THE ROLE OF IMAGE AND LANGUAGE IN FORMAL HIERARCHICAL COMMUNICATION IN ORGANIZATIONS

by

P. Robert Duimering

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Abstract

In formal organizational communications, it is common for individuals, departments and organizations to report primarily positive information about their activities, while systematically downplaying or covering up negative information. While this simple phenomenon has been noted by researchers, it has never been adequately explained and its profound implications for a wide range of organizational processes have gone largely unexplored. Instead, most organizational theories are based on implicit assumptions about the accuracy, quality, representativeness, and reliability of information that are rarely met in practice. Where biased information processing in organizations has been considered by researchers, it has been typically attributed to individual motives or political maneuvering. This research considers the phenomenon in terms of structural factors inherent in the design of modern organizations, by examining how language is used within organizational structures to represent events and actions in a biased manner for communication purposes.

A theoretical framework for explaining the phenomenon is developed, which considers the interplay of several elements: formal structure in organizations, responsibility, legitimate authority, event complexity, constrained formal communication channels, language, image, as well as cognitive mechanisms of abstraction, selection and categorization. All organizations and organizational units elaborate formal structures which present simple and inherently positive images about their internal ongoings for external audiences or publics. Individuals and units are assigned formal responsibilities by their legitimate authorities within the structure, creating a situation in which the simple and positive images of formal structures must be confirmed and maintained through the generation of formal information by individuals and units. Management control systems are supposed to ensure that unit actions are consistent with their responsibilities.

However, because it is impossible to communicate every detail of a unit's activities, a great deal of information reduction must occur as information moves up the management hierarchy during the reporting process. Information is typically reduced by using language-based reports (or surrogates for language, such as statistics, charts, etc.), to represent formally the ongoings and events within organizational units. Flexibility in the relationship between events and their representations in language changes the nature of the hierarchical control process. Formal structures and formal responsibilities define a system

of ambiguous language categories that can be operationalized in a wide variety of ways. Similarly, events and actions are complex, and can be "packaged" or "labeled" to best reflect formal output requirements. This "many to many" relationship between events and language provides opportunities for bias and selectivity to enter formal communication processes. Formal information can be reported in a manner that creates and maintains the best possible image for the unit—to demonstrate formally that the unit is doing as it is supposed to be doing. The result is that management control systems primarily constrain the formal informational outputs of organizational units, rather than actions directly. The degree to which unit actions are also constrained depends on the degree of "representational transparency"—the degree of correspondence between the actions and their representations in formal information.

Overall, formal hierarchical communication in organizations is viewed as a collective process of constructing and maintaining an elaborate organizational image, by constraining the informational outputs of organizational units. The framework considers formal hierarchical communications as a "pseudo-scientific" process, in which legitimate formal structures act as biased hypotheses, that are operationalized in language and actions by organizational members. These structural hypotheses are then selectively measured and reported on through a positively biased measurement system, which always tends towards hypothesis confirmation. Through flexibilities available in language, organizational members generate information that tends to confirm for higher management that they are doing what they are supposed to be doing.

An in-depth case study, conducted in a high technology industrial organization over a period of about one year, was used to empirically examine aspects of the framework. The case results provide a wide range of evidence in support of the theory and demonstrate at several different levels of analysis how the formal structure placed constraints on communication and language use within the organization studied.

Practical and theoretical implications of the theory and empirical findings are examined. Potential directions for future research are discussed.

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Dedication

To Caroline, whose love and encouragement supports me in everything I do.

And to Lauren and Kristen. See, I told you I'd finish school before you!

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Chapter 1

1. Introduction

A large manufacturing firm recently instituted a corporate program for implementing a team-based management approach throughout its operations. A wide variety of activities took place under the umbrella of this team program. Employees were trained in team concepts; a team facilitator was appointed and given an office in the middle of the factory; meetings were held among factory employee "teams"; new performance measurements were instituted for managers; and several teams developed process improvement suggestions which they formally presented to higher management. Throughout the duration of the program, university researchers conducted a study of the team implementation. Two research reports were generated. The first report described in detail the workings of one team which was generally regarded as being successful and exemplary of what the program was trying to achieve. The team had been implemented as a self-managing work group, prior to the "rolling in" of the official corporate team program, mainly through the efforts of its enthusiastic manager. Before the team program began, the group had received very little recognition by others in the factory, and was more or less tolerated along with its over-zealous manager. With the new program giving her group some legitimacy within the organization, the manager began to refer to them as a "team" and soon earned some formal recognition for her efforts. The researcher's report reflected the positive nature of the team's activities, and documented many of the reasons for the team's success. The second report described the implementation of the team program in general within the rest of the factory. It reported a variety of implementation problems and concluded that the program as a whole, had more or less failed to accomplish its objectives, had resulted in a great deal of time spent in meetings with little to show for it, and had not been supported by upper management through appropriate policy changes.

The first report was widely circulated by management. Several people associated with the team program were given promotions, including the team facilitator who was given a factory management position, and the university researchers whose contract was renewed. Team members were sent to conferences to make presentations about their team. The Vice-President of Human Relations (whose department initiated the team program) arranged for a great deal of publicity for the successful team, including visits by executives

from within the corporation and from other firms. Even a delegation of Russian diplomats dropped by to witness the team in action. On the evidence of the first report, the team program was generally regarded by corporate management as highly successful. The second report was carefully filed away by local management as if it had never been written. Informally, some rumours circulated that there had been some problems with the team program, but these were soon forgotten. By the time the second report was written, the corporation was beginning to "roll out" the team program in favour of a new program which emphasized "continuous improvement" and "business process re-engineering." The team facilitation office was dismantled and removed. After about a year, an organizational "re-engineering" project resulted in the successful team of the first report being split apart, with its departmental activities and members divided among two different divisions.

Why are organizations and the individuals within them, so interested in generating positive information about their activities, while suppressing negative information? How do organizations and their members select from among all the data available when they wish to describe or report on what they are doing? Do they sample from the situation in a representative manner as a careful scientist might, or in a more biased manner as suggested by the above scenario? What sorts of organizational behaviours result from the establishment of formally recognized programs, such as the above team program? What role do "buzzwords" like "team" or "re-engineering," play in the functioning of organizations? Why do programs and buzzwords change so frequently in large organizations? How are organizational actions and the language used to describe them, affected by such programs and buzzwords? How are language and other means of representation (such as statistics, charts, diagrams, etc.) used by organizational members to document and present a positive image of their actions and accomplishments? How do such images affect organizational communication and information processing? What are the implications for managerial control if information processing within organizations is inherently biased to create positive impressions, as suggested in the situation described above?

The literature on organizations has very little to offer, either theoretically or empirically, to address these types of questions. Most of the literature implicitly assumes that the information given by organizational members is reasonably representative of the situations they are describing. While concepts such as "bounded rationality" (March and Simon, 1958) are generally accepted, the implications of such concepts have not been worked out for many everyday organizational situations. The process of "impression management" (Goffman, 1959) has been accepted as a given in much sociological research,

but has only recently received some attention by organizational theorists. Despite the pervasive use of buzzwords within organizations, management researchers have been virtually silent when it comes to analyzing theoretically the role of buzzwords in organizations. For instance, how is it that essentially the same activity can be "repackaged" to fit different buzzwords?

Besides buzzwords, very little work has been devoted to the subject of organizational language use in general. For instance, while the role of language has received some attention by researchers of organizational culture, they have generally focused on a view of culture as a system of shared meanings or interpretations held by organizational members—one that is more or less stable over time (or at least considerably more stable than the dynamic behaviour of buzzwords and programs noted in the above scenario). In such a context, language plays the role of a medium through which shared meanings develop as a results of member interaction. The role of language as a mechanism for presenting realistic or unrealistic images of one's self and one's actions to others inside or outside of the organization has not been well explored.

The objective of this dissertation research is to investigate the role of images and language in formal hierarchical communication and control settings in organizations. In formal organizational communications, it is common for individuals, departments and organizations to primarily report positive information about their activities, while systematically downplaying or covering up negative information. While this simple phenomenon of "positive reporting" has been noted by researchers, it has never been adequately explained and its profound implications for a wide range of organizational processes have gone largely unexplored. Instead, most organizational theories are based on implicit assumptions about the accuracy, quality, representativeness, and reliability of information that are rarely met in practice. Where biased information processing in organizations has been considered by researchers, it has typically been attributed to individual motives or political maneuvering. This research considers the phenomenon in terms of structural factors inherent in the design of organizations, by examining how images and language are used within organizational structures to systematically represent events and actions in a biased manner for communication purposes. This work will, therefore, contribute to a better understanding of the role of such systematic communication bias and examine some of the implications for organizational theory and practice.

The dissertation consists of two major areas of work: an extensive theoretical development and an in-depth case study conducted over a period of about a year, within a unit of a high technology manufacturing organization.

