in groups which make up organizations, which are in turn part of society, most interpretations of power are usually only suitable for one level of analysis. For example, one can clearly see how power works between individuals when it is conceived as position in the management hierarchy, but this interpretation explains nothing about power relations between organizational or social groups. Similarly, it is often difficult to observe social power empirically because there is not clear understanding of how it works among individuals. It is not surprising, therefore, that Kling [28] and Murphy [41] have each found the available empirical studies of power use relatively weak conceptualizations.

One way out of this theoretical maze is to use Weber's analysis of power [17,52,53]. He suggests that power can have multiple sources depending on the context in which it operates. For Weber, how power works, rather than what it is, is central to understanding this concept. For most people, power is the ability to command the actions of others. Whether at an individual organizational, or social level, people or groups have power if they have the right to administer the rules of the legally established order. However, Weber believes that power also operates in another mode which is less easily observable. This is the power to constrain the choices or actions available to others. While individuals or groups may perceive themselves to be completely free, if their freedom is limited to a

narrow range of alternatives, their power is also limited. Because constraints direct choice and eliminate options, the person or group establishing them has effective power over those who are subject to them [37].

Thus, in any situation, power can be exercised formally through the established right of a group or individual to command the actions of others, or informally through the ability to constrain the options available to others. Power relations in more inclusive contexts such as society, also constrain power relations in less inclusive contests — the organization. For example, one individual can exercise power over another individual through position in the management hierarchy.

Yet, such actions in turn are limited by the organizational unit to which that person belongs. A person belonging to a relatively important department such as sales and marketing, can exercise more power than a person belonging to a less important department such as personnel. Similarly, an individual's and an organization's power are limited in turn by the social context in which they exist. Social class and education can curtail a person's advancement and effectiveness in an organization. The influences of the marketplace and the state play important roles in what organizations can and cannot do. Figure 1 illustrates how the concept of constraint can provide the link between several contexts of analysis. In this conceptualization, what power is can change according to the level of analysis since any source of power is limited by the larger contexts of power in which it operates.

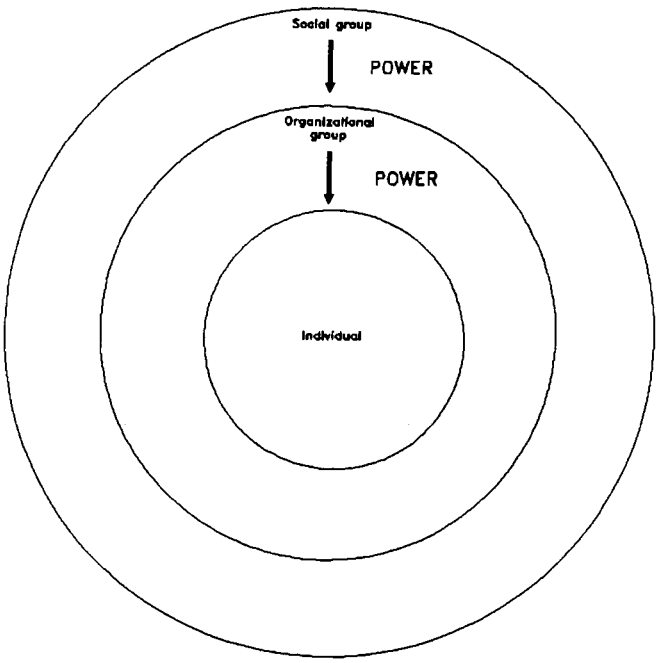

Figure 1. Power Operating Between Levels of Analysis

STUDYING THE USER-INFORMATION SYSTEMS RELATIONSHIP

If power is a factor in the user-IS relationship, it should be readily observable in the activities which take place from the time a system is first proposed up to its installation. This is where users and IS make decisions which will determine the future direction of automation in an organization. These activities (collectively referred to as "systems development") include: system planning, resource allocation, establishing a system's scope and objective, determining what should be developed and how it should be done, and system implementation. The research was designed to explore the following hypothesis:

> The information systems group will exercise more power in the organization than the user group in systems development and these power relations will be reflected in the groups' attitudes toward each other.

A case study design was chosen since it was most suited to using the multiple forms of data collection which would be required if user-IS interaction were to be studied at several levels and in several contexts. While not generalizable, it was felt that because of the limitations of the available conceptualizations of power, a case study supported a broader and more detailed investigation of the relationship than would be allowed using most other designs.

Fieldwork for this study was conducted over a period of six weeks at a large, well-established corporation, The Communications Corporation of Canada (ComCorp), not its real name, which specializes in telecommunications. Computer systems have been essential to ComCorp's effectiveness over the past 25 years and most divisions of the firm use computer systems in some aspect of their work. The company is divided into four main user divisions. Two large regional divisions are responsible for the company's daily operations. The Headquarters division provides overall financial and administrative control while Marketing has the responsibility for planning and selling the company's product.

Within each user division there are major functional departments, e.g., accounting, customer service, engineering. User departments are further divided into line and staff groups. Line groups are responsible for a department's day-to-day activities, including all activities which utilize existing computer systems. Staff groups are responsible for providing services and support to the line. An important staff activity, therefore, is participating in the planning and development of new computer systems.

ComCorp's data processing department (the Corporate Systems Group or, CSG) has over 1000 employees and uses state-of-the-art technology and development techniques. While it is not technically considered a division of the com-

pany, its vice president reports directly to the president as do the four divisional executive vice presidents. User representatives of each affected department are required by company policy to participate actively in the systems development process. For the duration of a project, users are staff personnel and have no direct line responsibilities. However, most users have considerable line experience and usually return to the line after a project is completed. Project teams are composed of equal numbers of users and IS staff — all at a management level.

Historically, computer systems at Com Corp have been used to reduce labor costs and this is still an important component of the corporation's systems philosophy. However, with increasing competition in the industry in recent years, the importance of the strategic use of systems is being recognized at the senior executive level. Systems planning and systems development are therefore separate organizational subunits within CSG. Systems development is further subdivided into distinct development and maintenance groups. For the reasons stated above, the user and IS staff engaged in maintenance work were excluded from this study.

Users and IS staffs on seven development projects and in systems planning, as well as their senior managers, made up the study's sample. Projects were chosen judgmentally to represent different project sizes and stages of development (see Table 1) as well as different user groups. Users from each of the major business functions of the company were represented. Altogether, 176 people participated in this study, of whom 88 were IS personnel. This represents about 40 percent of all users and IS staffs engaged in systems development during the time of the study.

Users and IS managers from five levels of management were included in the study. Non-management personnel did not participate in the systems development process and hence, were excluded from the sample. Company executives (from vice president up) were also excluded since it was felt that a different design strategy would be required to identify and uncover the issues involved at this level.

Several different methods of data gathering were used. All respondents were asked to complete a self-administered, structured questionnaire using scaled responses (see Appendix for sample questions). Scales were designed to test for the same variable in several ways. They were extensively pretested with non-participating users at ComCorp and with IS staffs at another organization.

The results show a high degree of consistency in the responses obtained. More than 94 percent of all questionnaires were returned. In addition, 15 IS and 16 user managers participated in unstructured, in-depth interviews. Several small group interviews of either IS staffs or users, representing 35 respondents, were also conducted. Finally, document analysis and observation of user-IS meetings were used to supplement other findings.

Table 1
Projects Selected by Size and Phase of Development

	Large-Scale (>$1,000,000 cost)	Medium-Small Scale (<$1,000,000 cost)	Total
Analysis Phases (user primary decision-maker)	2	2	(4)
Design/ Development Phases (IS primary decision-maker)	1	2	(3)
Total	(3)	(4)	(7)

POWER IN THE USER-INFORMATION SYSTEMS RELATIONSHIP

The study examined three aspects of power in the user-information systems relationship. First, it explored formal power, that is, the established right of a group or individual to command the actions of others. Second, it looked at how informal power established constraints in the relationship. Finally, it examined how status characteristics of groups can affect their relative power within the organization.

A. The Formal Relationship

Do company policies give one group the ability to command the actions of others during systems development? To attempt to answer this question, three indicators of the relative formal power of the groups were explored: 1) formal position in the corporate hierarchy; 2) formal responsibility; and 3) dependence.

1) Formal Position in the Corporate Hierarchy

It was no surprise to learn that CSG's place on the company's organization chart has improved steadily over the years. It has grown from a subgroup of the Accounting Department in the 1950s to a major division of the company. Today, it is represented by its own vice president. With the exception of the current dominant user group, all other users report to regional vice presidents and then to one of two regional executive vice presidents.

As in all organizations, over time various user groups have risen to prominence while others have declined. This seems to follow a cyclical pattern as company priorities

change. As one user explained, "The '60s were the age of the operations guys; the '70s were the age of the engineers; and in the '80s, marketing's where it's at." In contrast, the move of CSG up the corporate hierarchy over the last 30 years has been continuous and spectacular. Because information systems is a staff and not a line function, it is removed from the dynamics that govern the allocation of relative power in the rest of the company. Information systems are needed by every user group and can therefore shift priorities to work with whichever department is more important at the moment, maintaining and increasing its formal position in the corporation "on the coattails" of each user department in turn.

CSG is now represented on all major executive committees, including the executive group in charge of restructuring the company and the Executive Expenditures Committee which reviews all corporate expenditures over $300,000. It is the only division which is specifically represented.

2) Formal Responsibilities

CSG's formal responsibilities have increased along with its position in the corporate hierarchy. These fall into two major areas, technical responsibilities and system scope.

a) Technical Responsibilities

With the advent of personal computers and online systems, the distinction between "computer" and "office equipment" has become increasingly blurred. A great deal of computerized equipment is now located in the user areas. As the volume of this equipment has expanded, company policies have been formulated to maintain control and prevent duplication of effort. Such policies assign the responsibility for the selection and approval of all such equipment to CSG. For example, the policy on word processing equipment states that the "... corporate policy is to centralize control for the acquisition, purchase, lease ... and upgrading of word processing systems ... to ensure that user needs are satisfied consistent with the future evolution, plans and objectives for MIS within (the corporation)."

CSG is responsible for "... providing the consulting and development resources to analyze, design, select, procure and implement" these systems and for the budgets involved. Users are responsible "... for the operation of word processing systems in accordance with guidelines established in recommendations by CSG." CSG has similar responsibilities in all areas of the microelectronic technology, effectively preventing users from automating their own departments without reference to CSG. Although technically they can suggest what equipment they'd like, a popular users joke goes like this: "You can ask for whatever you like, but it only comes in black."