The dissertation is organized as follows: Chapter 2 will summarize some of the literature having a bearing on this problem, to examine how the idea of "positive reporting" in formal hierarchical communication has been conceptualized in past research and to identify some additional ideas upon which this dissertation will build, to develop an alternative theory of the phenomenon. In Chapter 3, a detailed theoretical framework will be developed to explain in a new way the workings of formal hierarchical communication in organizations, with particular attention to the idea of "positive reporting." Chapter 4 will introduce the case study of the "Staging Organization," by providing an overview of the case situation and outlining key events in the organization's history, since its conception until its official closing. Chapter 4 will also provide a general description of the research methodology used to conduct the case study. Chapter 5 will provide an in-depth analysis of a wide variety of case data, using a mix of qualitative/interpretative methods and quantitative methods to examine the case results in relation to the theoretical framework. Chapter 6 provides an overview of the case findings in relation to the theory, and discusses issues related to the methodological limitations of the study and the generalizability of the results. Finally, Chapter 7 identifies the primary contributions of this dissertation, examines some of the implications of the work for organizational theory and practice, and identifies areas for future research.

Chapter 2

2. Review of Background Literature

The general objective of this research is to explore the role of image and language in formal hierarchical organizational communications. As such, the research will touch upon some of the most basic foundations of organizational and management theory. In one way or another, virtually all organizational and management processes rely on human communications and language. Given this potential breadth, it need hardly be stated that an exhaustive survey of all literature bearing upon the topics of language, communications, or image would be out of the question. The intention of this section, therefore, is not to summarize a wide range of disconnected theories or research findings and state their relevance or irrelevance to the current topic. Rather, the approach will be to draw on particular contributions that have improved our theoretical understanding and have proven useful in giving structure to the research problem. In Chapter 3, additional areas of literature will be drawn upon as required for the development of the theoretical framework. Since most of the previous research on "positive reporting" in the context of hierarchical organizational communication has cast the phenomenon in terms of "distortion," I will begin with a summary of research on the role of distortion in hierarchical communication.

2.1 Distortion in Hierarchical Organizational Communication

There has been a great deal of research on hierarchical communications in organizations, particularly focusing on various aspects of superior-subordinate communications. This research has been reviewed by Jablin (1979; 1985), Glauser (1984), Dansereau and Markham (1987) and Jablin and Krone (1994), and has also been included in general reviews of organizational communication by Guetzkow (1965) and Porter and Roberts (1976) among others. Consequently it will not be documented here in detail. Some of the topics covered by this research include analyses of the frequency of upward versus downward communication, perceptions of communication openness or receptivity of superiors in relation to subordinate job satisfaction, communication feedback in relation to subordinate job satisfaction and performance, differences in the degree of understanding of certain issues between superiors and subordinates, and various personal characteristics of superiors and subordinates in relation to communication effectiveness.

In terms of the present study, several researchers of superior-subordinate communication have considered upward distortion of communications by subordinates, where distortion is considered to be the process of modifying messages transmitted to receivers (Campbell, 1958). For instance, Robert and O'Reilly (1974) found that subordinates are less reluctant to communicate information to their superiors that is positive or favourable than negative or unfavourable. They described four types of distortion: i) gate keeping, where not all of the information received is passed upward, ii) summarization, involving a change in the emphasis given to different parts of the message, iii) withholding of information, and iv) general distortion, which involves actively changing the nature of the information transmitted. As for explanations of communication distortion, the empirical research is limited and generally inconclusive. Jablin and Krone (1994) report that ". . . numerous variables have been found to moderate the occurrence of upward distortion, including subordinates' mobility aspirations, ascendancy and security needs, trust in superiors, gender, and motivation" (p. 633), but only trust and mobility aspirations have shown repeatability across different studies. As examples, a study by Read (1966) showed that the accuracy of upward communications was negatively correlated with subordinates upward "mobility aspirations" and positively correlated with subordinates' trust of their superiors. Roberts and O'Reilly (1974) also found that trust of superiors was related to distortion-free communication, but failed to find any relationship with mobility aspirations. Earlier studies of communication in experimentally created hierarchies by Kelley (1951), Cohen (1958) and a study of laboratory communications by Mellinger (1956) also found relationships between information distortion, trust and upward mobility aspirations. Cohen (1958) found for instance, that if an individual of higher status has power over the advancement of persons of lower ranks, those of lower status will omit criticisms from their communications with those of higher status. More recent research by Fulk and Mani (1986) has suggested that upward communication distortion is also related to downward distortion. That is, subordinate distortion or withholding of information was found to be related to their perceptions of superiors withholding information.

Beyond the limited empirical evidence, a number of organizational writers have commented on the existence of distortion in hierarchical communication and attempted to provide explanations for the phenomenon. Hoslett (1951) suggested that power differences inherent in the superior-subordinate relationship was a major barrier to communication. Leavitt (1964) has suggested that every job implicitly amounts to two jobs: the actual job and the "job" of pleasing the superior, such that information must be distorted and selectively reported in order to please the boss. Katz and Kahn (1978) have

suggested that upward communication is inhibited due to the fact that information fed up the line is often utilized for control purposes, and also noted that "full and objective reporting is difficult regardless of the organizational situation" since "no individual is an objective observer of his or her own performance and problems" (p. 447). While they give very little elaboration, Katz and Kahn are explicit in suggesting that organizational factors are the cause of distortion rather than individual characteristics: "it is not a matter of changing the communication habits of individuals, but of changing the organizational conditions responsible for them" (p. 447). On the other hand, Porter, Allen and Angle (1981) ignored the organizational context in their model of upward "political" influence attempts, which explains the process in terms of individual self-interest. March and Simon (1958) have discussed the idea of "cognitive limits on rationality," and argue that information reduction and summarization must occur as it moves up the hierarchical ranks to avoid overloading superiors with information (also Miller, 1956). They labeled this process "uncertainty absorption" and noted the possibility of distortion, since superiors typically can not test or validate the summary information given to them by their subordinates, forcing them to take it at face value. Thus, constraints in hierarchical communication channels necessitate information reduction, which in turn creates opportunities for bias and distortion to enter the communication process.

The existing empirical research on distortion in superior-subordinate communications suffers from several weaknesses. First, distortion has been essentially examined in terms of individual level variables (trust, mobility aspirations, etc.) and has largely ignored aspects of the organizational context that may force, encourage or demand systematic communication distortion on the part of individuals. These sorts of explanations are equivalent to trying to explain the on-court behaviour of basketball players by examining the individual characteristics of different players. While individual differences may account for varying degrees of success at the game, they do not provide an explanation of the rules of the game itself, in which all players (good or bad) participate. A better approach to understanding the behaviour of basketball players would be to start by trying to understand the rules of the game they are playing.

As an example, a recent study by Abrahamson and Parks (1994) examined the concealment of negative information about company profitability by corporate officers from an "agency theory perspective." Their explanation of the phenomenon was that officers withheld information due to a motive of economic self-interest (i.e., an individual explanation), and as evidence for this explanation, the researchers showed that officers systematically sold their privately owned company stocks, just prior to the release of

negative information about poor profits. However, this explanation ignores several characteristics of the organizational situation in which corporate officers work (i.e., the rules of the game), and inappropriately ties two actions together based on a correlation between stock selling and information withholding behaviours. First, evidence of selling stocks prior to the release of negative information merely suggests that corporate officers know that the release of negative profit information is likely to trigger a drop in stock prices. Thus, a theory of agent self-interest does indeed provide a plausible explanation for the selling of stocks prior to the release of negative information. However, this has nothing directly to do with the act of withholding information. Typically, corporate officers are formally responsible to the shareholders for the maintenance of high stock prices. Thus, an implicit aspect of any corporate officer's job is the requirement to do what is necessary (within legal limits) to maintain stock prices. Since negative profit information is well known to trigger stock price reductions, the release of such information before it is absolutely necessary, would be a violation of any corporate officer's implicit job responsibilities. Thus, the withholding of negative information about company profits is really just part the job for corporate officers and has nothing directly to do with the individual characteristics or motives of particular officers.

The second problem with the existing research is that it has not dealt adequately with multiple levels of analysis and multiple interaction "frames" (Goffman, 1974), which complicate the nature of superior-subordinate interactions. While it may be convenient for researchers to collect communications data in the context of simple superior-subordinate dyads, the communications and interactions that takes place within such dyads are influenced by a wide variety of other patterns of interaction. Even within such dyads, their are many subtle forms of communication that complicate the picture. For instance, a superior and subordinate may informally agree to formally report an event in such a way that creates distorted impressions of the event, even though informally both understand the nature of the formal distortion. The distinction or relationship between formal and informal communications is never elaborated and rarely even commented on in the existing work on hierarchical communication. Dansereau and Markham (1987) have recommended four levels of analysis for studying superior-subordinate communications (i.e., person, dyads, groups, collectivities) and the consideration of four different "modes" of communication (i.e., personal, exchange, leadership, supervision) as way of beginning to deal with the interaction complexity, but provide no evidence of actual research which adopts this scheme.

Finally perhaps the most fundamental drawback of the existing research on "positive reporting" is that it has almost entirely ignored the role of language in hierarchical communications. To frame the problem in terms of "information distortion" presumes that information is "pre-existing" within organizations, and ignores how people use language in the process of "creating information" in the first place (e.g., Van Maanen, 1995a). Information does not just "exist out there" in organizations, waiting to be passed up the ranks, either as is or distorted, as the subordinate sees fit. People interpret ongoings and events around them and use language to label and define these events. This interpretation and labeling process itself provides opportunities for distortion, bias, or selectivity to enter the communication process, as later discussions will elaborate.

2.2 Formal Structure and Hierarchical Communication

The research relating hierarchical communication to formal organizational structure has been extremely limited, as reviews by Jablin (1987), and Glauser (1984) have noted. At best, the work has demonstrated that certain structural variables (e.g., organizational size, number of hierarchical levels, position within the hierarchy, etc.) may influence the frequency or volume of hierarchical communications—tentative results of little direct relevance to this dissertation research. More relevant is some preliminary theoretical work by McPhee (1985), which describes formal structure as "explicit, authoritative meta-communication, communication about the process of communication" (p. 162), suggesting that formal structures impose constraints on organizational communication processes. Also, in reference to work by Giddens (1982), McPhee points out that bureaucratic structures designed to control behaviour always leave subordinates a certain amount of room for maneuvering. That is, formal structures ". . . allow employees many opportunities for creating bargaining power relative to the organization and a 'space of control' over their own activities—a 'back region' in Goffman's sense [see below], involving the strategic counter-manipulation of the media of surveillance. . ." (McPhee, 1985, p. 168). This creates, in Giddens' (1982) term, a "dialectic of control," whereby control is not held entirely by one party (i.e., the higher level authority) in a two-way interaction, but is shared to some degree between both parties. Unfortunately, beyond making these theoretical points, McPhee does not really go into further detail or provide evidence to demonstrate how either phenomenon might work in particular situations. Furthermore, while structure may constrain communications, it can also be viewed "as communication" (i.e., as an informational output of the organization) with respect to the

higher level authority structures or organizational networks of which the organization is a part.

This point has been explored by "institutional theorists" (e.g., Meyer and Rowan, 1977; DiMaggio and Powell, 1983; Meyer and Scott, 1983; Powell and DiMaggio, 1991), who have argued that legitimate "myths" and "norms of rationality" can lead to the elaboration of formal structures. That is, in order to maintain or enhance their legitimacy, organizations may establish formal structures as "ceremonial" or "ritual" responses to "myths" in their environments, even when such structures conflict with "substantive" concerns for organizational efficiency. In a similar vein, other researchers have suggested that "fashion" may influence organizational practices (Abrahamson, 1996) and act as a determinant of organizational structures (Mintzberg, 1979). Fashionable ideas and "solutions" generated by management consultants or business schools may be adopted by organizations and incorporated into their formal structures in order to maintain appearances of being on the leading edge. While institutional theorists have tended to focus on a "macro" view of organizations, describing structure in relation to norms and myths in the external environment, similar processes within organizations are also of interest to this research. For instance, as later discussions will elaborate, internal formal structures may themselves be viewed as myth-like "categories" that in turn require lower level organizational responses in formal communication.

In general, institutional theory and other work dealing with communicative aspects of formal structures, have not dealt adequately with the role of language in the process, raising the question of the manner in which formal structures, as viewed from the perspective of researchers, are actually enacted internally by members of organizations. That is, while structures may be formally defined in rational terms, they are not necessarily predictive of the actual behaviours that take place within organizations. For instance, DiMaggio and Powell (1983) have argued that over time organizations within a particular "organizational field" will tend to develop "homogenous" structures, which are "isomorphic" to the myths of their environment . The test of such an hypothesis depends very much on how language is used. For instance, while environmental myths may be associated with the elaboration of structures on the part of organizations, these structures may be "homogeneous" in name only across organizations within a common "field." To use one of Meyer and Rowan's (1977) examples, while all organizations may create "human resource" departments in response to myths about their legitimacy, this does not imply that the actions performed within different human resource departments will be identical. There could be wide discrepancies in how these structures are operationalized

internally. Each of the organizations within a field have unique constraints on their operations, which may lead to very heterogeneous operationalizations of structures that appear homogeneous to an external observer.

Some of the earliest research on bureaucracy (Weber, 1966), as well as more recent work on performance monitoring within organizations, have examined discrepancies between how formal structures are supposed to work, and the resulting communicative responses on the part of individuals. Blau (1955) and others—e.g., Merton, Gouldner, Selznick, see March and Simon (1958) for a review—showed that besides the so-called "functional" consequences of particular bureaucratic arrangements, the very establishment of the formal arrangements often lead to the development of consequences which were "dysfunctional" from the point of view of overall organizational goals and objectives. Blau studied the behaviour of employees working in an employment placement agency. As an indicator of their job performance, the placement agents were measured on how many job interviews they arranged between prospective employers and unemployed job candidates. However, Blau discovered that this measurement approach lead to the agents focusing primarily on arranging job interviews, rather than spending time assessing whether or not the candidates would actually be suited to a particular job. The result was that they sent candidates off to as many interviews as they could, regardless of their suitability. Irving et al. (1986) observed similar behaviours on the part of insurance claims adjusters who's performance was measured on the basis of the number of claims they processed. In order to maximize their score on the measurement, the adjusters adopted an operating norm of "when in doubt, pay," preferring to waste company money, rather than risk their own performance ratings by spending too much time investigating questionable insurance claims. These "bureaucratic behaviours" have typically been described in question-begging fashion as ". . . individuals behaving in ways that are called for by the control system, but that are dysfunctional as far as the generally agreed upon goals of the organization are concerned" (Lawler, 1976, p. 1254). How do control systems call for such behaviours? Why do individuals respond to such calls? Why do managers establish such control systems in the first place? A brief speculative consideration of Blau's (1955) findings may highlight some of the issues involved in addressing these questions.

In bureaucratic control settings such as the one studied by Blau, simple language-based categorical indicators are used to represent complex behavioural situations. Thus, the indicator "number of interviews arranged" was assumed by upper management to provide a representative indication of agent performance within their complex work situations. From a control theory, or "cybernetics" (e.g., Ashby, 1956; Beer, 1966)

perspective, this amounts to a mismatch between the "variety" of the system being controlled and the "requisite variety" of the control mechanism. The measure failed to capture in sufficient detail the situational complexity of the agents work environment. Why would management adopt such a "low variety" indicator? A number of reasons seem plausible. First, they may have had very little choice; only certain aspects of the agent's work may be measurable at all. Management may not have had the time or resources to devise and track more complex and representative indicators. Management may have not known enough about the contextual aspects of the agent's work situation to come up with more appropriate measurements. Finally, the agents' immediate superior may have been under some pressure from his or her own superiors to provide evidence of agent performance. Despite the behavioural consequences, the measure may have been chosen specifically because it not only made the agents look good, but made the superior look good to higher management as well.

One may also consider Blau's study from the perspective of the role of language in the process. One way of understanding the measure "number of job interviews arranged" is that it constitutes the context specific meaning (or in scientific terminology, the operational definition) of the abstract concept of "agent performance." That is, a general term like "performance" may have many possible meanings and uses, depending on the context or circumstances, but in the particular context of the placement agents, "performance" was formally defined as "number of interviews arranged." Hence, the formal definition of the agents' job was not to "perform" in a general sense, but rather to arrange as many interviews as possible. This example suggests a general characteristic of complex organizations, that abstract words used at the higher levels of the organization may be operationally defined, interpreted and used at lower levels in ways that are unanticipated by those at higher levels. Finally, one might also note that it was not until Blau arrived as a researcher that this measurement problem was detected. This suggests that within a bureaucratic structure, a peculiar local use of language can easily go undetected by others within the structure. One reason may have been that higher level managers lacked the contextual knowledge of the agents' work situation required for them to understand why such an interpretation was actually inappropriate from the perspective of meeting higher level organizational goals. Given their lack of contextual knowledge, being told that "performance" has been operationalized as the "number of job interviews arranged" may have seemed quite reasonable to higher management. Their limited model of the local situation may have prevented them from detecting "what is missed" by such a measurement

scheme, and constraints on the flow of contextual information prevented them from directly observing the resulting behaviours.