Similar policies also limit the kinds of software users can purchase. Although users are now encouraged to buy packages and even do some programming, CSG maintains control over all important decisions. For example, users cannot purchase packages, develop their own systems, or obtain outside IS services without approval from CSG. Through these policies, CSG has clearly increased its ability to influence the direction of automation within user departments. Conversely, users have lost an important amount of control in determining how their departments should operate.

b) System Scope

CSG's traditional responsibilities for system development have also increased. Systems are getting bigger, costing more and affecting more user departments and jobs than ever before. For example, the new Customer Service System (CSS) will cost $100 million to develop and implement, and will affect how thousands of people do their jobs. Because this system is so important the company has decided that, if necessary, the company will change and not the system. While other systems were smaller than CSS, most systems studied had projected savings of several millions of dollars each. Thus, the system development process can have a considerable impact on the corporation's financial statement.

CSG also has considerable influence in determining where IS resources will be assigned. Although users participate in the priority committee determining the functions that get automated, CSG staffs chair and organize these meetings. They also provide the full-time staff for its work, and prepare and present suggested recommendations to the committee. Thus, CSG exercises the bulk of control over determining corporate priorities in systems development.

3) Dependence

Formal company policies that force users to use CSG services put users in a position of dependence on CSG. Because the demand for IS resources is strong, users say: "We need them, but they don't need us." As a result, CSG can command user compliance in systems development. Although CSG defines itself as a service to the user departments, most users agree that CSG does not act as a service. One concluded: "As it is now, instead of working for us, we're working for them."

In spite of massive frustration with CSG bureaucracy, user dependence is consistently enforced by the company's executive. Attempts to circumvent CSG are dealt with harshly, and most users feel it is "too risky" to try and "end run" around it. One senior user remarked, "When it comes to CSG everyone turns into wimps. They must be getting away with it at a high level. I've never seen anything like this happen before."

B. The Informal Relationship

While the formal user-IS relationship is defined by com-

pany policy, their informal relationship is based on what actually happens in systems work. Three indicators were examined: 1) informal responsibility; 2) control; and 3) expertise.

1) Informal Responsibility

In the last few years, the information systems group has strongly endorsed active user participation in systems decision making. New CSG methodologies now assign many formal responsibilities for determining what a system should look like to users. Contrary to what one would expect, the CSG staff strongly endorses this policy and believes it is "reasonable" and "sensible" for users to make all business-related decisions. Users, however, are not at all sure they want such responsibilities. "The users made a fuss when the policy (on user participation) came out because they were theoretically totally responsible for many things they couldn't do," one user said.

This apparent willingness of CSG to share responsibility — and even to force it on the users — at first appears incongruous, for it actually seems to increase the user group's formal power. However, attitudes within the group are revealed when their relative informal responsibility is assessed. "You can talk all you want about whose 'prime' (i.e., formally responsible), it's all really CSG's responsibility," bluntly stated a senior CSG manager. User managers strongly concurred. One explained: "CSG doesn't seriously believe anyone other than CSG is in charge." And another noted, "The user doesn't really have more responsibility now. He has more work but not more authority. CSG is still in charge."

It is clear that the IS group exercises considerably more informal responsibility in systems development than formal policies state. Most users felt that CSG wanted to exercise its influence informally because in the past CSG had been blamed for systems failures. "CSG now tries to spread the blame around. There's a real CYA (Cover Your Ass) attitude. This is why users were made 'prime' for the early phases of systems development. This is done by CSG just to be able to blame the users and say, 'You guys blew it because you didn't define your requirements properly.'" Thus, informal responsibilities can actually be a preferred means of exercising power because they reduce risk to CSG while still ensuring its influence.

Informal responsibility is exercised in several ways. In many cases, it takes the form of guidance or "hand-holding." In others, CSG They're telling the users what's good for them" one manager stated. An IS manager explained the situation's effect on the users this way: "During feasibility studies, the users are confused and the decisions (that are) made are over their heads. By the time they catch on, the piles have already been driven into the ground and the users are locked into a specific system design." IS staffs also use technical feasibility as a de facto veto of user decisions. For example, one user identified a response time requirement of two seconds — a decision for which she had responsibility — only to be told that it couldn't be done and that five second was the best she could ask for.

Through such informal means, CSG exercises considerably more influence on systems development than is formally recognized. Although users may win individual conflicts on which they are prepared to take a stand, CSG's informal influence is exercised in so many ways they lose daily on dozens of others.

2) Control

A much more subtle means of exercising power is through the environment which CSG establishes surrounding systems work. By creating a background of constraints which become increasingly palatable as they become more familiar, CSG can exercise power without being perceived as doing so.

Two examples illustrate how control operates. The information systems group controls how all systems development work is done in the company through imposing a variety of work techniques on the user, for example, structured analysis. These are supposed to improve the user-IS relationship by making systems development more effective and communications between the groups easier. Ironically, however, most of these techniques are regarded negatively by users.

One reason for this is that such techniques impose rational step-by-step methods of thinking onto the users. This may be an efficient means to develop a system, but in reality places constraints on how users think of their jobs. Decisions must be black and white; changes severely restricted. These methods take the users from the dynamic and relatively flexible world of business, and place them in one where actions are static and decisions concrete.

Another cause of resentment is the widespread perception that such techniques are a reflection of CSG's requirements. "You're really dancing to their tune," one user said. CSG managers strongly rejected this idea stating, "The users don't seem to understand that CSG is there to do a job according to standards. The techniques represent a common standard, not just a CSG standard."

Systems development techniques do impose the same standards on both user and IS staff. Yet, because they are conceived and developed by the information systems group, it is reasonable to expect that they unconsciously reflect its interests in the rules they impose. It is therefore not surprising that users find them to be much more onerous and constraining than do CSG staff. While 66 percent of CSG staff felt positively about systems development techniques, only 31 percent of users felt the same way.

A second example of control is CSG's policy of collocation which requires that a full-time user staff be assigned to a project before it can be started. Under this policy, users must

move into the CSG office area although they continue to report to their own management. Because it involved dislocation for users, it was surprising to find a strongly favorable attitude among them to this policy. Eighty percent felt positively toward this practice. A user's comments explained how collocation worked as an optimal form of constraint: "Collocation helped to change users' attitudes because it helped them to understand CSG more — its needs, its interests, its desires. It enabled users to accomplish objectives within the framework of the systems organization and its objectives."

While the policy of collocation is viewed favorably by both groups, it does cut junior managers off from their superiors both physically and mentally. This results in isolation of senior user management. While senior CSG managers are involved in detailed decision making, senior users appear to have abdicated their role in systems development. A senior CSG manager commented, "The lower level users are with us, but there is a greater gap as you go up. The management is not keen. Unless there is a major problem, they're not interested." This perceived "lack of commitment" by senior users gives CSG effective control over both the direction of computerization and a large number of user managers.

3) Expertise

The last area of the informal relationship to be explored was expertise. The imbalance between users and information systems staffs in expertise is often assumed to cause conflict because IS is considered to represent a "knowledge elite" within an organization, while users have few specialized skills. Indeed, there was a considerable discrepancy between the groups in systems development experience and skills. Sixty-one percent of users had had no previous experience in systems development whereas only 18 percent of CSG staff were in that position. However, rather than trying to protect its knowledge base, CSG was actively trying to train users in systems concepts and techniques. Seventy-eight percent of users had taken at least one systems development course and 94 percent of the information systems staff felt users needed more training.

A CSG senior manager explained why: "Even though experienced users are looking into your bailiwick, I'd rather have them because you can take on bigger challenges. If we can download enhancements and maintenance onto the users, we can do the big corporate and decision-support systems." This suggests that CSG's interests are better served by using its knowledge to further its impact and credibility in the company through others, than by using it as a protective mechanism, which would limit user access but which would limit CSG's productivity and influence in the company.

The differences between users and information systems staffs seem to be deeper than simply how well each can use systems development techniques. Comments from both groups reflect differences in values which each brings to the relationship as a result of their training and experience and how these often cause problems between them. Users value managerial skills such as being able to work with, supervise, and motivate people. Information systems staffs esteem their ability to analyze a problem intellectually, and to determine and implement effective solutions. Because CSG controls the work environment, user skills are less valued than are IS skills. "Users often lack credibility and (as a result), CSG starts second-guessing them, making unilateral decisions," remarked a senior CSG manager.

Problems in the relationship are caused not because of knowledge differences per se, but because of the one-sidedness in thought processes and values, and the implication that users must change in order to work with CSG. It is in this way that expertise acts as a constraining influence on users. "CSG people are generally technicians," a senior user stated. "I ordinarily wouldn't have to get down to such detail with other technical groups, but (with CSG) you have to look after yourself. This is NOT incompetence; it's a mind-set. If you work in such a rigid environment, you become that way, think that way ... it's like a priesthood."

C. Status Characteristics in the Relationship

Differences in the demographic characteristics of the two groups, for example, age, education, and sex, have commonly been considered important reasons for conflict between users and information systems. Certainly, the data revealed significant variations in this study. CSG staff are younger, better-educated and more likely to be male than are users (see Table 2). Yet, simply stating these differences does not suggest why they might be linked to hostile group attitudes. However, if these characteristics are interpreted in context — as indicators of relative social or organizational status — it can be seen how more inclusive contexts can affect the power positions of each group (see Figure 1).

Table 2
User and CSG Characteristics for Age, Education and Sex

	% Under 40	% with Univ. or College Education	% Male
Users	65.8% (73)	35.6% (73)	33.8% (71)
CSG	80.7% (88)	84.1% (88)	81.6% (87)
	(161)	(161)	(158)
	$X^2 = 4.61$	$X^2 = 34.23$	$X^2 = 35.30$
	sig. = .049	sig. = .000	sig. = .000

For example, education is a well-known indicator of socioeconomic status [52]. Because the IS group is better-educated than users, it has considerable social advantage over users, and this will tend to affect group relations in an organizational context. Similarly, CSG has a higher percentage of males compared with users. As males tend to be considered more powerful and as having higher status at a societal level than females, it would again appear that users are considerably less socially powerful than are IS staffs.

While relative youth in itself is not an indicator of organizational or social status, if the groups are compared controlling for level of management, it can be seen that more IS staffs than users have reached senior management positions at a relatively young age and with considerably less company experience (see Table 3). Age is therefore a factor in this relationship because it demonstrates the corporate status CSG has achieved in spite of its relative youth and inexperience.