2.3 Research on Symbols and Language in Organizations

Over the past couple of decades, there has been a growing recognition among organizational researchers of the importance of language to both the study of organizations and the practice of management (e.g., Pondy, 1977, 1978; Pfeffer, 1978, 1981; Eccles, Nohria and Berkley, 1992; Van Maanen, 1995a,c,d; Weick, 1995). In many different ways, researchers have begun to examine aspects of language in relation to organizational studies. Since this research is too vast to cover in detail, a rather simplistic classification scheme will be used here as a way of organizing the literature that connects language to organizations. In general, one might consider three classes (two quite large and one rather small) of literature on language phenomena in organizational contexts: descriptive/empirical, prescriptive, and conceptual/theoretical.

First, there has been a large body of empirical work. For instance, studies of organizational culture have considered organizations as systems of shared meanings or values (e.g., Smircich, 1983; Jermier, Slocum, Fry, and Gaines, 1991) and have often used organizational language and symbolism as indicative of organizational meanings and values. A wide variety of ethnographic studies and organizational text analysis studies have been reported, describing organizational settings in ways that demonstrate local uses of language (e.g., Evered, 1983; Fiol, 1989; various works referenced in Van Maanen, 1995b). A variety of communication studies have been reported, which focus on the construction and use of rhetoric by or within organizations (e.g., Edelman, 1964, 1971, 1977; Cheney, 1991). By and large, the majority of this empirical work has been descriptive or documentary in style, illustrating through examples various sorts of language behaviour in organizational contexts.

Another large body of literature in which language phenomena have influenced organizational research has been prescriptive writing about the process of doing research, and about the use of language in organizational contexts. For instance, several papers have appeared which discuss practices of organizational research from the perspective of respecting the role of language in organizations, typically arguing for or against various research methodologies or paradigms (e.g., Deetz, 1996). Similarly, Morgan (1981, 1986) and others have explored the existence of metaphors in organizational settings and in the context of organizational research and theoretical paradigms, arguing for styles of research that reflect the diverse approaches to thinking about organizational phenomena.

Finally, several works have discussed how language might be used by managers to improve the process of organizational change or the implementation of new programs and systems (e.g., Peters, 1978, 1983; Mason, 1991).

Finally, a much more limited amount of recent research has tried to work towards new ways of conceptualizing or theorizing about certain organizational phenomena, by applying an understanding of various aspects of language. For instance, Pfeffer (1978) and Pondy (1978) have both considered the role of language in the context of organizational leadership. Eccles, Nohria and Berkley (1992) have examined the interplay between rhetoric, action and identity, in the context of understanding several basic organizational phenomena including strategy formulation, structuring and performance measurement. Weick (1995) and others have explored the idea of "sensemaking" in organizational contexts, based on assumptions about how language mediates interaction and cognitive phenomena.

Collectively, this work demonstrates that organizational researchers are increasingly taking into account the existence and importance of language, and are increasingly choosing methods of investigation that allow for a more careful attendance to how language is used in organizational settings. Unfortunately, in terms of the third class of research noted above, there have so far been very few attempts to incorporate understandings of language into improved theories about management and organizational phenomena. It is hoped that this is one area where this dissertation research will be able to make a contribution, by proposing a theory of formal hierarchical communication in organizations that is explicitly based on an understanding of the role of language in the process.

2.4 Impression Management

One fruitful area of research, which has recently begun to receive some attention from organizational researchers is impression management. Goffman's (1959) seminal work on self-presentation utilized a dramaturgical model to illustrate how much of human interaction has a stage-like performance quality. He demonstrated in detail how many taken-for-granted interaction situations could be better thought of as performances, in which a great deal of preparation, coordination and interaction among a "cast" of team members may take place "backstage," in order to create and maintain a certain definition of the situation "front stage." Each party (individual or "team") in an interaction is thus both performer and audience. Goffman discussed the concept of a "region," which he defined as "any place that is bounded to some degree by barriers to perception" (1959, p. 106). Front regions are accessible to audience perceptions, while back regions are inaccessible.

The degree to which audience perceptions are blocked from a back region may vary quite significantly, depending on the circumstances. For instance, in a restaurant, normally kitchen activities are entirely hidden from customer view. However, Prus and Sharper (1977), in a study of street hustlers, described how the palm of the hustler's hand may be the extent of back region (referred to as "shade") available for the manipulation of a game of dice.

The degree to which performers in any situation may be able to manage audience impressions about ongoings and events, depends on the degree to which "expressive control" over backstage information may be maintained. If performers lack expressive control, either due to poor performances, or because contradictory information "slips out" via an alternative communication channel, their performance may be discredited, and audience members will develop definitions of the situation which are different from those that the performers are trying to maintain. Thus, information control is viewed by Goffman as crucial to the management of impressions.

In his later work, Goffman (1974) developed a more elaborate system for explaining the complexities of everyday human interaction, using the terminology of "frames." Goffman demonstrated that often in interaction, there are many different imbedded, overlapping, and often contradictory performances and interactions going on at the same time. For instance, in an essay entitled "The Lecture," Goffman (1981) describes how a lecturer may simultaneously engage in interaction within a variety of frames, beyond simply the obvious frame of delivering the lecture. A lecturer may comment on the lecture, apologizing for errors in speech, or pausing to elaborate on a point. A lecturer may exchange notes with someone off-stage, monitor the clock, or exchange knowing glances with a particular audience member. Each such frame may have both a front and back region, blocking audience perceptions to varying degrees and creating immensely complex and intriguing impression management situations.

A number of researchers have recently begun to examine impression management within organizational settings (e.g., Giacalone and Rosenfeld, 1989, 1991; Beard, 1996). For instance, Wayne and Liden (1995) have examined the relationship between the use of impression management tactics by employees and their performance ratings, showing that employees who put more effort into impression management tend to receive better ratings. Beard (1996) has noted that within an organizational context, an impression management perspective has been applied to research on topics such as arbitration, business ethics, computer-based surveys, employment selection, marketing, and office design.

While it is not the objective of the present study to explicitly discuss formal hierarchical communication from an impression management point of view, impression management is viewed as a significant component of the overall theoretical framework. However, the approach taken here differs in a number of ways from that taken by previous researchers. By and large, previous work has focused on impression management by individuals rather than groups or organizational units (despite the fact that Goffman's earliest work considered the idea of "teams" involved in collective impression management efforts). Existing work has also been limited almost exclusively to a simple two-way performer-audience "frame" of interaction, as described in Goffman's (1959) early work, ignoring the more complex web of potential frames implicit in his later work. While all the intricacies discussed by Goffman (1974) will not necessarily be explored here, the approach will distinguish between frames of formal communication and various informal frames of interaction, which may offer contrary or alternative "versions of reality" to those presented by formal hierarchical communication. As an example, the approach followed here recognizes the possibility that undistorted informal hierarchical communication may exist in parallel with distorted formal communication. Furthermore, the role of language has been largely unexplored in impression management research. The majority of work has focused on face-to-face interaction, typified by Goffman's (1967) term "face work." Much less attention has been paid to indirect forms of communication, such as the variety of reporting mechanisms used in modern organizations. This research explicitly focuses on the "backstage space" resulting from the role of language in formal organizational communication.

The approach followed here also differs in terms of the explanation of impression management behaviour on the part of individuals and groups. Most impression management research (including Goffman's work) has tended to focus on describing the behavioural outcomes without an exploration of the relationship between impression management behaviour and the social or organizational constraints acting on interaction participants. Where explanatory theories have been provided, impression management behaviour has largely been explained in terms of individual motives and psychological variables. For instance, individuals might engage in impression management in order to enhance or preserve a certain positive self-concept. The earlier example of corporate officers concealing negative information about company profitability, in which impression management type behaviours were explained in terms of individual self-interest, can be viewed as a case in point. However, there may be many ways in which structural constraints acting on the situation encourage (or even force) individuals and organizational

units to engage in impression management behaviours, quite apart from any individual motives or personality characteristics that may be involved. Even the idea of a "positive self-concept" depends on socially established definitions of what constitutes "positive," which may vary dramatically from one setting to the next.

2.5 Images

Finally, impression management strategies are not only viewed from the perspective of the performer's behaviour, but also in terms of the cognitive processes involved from the perspective of the audience receiving strategically controlled information. One basic objective of impression management is the construction of a positive image in the minds of audience members, where "positive" is defined within the particular context of the interaction situation. That is, impression management involves an implicit recognition of a "valence" (Lewin, 1935; 1974) within the interaction situation—a distinction between what constitutes "good" or "bad" ("positive" or "negative") within the setting—and an explicit motive on the part of the performer to be perceived by the audience as "good." (Note that there may be cases in which actors may wish to be perceived as "bad," as defined by objective observers [e.g., Becker and Martin, 1995]. However, this is just a matter of definition. Within the context of such interactions, "bad" may be considered "good.")