Table 3
Percentage of User and CSG Groups Under 40 Years of Age, Controlling for Level of Management

	% Under 40		
	Junior Management	Senior Management	
Users	69.3% (62)	45.4% (11)	(73)
CSG	84.0% (75)	61.5% (13)	(88)
	(137)	(24)	(161)
	$X^2 = 4.15$	$X^2 = .640$	
	sig. = .041	sig. = .430	

ATTITUDES IN THE USER-INFORMATION SYSTEMS RELATIONSHIP

The second half of this study was designed to show how the groups' relative power is reflected in their attitudes towards each other. Three kinds of attitudes were examined. First, three indicators of the overall quality of the relationship were studied. Then, the research explored two different variables commonly perceived to be related to power, perceptions of threat and perceptions of competence, in order to produce a more complete understanding of how users and IS staffs feel about each other. Finally, the study looked at how variations of power in different contexts affected user and CSG attitudes.

A. Negative Attitudes

In order to discover the degree of non-specific hostility between the groups, respondents were asked to rate their attitudes to the other groups by agreeing or disagreeing with six statements of general group relations. The results of these six items are reported in Table 4. In addition, they were combined to form an overall index of negative attitudes. Table 4 shows that in every case, the user group felt more negatively toward CSG than CSG did toward users. Overall, the majority of users (58 percent) expressed generally negative feelings toward CSG, while a minority (31 percent) of CSG respondents felt the same way about users. These findings are especially interesting in light of the fact that it was difficult to elicit general negative feelings in interviews since such negative attitudes are frowned on in business.

Table 4
Six Indicators and One Cumulative Index for User and CSG Attitudes Toward Each Other

	% Negative			
	Lacks Trust in Others	Feels Uninformed by Others	Feels Misled by Other's Jargon	Lacks Confidence in Others
Users	54.8% (73)	64.4% (73)	23.3% (73)	54.8% (73)
CSG	40.2% (87)	40.2% (87)	5.7% (87)	49.4% (87)
	(160)	(160)	(160)	(160)
	$X^2 = 3.72$	$X^2 = 11.88$	$X^2 = 13.91$	$X^2 = .478$
	sig. = .15	sig. = .002	sig. = .001	sig. = .78

	% Negative		
	Avoids Other Group	Feels Poor Overall Relationship	Feels Negatively Overall
Users	28.6% (14)	43.8% (73)	57.6% (73)
CSG	15.1% (86)	23.0% (87)	30.7% (88)
	(100)	(160)	(161)
	$X^2 = 2.41$	$X^2 = 8.75$	$X^2 = 11.74$
	sig. = .299	sig = .012	sig. = .000

Nevertheless, all respondents assumed that a poor user-CSG relationship did in fact exist. Often, users and IS were described as having "poor communication" — a euphemism for the groups' general problems. A user document explains the problems this way: "Communication gaps exist, impacting at times on the quality of decisions and also creating a lack of confidence in making decisions because there may be data you're unaware of." Some users were more blunt. "There's still a perception at the working level that CSG will screw you and they are not trustworthy," one said. Another remarked, "I don't like its (CSG's) confrontation atmosphere and I don't like to get yelled at."

While users tend to view the problems as a matter of group relations, CSG staff are almost unanimous in perceiv-

ing it as an individual problem. They see it as stemming from the personalities of particular managers who are too technical or who lack empathy with the users. One noted: "X is not user-oriented, he feels superior and he feels that users don't know what they want and that they are ineffectual." This tendency to minimize the problem may be an unwillingness to admit its fundamental nature lies in issues broader than "personality problems."

As a second measure of negative group attitudes, users and CSG staff were asked to rate their frustration with 10 common conditions which are often given as causes of problems between the information systems and the user groups. Half of the conditions involved situations which limited user access to IS knowledge or resources, or which otherwise acted as a constraint on the user group. The other five involved situations which limited or constrained CSG in a similar fashion.

Table 5
Indicators of User and CSG Frustration with Constraints Imposed by the Other Group

User Frustration with CSG-Imposed Constraints

	% Very Frustrated		
Access to IS Manpower	33.8% (65)	Cuts in System Functions	56.9% (65)
Technical Terminology	41.4% (70)	CSG Red Tape	80.9% (68)
IS Staff Changes	48.5% (68)	Overall Frustration	74.0% (73)

CSG Frustration with User-Imposed Constraints

	% Very Frustrated		
Access to User Manpower	32.2% (87)	Changes in User Requirements	45.9% (85)
Business Terminology	17.2% (87)	Unrealistic User Expectations	48.8% (86)
User Staff Changes	26.6% (87)	Overall Frustration	50.0% (88)

When these results were combined it could be seen that users experienced considerably more frustration (74 percent) with CSG-imposed constraints than CSG did with user-imposed constraints (50 percent) (see Table 5). These findings quantify the complaints the groups made about each other during interviews. These data again suggest the one-sidedness of the user-IS relationship and illustrate the problems that it causes.

Finally, attitudes toward methods of doing work were assessed. It has been noted that users were considerably (66 percent) more negative regarding these than CSG staff (31 percent). However, to illustrate how such techniques work as constraints, attitudes toward methods of work were analyzed, controlling for how well they were understood.

Table 6
A. Proportion of User and CSG Groups Negative to Methodology, Controlling for Level of Understanding

	% Negative			
	Good Understanding	Average Understanding	Poor Understanding	
Users	48.6% (35)	77.3% (22)	100.0% (6)	(63)
CSG	23.8% (63)	35.7% (14)	—— (0)	(77)
	(98)	(36)	(6)	(140)
	$X^2 = 6.27$	$X^2 = 6.21$	X^2 not applic.	
	sig. = .012	sig. = .012		

B. Proportion of User and CSG Groups Negative to Structured Analysis, Controlling for Level of Understanding

	% Negative			
	Good Understanding	Average Understanding	Poor Understanding	
Users	37.0% (27)	68.4% (19)	100.0% (3)	(49)
CSG	11.3% (62)	12.5% (8)	100.0% (1)	(71)
	(89)	(27)	(4)	(120)
	$X^2 = 8.06$	$X^2 = 7.05$	X^2 not applic.	
	sig. = .004	sig. = .007		

Table 6 shows that for both groups, negative attitudes decrease as familiarity with particular techniques increase. However, user and IS attitudes change at different rates and within context of the fact that users always feel more negatively toward those constraints than does CSG. It appears that these methods act as a constraint for both groups, although less so for CSG because they are more consistent with the information systems way of thinking about and approaching work. As new methods become more familiar, there is less awareness of constraints imposed and attitudes become more positive.

B. Feelings of Being Threatened

The groups were also asked to evaluate how much of a

threat one group represented to the other. The response, based on statements about the influence, size, and amount of control of the other group and the amount of access that should be available to the respondent's knowledge and information, was again strongly one-sided.

Table 7
Five Indicators and One Cumulative Index for User and CSG Perceptions of Being Threatened

	% Feeling Threatened		
	Other's Influence a Threat	Size a Threat/ Is Threatened	Control a Threat/ is Threatened
Users	45.1% (71)	52.1% (71)	54.3% (70)
CSG	19.5% (87)	14.0% (86)	17.2% (87)
	(158)	(157)	(157)
	$X^2 = 24.98$	$X^2 = 26.38$	$X^2 = 28.01$
	sig. = .000	sig. = .000	sig. = .000

	% Feeling Threatened		
	Other's Knowledge a Threat	Other's Access to Line a Threat	Overall Perception of Threat
Users	31.0% (71)	61.1% (72)	63.0% (71)
CSG	5.8% (86)	45.3% (86)	30.7% (87)
	(157)	(158)	(158)
	$X^2 = 28.97$	$X^2 = 4.45$	$X^2 = 16.83$
	sig. = .000	sig. = .010	sig. = .000

Table 7 shows that on every indicator, users felt substantially more threatened than CSG. Using combined scores overall, 63 percent of users felt threatened by the IS group, whereas only 31 percent of CSG staff perceived a user threat.

Given these findings, it is not surprising that CSG was more sensitive to the subject of user-information systems relations than were users. Sixty-one percent of CSG staff perceived that users felt negatively toward them. Only 41 percent of users considered that CSG felt equally negative. While many CSG managers emphasized that their department was working hard to correct poor user perceptions, most users felt that the changes made by CSG were too little and too late.

C. Perceptions of Competence

Finally, the two groups were asked to rate each others' competence,. Kanter [26] has noted that competence on the job is often overlooked as an aspect of power in that it enables individuals or groups to get things done. This suggested that perceptions of another's competence might be linked to perceptions of power. Table 8 confirms that CSG staff find users relatively incompetent, while most users find IS staffs to be quite competent. This finding was supported by interviews. Users rarely suggested that IS staffs were not capable; they were presumed to know how to do their job even if they didn't always do it as quickly or as completely as the users would have liked.

Table 8
Indicators of User and CSG Perception of the Other's Competence

	% Feeling Others Incompetent			
	Other's Understanding of Job	Other's Suitability for Job	Other's Decision-Making in Job	Other's Overall Incompetence
Users' Rating of CSG:	30.9% (68)	40.0% (70)	38.6% (70)	39.8% (73)
CSG's Rating of Users:	80.5% (87)	79.3% (87)	51.7% (87)	71.6% (88)
	(155)	(157)	(157)	(161)
	$X^2 = 38.69$	$X^2 = 25.38$	$X^2 = 2.70$	$X^2 = 17.93$
	sig. = .000	sig. = .000	sig. = .100	sig. = .000

More frequently, users felt the IS group didn't respect the users' competence. CSG comments tended to support this: "Users are always changing their minds," one said. "Lots of them don't know their own system," remarked another. "If CSG got out to the line, we could do a better job," noted a third. Such data tend to confirm the relative power positions of the two groups and demonstrate how attitudes and perceptions are affected by power.

D. The Social and Individual Contexts of the User-IS Relationship

While two organizational groups may occupy dominant-subordinate power positions, certain individuals within either group may exercise more or less power than other individuals. Similarly, members of both groups can belong to more inclusive social groups. To illustrate how power works in different contexts of the user-information systems relationship, attitudes were analyzed while controlling for social and individual variables of power.