Boulding (1956; 1959) has discussed the concept of an image as a subjective model one has of something in the world (person, organization, country, place, thing, etc.) with an explicit recognition of the role of a valence. As an argument against rational economic models of choice and decision making, he argues that in order to predict one's behaviour in a particular situation, it is insufficient to simply define the "objective" situation as it "really exists." Rather it is necessary to understand the subjective image the person has of the situation, which could be a biased and limited representation, compared to the objective situation. March and Simon (1958) make a similar point in the context of managerial decision making—the basis for their concept of bounded rationality:

> ". . . humans . . . behave rationally, if at all, only relative to some set of 'given' characteristics of the situation. These 'givens' include knowledge or assumptions about future events . . ., alternatives available for action, . . . consequences attached to alternatives—knowledge that may be more or less complete—and rules or principles for ordering consequences or alternatives according to preference . . .. These four sets of givens define the situation as it appears to the rational actor. In predicting his behaviour, we need this specification

and not merely a specification of the situation as it 'really' is, or more precisely, as it appears to an outside observer" (p. 150-151).

Furthermore:

> ". . . the definition of the situation represents a simplified, screened and biased model of the objective situation, and filtering affects all of the 'givens' that enter into the decision process" (p. 154-155).

More or less in accordance with Boulding (1956), this dissertation will view an image as a simplified model of a situation, with a valence. In practice, the conception of image used here is simpler than Boulding's, in the sense that he viewed an image as having multiple scaled dimensions, each having some value along a continuum. For instance, he may assign a score of one to ten on a scale of "good" to "bad" as the valence for some image. For the present purpose, as a matter of methodological convenience as much as anything else, it is sufficient to think about an image's dimensions, such as its valence, in simpler categorical terms—something may be either "good" or "bad."

The role of emotion is also relevant to images and to the impression management or rhetorical techniques involved in image construction and maintenance. Although the role of emotionality will not be explicitly explored in the current study, there are significant theoretical reasons for considering emotion in the context of images. For instance, Lewin (1974) has argued that "becoming emotional leads frequently to a narrowing-down of the psychologically existing area. A state of strong emotionality should, therefore, be detrimental to finding intellectual solutions" (p. 144). In other words, strong emotions can lead to a reduction of the complexity of one's cognitive model or image of a situation. This is evident in circumstances in which a negative piece of information triggers an emotional response on the part of members of the public. For instance, the public fear and anger that resulted when it was revealed that the Canadian blood system had distributed blood tainted with HIV during the early 1980s, created an extremely negative image for the Canadian Red Cross—far more negative than any rational risk model of the overall safety of the system may have predicted. Political campaigns are also well known for the effects of candidate charisma on voter emotions and the simplified voter decision making that characterizes such situations.

As an aside, it is noteworthy that the majority of research in cognitive science has tended to ignore the roles of both valence and emotion in discussions of cognitive models

(schemas, cognitive maps, scripts, etc. [e.g., Leahey and Harris, 1993]). The same can be said for recent work in "managerial and organizational cognition" (e.g., Walsh, 1995). Perhaps owing to historical linkages between cognitive science and computer science research, this work has essentially focused on supposedly neutral "knowledge structures," in isolation from evaluative and emotional components that may influence such structures.

Within an organizational context, most research that has considered the role of images has focused on image construction as a macro-level process, whereby organizations attempt to create certain images in their environments. For instance, Barich and Kotler (1991) and others have considered the idea of companies projecting a marketing image. Similarly, Ginzel et al. (1993) have discussed the role of top management in maintaining and protecting company images through their public statements. On the other hand, relatively few researchers have considered the role of images in internal organizational processes. Beach (1990) has proposed a model of decision making based on the hypothesis that managers tend to make decisions such that the images they have of the future decision outcomes are consistent with the images they have of company goals. Dutton and Dukerich (1991) discussed how the self-concepts of individuals who identify with their organization may be affected by a negative organizational image held by organizational outsiders. The idea of an image has not been tied to processes of formal hierarchical communications within organizations.

Chapter 3

3. Theoretical Framework

The purpose of this section is to outline a theoretical framework developed to describe the functioning of formal hierarchical communication in organizations, and to provide a new way of framing the idea of "positive reporting." This framework considers the interplay of several elements: formal structure in organizations, responsibility, legitimate authority, event complexity, language, image, as well as cognitive mechanisms of categorization. We begin with a consideration of formal structures in organizations.

3.1 Formal Structure

3.1.1 The Organization as a Whole

All organizations establish more or less formal definitions of their identities and their activities. These formal definitions may take the form of official organizational charts, which document formal roles, responsibilities, authority relationships, decision making powers, and the hierarchical reporting structure. They also include information about an organization's official outputs, particularly its products and services. They may also include mission statements, "core values," or the official goals and objectives that the organization as a whole or its sub-units are trying to achieve. In general, such formal definitions and descriptions convey information about an organization's official identity, that it is willing and ready to share among its internal and/or external "publics," audiences, or stakeholders (Barich and Kotler, 1991). For instance, externally an organization presents itself to shareholders, investors, debtors, suppliers, consumers, governments, etc. Internally, it presents itself to its employees, which may include various sub-groups, such as labourers, management, or professionals, as well as administrative units such as unions, marketing, engineering or manufacturing departments. In this dissertation, these formal statements of the organization's identity and actions will be referred to as the "formal structure."

The formal structure may have both stable and dynamic elements. For instance, Ford has always been a car manufacturer, so this aspect of Ford's public image is essentially stable and unchanging. Similarly, an organization's policy structure may be

quite stable, as may some of its official goals such as "efficiency" or "high quality." On the other hand, many aspects of the formal structure could be quite dynamic, changing over time. For example, certain "buzzwords" may acquire legitimacy within an organization for brief periods, major policies, strategies or programs may vary from time to time, and in many large organizations management reporting structures change frequently as people are moved around from job to job and departments are created or dissolved.

Formal structures may also have temporal aspects to them. For instance, in addition to formal information about the current programs or policies, organizations may present information about their official future plans, including for instance government deficit targets or election promises. Furthermore, they may provide formal information about past events. These may include past accounting records kept on file for auditing purposes, or officially sanctioned interpretations of the organization's history, perhaps in the form of myths and stories about the organization's founders. Hence, not only do organizations generate formal information about their current identity and actions, but also about their past and future identities and actions.

Finally, formal structures may have both mandatory and discretionary elements. For instance, accounting records may be structured in ways that are mandated by government regulations, while training programs may be much more discretionary and variable depending on local circumstances. As a whole, certain organizations may be characterized as being more or less discretionary in formal structure. For instance, IBM has long had a "blue suit" reputation that suggested a rather rigid system of constraints on employee dress. On the other hand, compared to many other organizations, universities are often regarded as relatively democratic institutions, free of rigid constraints on the behaviour of their members.

In total, the formal structure of an organization conveys simple images of what the organization is supposed to be and supposed to do, and how it is supposed to fit into society or the economy at large. These images have two important characteristics. First, the formal structure provides a very simple model of the organization's identity and activities. For instance, an organization may portray itself formally as performing some broad level organizational task or function: universities educate people, governments manage economies and provide social services, General Motors makes cars. Despite all the other things done by the people in these organizations, their formal structures tend to define them very simply in terms of one or a few general activities. Such simplifications are required for the purposes of communicating about the organization through channels of limited capacity. That is, since any real organizational task typically involves far too many

details and too much information to communicate easily, simpler abstractions must be used to represent what is going on.

The second characteristic to note about the images conveyed by organizations through their formal structures is that they always tend to emphasize the positive. The formal structure defines the organization in terms of positive values which have legitimacy with the particular "public" that is the intended audience of the image being presented. For instance, in relation to the general public, universities define themselves in terms of education because society places a high value (or a positive "valence"; Lewin, 1935) on the education of its citizens. Education is generally accepted as a high valence, legitimate societal goal. Universities do not define themselves as institutions which process tuition cheques or sell books, even though such activities may also take place within university organizations. Given limited communication channel capacity, universities choose to define themselves primarily in terms of their educational role, because out of all of the things they do, education has the highest positive valence (the most legitimacy) among the public they depend on for their support. (Note: a detailed treatment of the concept of legitimacy is beyond the scope of this research; for a recent review of the topic see Suchman, 1995.)

What constitutes "positive" is defined contextually (i.e., within a social, spatial and temporal context) in terms of the demands placed on the organization by those who exercise some legitimate authority over it. That is, what is "positive" is arbitrary and relative, and is defined in terms of the organization's structural relation to its legitimate authority. For instance, if a corporation is supposed to generate increased share value, based on demands from shareholders who exercise legitimate authority over it, then "increased share value" is positive and good by definition of what the corporation is supposed to do. If the public demands that universities educate its citizens, then education is positive by definition. As an extreme example, consider a Mafia organization that conducts extortion activities in a city neighborhood. With respect to society at large, the organization may be viewed as wholly illegitimate. However, society at large is not the "public" to which the Mafia organization owes its legitimacy. With respect to its own legitimate authority, such as the higher level Mafia bosses, the organization presents a positive image by conducting extortion activities within its neighborhood, as it is supposed to. On the other hand, within the Mafia structure, police agencies would be considered "negative" and "bad" because they oppose its extortion activities.