It has been noted above that the IS group overall was more socially powerful than the users. Table 9 shows that if social variables of power such as education and sex are controlled, those in the higher status group (the males and the well-educated) tend to feel more negatively than those in the lower status group (the females and the less well-educated). The

pattern of user-CSG negativity persists. However, it is clear that the social groups to which both users and IS belong, being more inclusive contexts, do affect user-IS attitudes in the same way. For instance, males are more negative than females.

Table 9
Individual User and CSG Attitudes, Controlling for Social Variables of Power

	% Negative			
	High Education*	Low Education	Male	Female
Users	61.5% (26)	55.3% (47)	66.7% (24)	51.1% (47)
CSG	32.4% (74)	21.4% (14)	31.0% (71)	25.0% (16)
	(100)	(61)	(95)	(63)
	$X^2 = 6.54$	$X^2 = 4.96$	$X^2 = 9.51$	$X^2 = 3.28$
	sig. = .010	sig. = .025	sig. = .002	sig. = .070

*those with high education had a diploma or degree from a post-secondary institution.

A completely different relationship between power and attitudes is observed when individual variables of power are controlled. In Table 10, it can be seen that there is an inverse relationship between power and negativity for the user and IS groups. Users with more power (those in senior management or feeling more personal control of their work) feel more negatively toward information systems while CSG staff with more power feel less negatively toward users. These findings must be considered in light of the overall user-IS group relationship.

Table 10
Individual User and CSG Attitudes, Controlling for Individual Variables of Power

	% Negative			
	Junior Management	Senior Management	Lacks Control	Has Control
Users	54.8% (62)	72.7% (11)	47.9% (48)	73.9% (23)
CSG	33.3% (75)	15.4% (11)	34.8% (46)	21.1% (84)
	(137)	(22)	(94)	(107)
	$X^2 = 6.40$	$X^2 = 8.06$	$X^2 = 1.66$	$X^2 = 16.55$
	sig. = .011	sig. = .004	sig. = .196	sig. = .000

Members of the more powerful group (CSG), as they gain position and influence, become more confident and secure and therefore more magnanimous toward members of the less powerful group. Conversely, users who become more personally powerful have more to lose in the relationship. Senior managers, for example, are in a much better position to see the impact of information systems decisions on their departments and on the company and are thus more likely to be sensitive to the loss of control they imply for users. Users who have more control over their work, also have more to lose than users who feel they lack control.

CONCLUSIONS

This study has shown that in every area investigated, the information systems group is in a powerful position relative to users. IS not only has the formal authority to control systems work and to limit access to its resources, but it also has considerable informal influence. Its technical expertise enables it to create the rules which underlie systems and to establish constraints which limit the possible courses of action open to users.

As well, the IS group displays higher social and corporate status characteristics which place users at a social and organizational disadvantage in the relationship. User and IS attitudes toward each other strongly reflect these power positions. On every indicator selected, user attitudes to the IS group were consistently more negative than IS attitudes toward users. Users also tended to feel more threatened by IS. The one-sidedness of the relationship further demonstrates the users' strong perceptions of the IS group's competence and IS's feelings that users are incompetent.

The basic hypothesis that the groups' attitudes toward each other reflect their relative positions of power in the organization, was confirmed when social and individual contexts of power were assessed. When variables relating to more inclusive social contexts of power were controlled — for example, education and gender groups — user and IS attitudes varied in the same way. This reflects the influence of the larger social groups to which they both belong. However, when variables relating to less inclusive individual contexts of power were controlled — for example, levels of management and personal control — user and IS attitudes varied inversely. This finding shows how group relations of power, as well as individual positions of power, can affect individual attitudes and illustrates clearly how levels of analysis are linked.

The results of one study in one organization cannot be considered definitive since the methodology used does not allow generalization beyond one company. More research in this field is clearly necessary. Factors affecting the balance of power between users and IS, such as decentralization and end user computing, need to be investigated further. However, these findings should not be considered anomalous. The organization, tools, techniques and philosophies of systems development used at this company are common to many

organizations. Thus, the many features of the user-IS relationship which appear to be conditioned by them represent an industry norm, not just the approach of one organization.

The findings suggest that the more common explanations of the reasons behind user-IS problems may need to be reinterpreted. Communication gaps, personality clashes, or misalignment of goals may be superficial manifestations of an underlying power relationship rather than causes of the problem. If their unequal access to power is a common cause of user-IS problems, attempts to identify solutions will have little effect on the basic relationship unless the balance of power between the groups is somehow altered. A similar conclusion was also reached by Robey and Farrow [47] in their study of user participation in systems development. They found that only if users were able to exert influence in the systems development process was participation effective in reducing conflict.

Typically, practical solutions to this problem have focused on specific problems in specific contexts and have ignored the group relationship itself. IS staffs especially, have tended to look at good individual and project relations, and then wondered why users' attitudes were still so negative. These findings suggest that if the problem of poor user-IS relationships to be adequately addressed, it must be treated as a problem between organizational groups, since this relationship affects all other contexts in which users and IS people interact.

This study also discovered clear-cut differences of interest in the non-executive management group of the company. It may be that this group no longer represents the homogeneity of values that it once did. The relative powerlessness of user managers in the process of automation and the relative isolation of senior users from this process, may be indicative of further changes to come. Other studies have suggested that automation will lead to reduced numbers of middle managers [43]. Whether or not this is true, it is clear that at the company studied middle management's influence was gradually disappearing and, along with it, traditional management values.

It must be reemphasized that the power relationships talked of here are not the result of IS run amok" or a massive power grab by the group. Instead, they tend to support many of the ongoing trends in business toward centralization of control and bureaucratization through the use of technocratic rationality observed by many scholars [31,52]. This is also the conclusion reached by Kraemer and Danziger [11] when they suggested that those in control of computing decisions acted in the interest of those running the organization, i.e., top management. Senior executives by and large support IS's increased influence because it enables the ongoing rationalization of the organization necessary to maintain and improve profits. At this level, the changing user-IS relationship must be said to be serving ComCorp's interests since it is a profitable organization.

These changes in user-IS relations are occurring for the most part unheralded and unrecognized because the information systems power is exerted so ephemerally. In the shifting nature of modern organizations, specific causes of concern between users and information systems groups change continually. Informal procedures, based on informal responsibility and expertise, may become codified in formal policies and instruments of formal control. Similarly, as formal policies come to be taken for granted as "the rules of the game," their enforcement no longer becomes necessary. At this point, control has become a way of life and thus, self-regulating.

As formal control becomes less necessary, informal power becomes the operative mode of power in any particular area. When this occurs, it is sometimes difficult at first to see how such practices as increased user computing or greater user participation in systems development can actually be as effective in limiting user choice as more formal policies. It is only when one looks beyond the specific causes of complaint in the relationship to the set of power relations behind them that the full implications of power in this relationship can be understood.

The informal dimensions of power are especially important since they are used to establish information systems control without the appearance of it being "power hungry." The effectiveness of this mode of power suggests that it may ultimately have a more long-lasting influence on the relationship than its formal dimensions. It has been suggested that with the spread of end-user computing, the power of the corporate information systems group will decline [37]. This may well be the case.

The question is, however, will the codification of human thought processes and the zealous application of technology to human problems — as typified by the information systems approach to automation of the organization — have left us all to be participants in Weber's nightmare where "...men will one day be like peasants, quiescent and powerless, while a purely technically good, i.e., rational, administration decides the direction of their affairs" [31]. Certainly, as long as user managers remain relatively powerless, a more balanced approach to automation can never take place.

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APPENDIX

USER-INFORMATION SYSTEMS RELATIONS SURVEY EXCERPTS

This appendix contains excerpts of the attitudinal questions used in this study.

Part A

(This section was answered by all respondents)

1. Using the scale below, indicate how much you agree or disagree with the following statements.

strongly disagree	disagree	don't know	agree	strongly agree
1	2	3	4	5

___ I feel I understand quite well what's expected of me in my current assignment.
___ In my current assignment, I don't always feel I have the control over my work that I should have.
___ Most important decisions affecting my job are made for me by someone else.
___ My current superior is very effective in helping me solve any problems I have on the job.
___ I feel I'm usually able to get the things I want done.
___ I feel I need to learn more before I can do my job in systems planning/development as well as I'd like.

2. The following are some common conditions that often cause concern in user-information systems relationships. Using the scale provided, indicate how great a problem you find each in your current assignment.

doesn't bother me at all				extremely frustrating
1	2	3	4	5

___ limited CSG manpower
___ limited user involvement
___ technical terminology
___ business terminology
___ CSG "red tape"
___ changes in CSG personnel
___ changes in User personnel
___ cuts in system functions
___ changes in user requirements
___ unrealistic user expectations

Part B

(This section consisted of separate supplements for users and information systems personnel. Respondents were asked to respond to identical or very similar attitudinal statements about the other group. These have been combined for this Appendix, using the following scale.)

strongly disagree	disagree	don't know	agree	strongly agree
1	2	3	4	5

1. The following statements describe different aspects of the working relationship between CSG and users. For each, indicate how much you agree or disagree that it represents CSG's (user's) feelings about users (CSG) in your group.

___ CSG (users) trust users (CSG).
___ Users (CSG people) keep CSG (users) informed about what's going on.
___ Users (CSG people) often use jargon to prevent CSG (users) from understanding a given situation.
___ CSG people (users) have confidence in decisions made by users (CSG people).
___ CSG people (users) avoid dealing with users(CSG people) where ever possible.
___ The overall CSG-user relationship is poor.

2. For each of the following, indicate how much you agree or disagree that it accurately describes the users (CSG people) with whom you work.

___ Users (CSG people) usually don't understand what's expected of them in the systems development process.
___ Most users (CSG people) are well-suited to the kinds of work involved in systems development/systems planning.
___ Most users (CSG people) are not up-to-date on line user functions (technically).
___ Most users (CSG people) have a long-term corporate perspective on their work.
___ Users (CSG people) often allow CSG (users) to make important decisions for them regarding the development or planning of systems because they're not knowledgeable of the issues involved.

3. Indicate how much you agree or disagree with each of the following statements.

___ Users (CSG people) feel that CSG (users) has too much influence in the company (systems planning/systems development).
___ CSG people (users) should have to take more systems (business) education courses.
___ CSG people (users) should be able to speak directly to line users (systems operations personnel) if they wish.
___ User groups (CSG) are trying hard to improve the relationship between CSG and users.

4. Using the scale below, indicate how positively or negatively you think users (CSG people) feel toward CSG (users).

very negatively				very positively
1	2	3	4	5

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