Dynamic formal structures, as well as past and future structures are also positive, as defined contextually by the organization's legitimate authority. For instance, buzzwords

like "re-engineering" may acquire a positive valence in business circles, forcing an organization to adjust its formal structure to include a re-engineering strategy, and thereby sustaining the impression among its shareholders that it is adopting the latest managerial innovations. Similarly, future structures are continually redefined in terms of current high valence demands from legitimate authority. Past structures may have been established with respect to past positive definitions, such as the case of past accounting records that demonstrate to auditors that the organization followed the rules properly at the time, even though the rules may have since changed. Alternatively, past structures may be redefined on a continual basis according to current high valence demands. For example, an organization may claim that it has always been a "team" company and reinterpret past events as evidence of good teamwork, if the buzzword "team" has acquired a positive valence in business circles.

Finally, with respect to the relationship between the formal structure of an organization and actual events and ongoings (Allport, 1954) within the organization, much will be discussed later, but two points can be made here. First, although the people within an organization do many things, exactly what they do is often not fully known by others outside of the organization. Most of what outsiders know about internal ongoings is based on the formal information provided by the organization itself. That is, the image people have of an organization is largely the result of the formal structure presented by the organization. Second, the image outsiders have about an organization may also be affected by additional information that "slips out" due to a lack of expressive control on the part of the organization (Goffman, 1959). Such information may confirm the formal structure, such as the case of an automobile buyer who discovers that her new car lives up to the quality and performance claims made by the manufacturer. Alternatively, such information may contradict the formal structure, and in extreme cases, may lead to explicit questioning of the organization's legitimacy by its formal authorities. Examples recently in the Canadian news include the HIV tainted blood scandal of the Canadian Red Cross, the killing of a Somalia teenager by members of the Canadian military during a peacekeeping operation, and the explosion of a coal mine in Nova Scotia which killed 29 miners. In such cases, information becomes available that discredits the image being maintained through the formal structure of the organization, for instance images of a safe blood supply, a decent military striving to establish peace, and a safe mining industry.

3.1.2 Organizational Units

Until now, the discussion has focused primarily on the formal structure and images associated with an organization as a whole. However, each of the points made above can also be applied to sub-units within organizations. Organizational units present formal structures that convey images about their unit identities and activities to their internal and external publics.

Within an organization, broad organizational tasks are carved up into sub-tasks which are assigned to departments in the form of official responsibilities and to individuals in the form of official roles. These unit (departmental or individual) responsibilities define what each unit is supposed to do and be within the organization. For example, the sales department is supposed to sell the product, the manufacturing department is supposed to make the product, and the janitor is supposed to keep the offices clean. Official unit responsibilities are typically defined within the context of a formal organizational structure which is almost universally hierarchical, and organizational members and units are obliged to play a role within the organization according to their position in the hierarchical structure. The organizational structure is commonly represented by official organizational charts which formally define how the people of the organization are "mapped onto" the carved up broad organizational tasks, and also defines the formal decision making, authority or reporting structure of the organization. The organizational structure is considered to be a basic mechanism through which organizational goals and tasks are to be achieved.

Units may also have official unit goals or objectives, which form part of their formal structures. These may be general goals, such as "high product quality," or very specific performance measurement schemes where an individual or unit may be expected to produce a certain number of items over some specified period of time. Formally, unit goals and objectives are typically viewed as local operationalizations of higher level official organizational goals. However, as later discussions will elaborate, the correspondence between unit goals and organizational goals is somewhat questionable. The formal structure of units may also include implicit or explicit formal values and assumptions. For instance, the idea that people should defer to the authority of their boss, is a formally agreed upon assumption necessary to maintain the integrity of the structure. It is also worth noting that within the organizational hierarchy, formal structures may be specified from higher levels downward, as in the case of responsibilities assigned to lower level units, as well as upward from lower levels. An example of the latter would be formal structures (unit responsibilities, formal unit programs or plans) developed within a unit as justification for funding approvals from higher management. In such instances, formal

structures may be elaborated as evidence for management that the unit is doing what it claims to be doing, or is capable of doing what it proposes to do in the future.

As with formal structures at the organizational level, formal unit structures also have stable and dynamic elements, temporal (past, present, future) elements, as well as discretionary and mandatory elements. Hence, manufacturing departments may have stable efficiency goals, as well as dynamic objectives associated with currently legitimate buzzwords. Marketing departments may establish official interpretations of their past sales campaigns and develop formal programs and plans for future campaigns. New units, policies and structures may be created to correspond with current high valence demands from upper management or perceived demands from external publics. For instance, during the late 1980s and early 1990s many corporations established Environment departments in response to growing public demands for increased corporate concern about the natural environment. Similarly, organizational policies designed to ensure equal opportunity for minority groups may be established in response to external pressures. Production quotas may be a mandatory element of a manufacturing department's structure, while the implementation of process improvements may be more discretionary.

Formal structures at the unit level convey simple images of the unit's identity and activities and how it is supposed to fit into the organization as a whole. These images have the same two characteristics as the images conveyed by organization level structures: they present a simple model of the unit and tend to emphasize the positive. Hence, despite all the other things that may take place within a manufacturing department, it will tend to define itself formally in terms of its primary role of making the product. A sales department will tend to emphasize its main role of selling the product. Typically, the department's name (manufacturing, sales, accounting, etc.) will itself convey information about the unit's primary responsibility within the organizational structure. Furthermore, the formal structure presented by a unit will emphasize the positive aspects of its activities, where "positive" is defined contextually in terms of the unit's official roles and responsibilities within the formal hierarchical structure, based on the demands placed on the unit by its legitimate authority. Hence, a sales department will define itself in terms of its legitimate sales activities, rather than in terms of its "wining and dining" activities with potential clients.

3.2 Formal Structure as a Hypothesis

The notion that the particular formal structure elaborated and defined by an organization will actually work as it is supposed to is a hypothesis at best. That is, although formal structures are established officially as mechanisms for accomplishing goals and performing organizational tasks, this is nonetheless a hypothesis, the proof or disproof of which requires careful comparison of the formal structure against the actual ongoings and events within organizations (Allport, 1954). For example, the idea that different activities within an organization are distributed across people and departments and related to one another as depicted by an organizational chart is a hypothesis that may or may not coincide with the actual situation. Likewise, the idea that a corporate "re-engineering program" will produce a more effective organization is a hypotheses.

Implicit in the establishment of formal structures are certain assumptions about how these structures are supposed to work. For instance, Katz and Kahn (1978) have presented a widely cited discussion outlining several basic assumptions about the workings of hierarchical communication and decision making within organizations. Higher level managers are supposed to make decisions which reflect organizational goals and communicate them downward, to be further defined, operationalized or interpreted by people at lower levels. Upward communication is assumed to include feedback information about how people are progressing towards the directives given to them by upper management. Information about problems or difficulties that lower levels may have achieving their formal goals is assumed to be passed up the ranks for resolution or corrective actions by superiors. The idea that superiors make decisions affecting lower levels assumes that they have good decision models—models with sufficient requisite variety to handle all relevant aspects of the situations they manage (Ashby, 1956; Beer, 1966). It also assumes that higher level managers receive reasonably accurate, complete and representative information about the situations they manage in order to make good decisions, and that they actually make decisions based on summarizing the information they receive from lower levels.

These assumptions have been questioned by March and Simon (1958), who recognized that human cognitive limits (Miller, 1956) constrain organizational communication and limit the rationality of organizational decision making. To keep the amount of information within managers' cognitive limits, their subordinates must summarize it for them, in a process labeled "uncertainty absorption" by March and Simon (1958). However, the idea of uncertainty absorption is itself based on assumptions about the workings of the formal structure. In particular, it assumes that the information passed

up the hierarchy is a reasonable and representative summary of the actual events of a situation, and that some rational method of summarizing information has been followed. How is information reduced as it goes up the hierarchy? Does the process work in a manner similar to the way a careful scientist might summarize empirical data in an attempt to test an hypothesis? That is, a scientist might collect and summarize empirical data in as unbiased a manner as possible, following accepted standards of research methodology in order to come up with a reasonable, representative summary of the phenomena under study. Do managers collect information this way? Or does the process of hierarchical communication work more like a negative feedback control system, in which goals are set and any deviations from these goals are highlighted or amplified in order that corrective action may be taken by management in a timely manner? The implicit assumption in formal structures is that they work as both of these, providing negative feedback control through a process of careful representative summarization of information. Later discussion shall argue that they really work in the opposite manner, providing positive feedback through a biased process of information summary.

The idea of formal organizational structure representing a hypothetical model of organizations has been around since at least the turn of the century when Max Weber (1966) formulated his theory of bureaucracy (Blau and Scott, 1962). Bureaucracy can be viewed as a specific kind of formal structure, defined by Weber in terms of certain features, including a hierarchical chain of command, rules and procedures, etc. Weber defined the characteristics of bureaucracy not as a model of how organizations actually work, but as an ideal model of how organizations could theoretically be structured and operated, against which real organizations might be compared. Thus, in bureaucracy the formal definition of the organization's identity and activities reflected in its formal structure, rules and procedures, etc., represents a hypothetical ideal state: how the organization theoretically operates, rather than how it actually operates. Furthermore, this formal definition reflects a simple model of the organization. It presents a simplified image of what the organization is and does that idealizes and glosses over what actually happens in the organization.

Besides the arguments of March and Simon (1958) mentioned above, a great deal of organizational theory and research has demonstrated that organizations do not actually work as their formal structures would imply. Merton, Blau and others have pointed out that in addition to the "functional" consequences of certain formal structures in bureaucracy, there may also be "dysfunctional" consequences (March and Simon, 1958). Mintzberg (1979) and others have discussed the existence and importance of the "informal" system, where real decisions are made, real communication takes place and things really get

done. Weick (1976; 1979) has described organizations as "loosely coupled systems," in which sub-units are often at odds with one another, rather than each playing their role within the structure as they are supposed to. Similarly, Mintzberg (1994) has documented a detailed and well-supported argument against methods of rational strategic planning, suggesting they represent unrealistic prescriptive formalisms that bear little relation to empirical evidence about how strategies actually develop in organizations. He views strategy formation as an unpredictable, interpretive process, where managers often do not realize until later what their "strategy" actually was (Mintzberg and McHugh, 1985). Collectively, the work of these and many other researchers can only lead to the conclusion that formal structures convey poor representations of what actually goes on within organizations.

There are many well-known reasons why this is the case. While the formal structure conveys a simple image of the organization, reality is not so simple. There are many constraints acting on people in organizations that prevent them from fully living up to the pure images conveyed by the formal structure. Limitations of technology, human skills, material supply and quality, and the level of cooperation among different units all constrain the organization's ability to operate as the formal structure implies. Informal demands on individuals or units may conflict with the demands of the formal structure, as in cases where norms governing the pace of work are established among a group of coworkers. There may also be conflicting demands placed on units by conflicting elements of the formal structure. For instance, a manufacturing unit may be formally expected to implement a team program that disrupts its normal mode of operation, while at the same time it is also expected to maintain production volumes at normal levels. Galbraith (1973) and Thompson (1967) have argued that organizational structures should be designed in accordance with the information processing demands and interdependencies associated with organizational tasks. When formal structures are not designed accordingly, the information processing demands and task interdependencies still exist and pose constraints which may conflict with the demands of the formal structure. Past decisions and actions also constrain an organization's ability to adapt to future demands. For instance, an organization that has invested heavily in advanced technology could not easily adjust its operations if new strategies emphasizing process simplicity were to gain legitimacy within the organization (Duimering, Safayeni and Purdy, 1993). Finally, even though formal structures tend to emphasize only the positive and legitimate things that happen in organizations, things obviously go wrong at times, and not all the activities organizations are involved with have the same degree of legitimacy.

In general, it can be concluded that in any organizational situation there are many constraints which limit what can actually be done by individuals and units, and to varying degrees conflict with the demands of the formal structure. As a result, the formal structure presented by an organization as the official definition of its identity and activities often provides a very poor representation of actual ongoings and events within the organization.

3.3 Pressure to Confirm Hypothesis of the Formal Structure

Although the formal structure may represent an hypothesis, and many organizational constraints conflict with its formal demands, nonetheless all organizations define formal structures to some extent at least, as if they actually did work as defined. For instance, as Blau and Scott (1962, p. 32) have noted: "almost all modern administrative organizations (as well as some ancient ones) are bureaucratically organized." If anything, this is an understatement. One would be hard pressed to find even a single example of an organization that does not elaborate for its various publics some formal definitions of its identity and activities.

Furthermore, not only do all organizations have formal structures, but despite the vast amount of research evidence to the contrary, in practice individuals and units within organizations are under a great deal of pressure to demonstrate that the formal structure actually works as it is supposed to. Individuals and units are under pressure to confirm the hypothesis of the formal structure and to show that they are doing what they are supposed to be doing within the formal structure. The reason seems to be related to the somewhat paradoxical role of "responsibility" within the formal structure of organizations: if individuals or units can not demonstrate that they are doing as they are supposed to do within the structure, no one ever suggests that the structure itself does not work; rather, according to the definition of the formal structure and their roles within it, these individuals or units are viewed as not living up to the responsibilities they have been assigned. Formal structures must be confirmed, because according to how the situation has been formally defined, if they are not confirmed, individuals and units are held accountable.

3.4 Responsibility and Legitimate Authority Within the Formal Structure

What are the implications when responsibilities are assigned to individuals or units within an organization? Several aspects of the concepts of responsibility and legitimate authority within formal structures, that have gone largely unexamined in the organizational literature, are worth considering in some detail.

Responsibility amounts to a pressure on individuals and units to do as they are supposed to do within the formal structure. In general, having responsibility within an organization is equivalent to a demand or expectation on the individual or unit to "do good"—to make sure that good things happens and bad things do not happen within one's area of responsibility—where "good" is defined contextually within organizational units. The contextual definition of "good" is either explicitly given, or at least implicitly approved, by the immediate superior (i.e., the legitimate authority) within the hierarchical reporting structure. Thus, the assignment of unit or individual responsibilities amounts to an expectation to do "good" as formally defined by one's superior or legitimate authority. One is obligated to do what one's superior defines as "good," since part of the definition of the formal structure in hierarchical organizations is the idea that superiors have legitimate authority over subordinates. While organizations certainly vary in the degree to which insubordination is tolerated, with the extreme being military settings with rigid sanctions against insubordination, virtually all organizations have some form of legitimate hierarchical authority structure.

Not only do superiors have the legitimate authority to define "good" within their units, but they also have the authority to evaluate whether or not their subordinates did "good." That is, superiors interpret the actions of their subordinates as "good" or "bad" according to their own definitions of "good" and "bad." Based on the evaluations of legitimate superiors, individuals and units can be held accountable if they do not do good as defined. Thus, formal responsibility can be used as a mechanism or justification for taking legitimate legal action against an individual. For instance, people can be sanctioned for not living up to the formal responsibilities defined for them by their legitimate authority. More specifically, according to the formal definition of the situation and an individual's position within the structure, if negative information is reported, the individual can be held personally accountable, unless it can be successfully argued that the negative outcome resulted from factors beyond the individual's control. Local punishments and sanctions are used routinely by organizations as mechanisms for dealing with problems. For instance, professional sports teams may fire the coach if the team is performing poorly. Similarly, extensive organizational problems are often officially attributed to individuals based on a kind of "bad apple" theory of explanation. That is, rather than allowing an entire organization to lose legitimacy within its authority structure, individuals or units may be singled out as "bad apples" and sanctioned as a formal way of solving an organizational problem. Beer (1974) has gone so far as to suggest that the organizational chart serves

essentially no other purpose beyond providing a mechanism for determining who to blame formally when there is a problem.

Another important aspect of responsibility within hierarchical organizations is that the hierarchy creates a nested structure of vested interests. When individuals do good, it also reflects positively on their units, their superiors, and so on up the ranks. When individuals do things that are defined as bad within the structure, it may reflect badly on their units and superiors up the ranks. This structure of "nested interests" has implications for the processing of formal information up the ranks. Specifically, it creates incentives for negative information to be suppressed during the upward reporting process. If an individual does something formally defined as negative, his superior will have an incentive to prevent the information from moving to the next level in the hierarchy because the information may then reflect negatively on the superior. This suggests that at each level in the hierarchy, positive information would be more likely to be reported upwards than negative information. In addition, the fact that information must be reduced and summarized for communication up the ranks, suggests that information should become more positive as it progresses upward.

With respect to the role of authority, it was noted above that one aspect of legitimate authority within formal organizations is that it gives a person the authority to define "good" within the unit or context over which he or she possesses legitimate authority. That is, authority gives one the right to define performance standards for one's subordinates. The fact that domains of responsibility and authority are structured in a nested fashion has direct implications for how a unit manager might operationalize the meaning of "good" within his or her domain of authority. Specifically, the formal responsibilities defined for a manager, establish output requirements on the manager and the unit over which the manager holds authority. These output requirements define "good" for the manager, and as such must be satisfied if the manager is to be evaluated positively by his or her superior. Therefore, in the process of operationally defining "good" for his or her subordinates, the manager is constrained by his or her own output requirements. Thus "good" for the subordinates will tend to be defined in such a way that good performance on their part will also make the manager look good as defined by his or her output requirements. The process of operationalizing formal structures down the ranks is, therefore, a very selective one. At each level, the performance criteria for lower levels will tend to be defined in order to provide evidence that can be used by the superior to satisfy his or her own performance criteria. In general, the formal definitions developed by managers as operationalizations of

the formal structures they must satisfy, in turn create new formal structures for their subordinates to satisfy.

Another aspect of legitimate authority is important to note. Not only do managers have the legitimate authority to define "good" for their subordinates, but they also have the legitimate role of defining what is going on within their units for their superiors and others outside of their units. As official spokespersons for their units, managers have the formal role of defining the official reality of their units. Because of their position within the formal structure, such definitions will tend to be stated in terms of the output demands on the unit from its legitimate authorities. For example, if a manufacturing department is supposed to implement "teams" in accordance with a formal corporate team program, formal statements about ongoings within manufacturing will likely have something to say about teams. That is, formal statements about ongoings within a unit, will tend to confirm that it is doing as it is supposed to be doing, thus confirming the hypothesis of its formal structure.

While formal reports will tend to reflect the language of the formal structure, it is important to recognize that this does not necessarily imply units will deliberately fabricate information about their internal ongoings, though fabrication may be a possible outcome. Rather, people within organizational settings may come to see their work situations very much in terms of the output demands that have been formally defined for them by their superiors. Hence, a student taking a chemistry course may feel that achieving a good score on the exam reflects his or her knowledge of chemistry, as opposed to an ability to pass chemistry examinations. Workers in a manufacturing unit may equate productivity with the number of pieces they have produced, if that is the formal definition established for the unit's output. In fact, the task itself may become entirely restructured in accordance with formal output requirements. For instance, Blau's (1955) employment agents came to see their task strictly in terms of arranging interviews, rather than in terms of helping people find jobs, and went about their work accordingly. In situations such as these, the process can be more fruitfully understood in terms of individuals making reasonable adjustments to the constraints of the formal structures they find themselves in, rather than deliberately fabricating information.

The literature has had relatively little to say about these aspects of responsibility and legitimate authority within hierarchical organizations. It has long been noted that in many organizational situations, the amount of authority an individual has can be considerably less than the amount of responsibility one has. Given the constraints operating within organizations that conflict with formal demands, the responsible individual often has relatively little control over what actually happens in their situation. For instance, Fayol

(1929, quoted in Das, 1990) argued at the turn of the century, that a manager's authority should equal his or her responsibility. The literature has also noted that besides formal legitimate authority, people in organizations may possess informal authority based on their technical expertise or their social status within a setting (e.g., Mintzberg, 1979a). For instance, a non-technical manager of an engineering department may act as little more than a rubber stamp of approval, who must rely on the technical expertise of staff members to ensure appropriate decisions are made.

To sum up, formal authority gives one the legitimate authority to operationally define "good" within one's domain of authority. It also gives one the role of spokesperson for the unit, with the authority to define the official reality of the unit—its formal identity and activities. Responsibility amounts to a pressure to do "good" within the formal structure, according to how "good" has been contextually defined by one's legitimate authorities. Someone who is assigned responsibility is expected to do good things, as defined and evaluated by one's superior, or else risk suffering sanctions. Assignments of both authority and responsibility are arranged hierarchically in a nested structure of vested interests, creating incentives that affect both the process of defining formal structures for subordinates and the process of reporting about ongoings within one's domain of responsibility for superiors. Constraints in any organizational setting imply that one's actual authority to influence what happens is often less than one's formal responsibility within the structure. Nonetheless, pressures exist in every organization for units and individuals to confirm the hypothesis of the formal structure, and to demonstrate that everything is working as it is formally supposed to work.

How is the formal structure confirmed in practice? Somehow the informal ongoings and events that actually occur within organizations and units must be "mapped" onto the formal structure. The next sections will address this issue by first considering the role of formal information within formal structures, and then by specifically examining aspects of the relationship between language and events.

3.5 Formal Information Processing

The mapping of actual ongoings and events onto the formal structure depends in the first place on the role of formal information processing within organizations. Several factors influence formal information processing. First of all, it is important to note that organizational actions take place within the context of "units" that are separated from one another to varying degrees by barriers to perception (Goffman, 1959). That is, ongoings and events within organizational units are for the most part not directly observable first

hand by those outside of the unit. Rather, they are indirectly experienced or observed primarily through the formal information and reports provided by those within the unit. To some extent in addition, outsiders may receive information directly or indirectly about unit ongoings that "slips out" due to a lack of expressive control on the part of those within the unit (Goffman, 1959).

An important aspect of formal information processing is the fact that a tremendous amount of information reduction must occur during the communication process. It is impossible to communicate every detail of a unit's ongoing activities, nor would anyone normally want to. Situations must be summarized in brief reports, typically language-based reports, statistics, charts or figures, in order to represent in a concise manner what is officially going on within the unit. Such abstractions contribute to the barriers to perception that isolate the unit from those outside. Since only summary information is communicated formally, the entire range of what could theoretically have been reported is lost due to the abstraction process. The connection between the summary report and the situation it officially summarizes, as well as the abstraction process itself gets lost during the communication process. For instance, in the team implementation discussed in the introduction, both the "successful" team and the other teams that had been "wasting time in meetings" were reported up the hierarchical ranks as "teams." The significant differences that existed between how the various "teams" were actually operating were largely inaccessible to the formal system.

Formal information, which is defined by the head or legitimate spokesperson for the unit, provides the official representation of what is going on within the unit—the unit's official reality. Those outside of the unit, including higher level management, may dispute certain aspects of this formal information, however, there is always an informational advantage on the part of the people inside the unit compared to those outside. That is, the amount of information about unit ongoings held by those within the unit is always greater than the amount of information about unit ongoings held by those outside. Hence, if questions are raised about the validity of a unit's formal informational outputs, the unit always has additional information on which to draw to corroborate or back up its initial reports.

In general, however, formal information is not openly questioned. Formal information has a certain status of legitimacy within the formal structure of an organization. One of the basic assumptions of formal organizational structures is that formal information provides a valid and representative summary of what is going on within an organizational unit. Unless contradictory information challenges the formal information generated by an

organizational unit, it is typically taken at face value. It is formally assumed to provide legitimate evidence within the structure of whether or not individuals or units are meeting their responsibilities and doing as they are supposed to be doing.

This is not to suggest that formal information is always believed by others in the organization. However, there seems to be a sort of "satisficing" (March and Simon, 1958) limit to the degree to which outsiders can challenge the formal information generated by a unit about its internal activities. To challenge the validity or legitimacy of a unit's formal informational outputs typically requires at least as much detailed contradictory evidence, and the evidence must normally meet certain standards of validity, which are often considerably more rigorous than the standards to which the original information being challenged is ever subjected. As an example, it is often extremely difficult to fire an unproductive employee, because formal structures exist which demand that rigorous evidence be documented about the employee's work habits. Often these "rules of evidence" are simply too demanding to be pursued by others in the organization, and the incentive to pursue a legitimate challenge may not be very great.

Formal information plays two key roles within the formal structure. First, as discussed above, it serves as legitimate evidence that the organizational unit is doing as it is supposed to within the structure. This role tends to be associated with the upward flow of formal information within the hierarchy. However, formal information also has an impact at lower levels of the hierarchy. Specifically, the formal informational outputs of organizational units pose constraints on lower level activities and their informational outputs within the formal structure (where "lower" refers to sub-units under the formal authority of the unit generating the information). That is, formal information creates formal structures for lower level units.

As an example, the Natural Sciences and Engineering Research Council of Canada (NSERC) offers "strategic grants" to Canadian researchers. The rules of the program, the application procedures, the categories of research NSERC intends to fund, etc., are all informational outputs on the part of NSERC, which create a formal structure that constrains the activities and informational outputs of researchers who wish to benefit from the strategic grants program. Only certain kinds of research topics will be considered and researchers are supposed to demonstrate that their work will meet the formal goals and objectives of the program if they wish to benefit from the program. On the other hand, from NSERC's perspective with respect to its legitimate authority structure (i.e., relative to the Canadian Government branch that has formal authority over NSERC), the strategic grants program itself serves as a formal piece of evidence that NSERC is meeting its formal

responsibilities as an agency. That is, the program demonstrates to the government that NSERC is doing what it is supposed to be doing within its formal structure.

To sum up, since barriers to perception prevent those outside of an organizational unit, including its upper management, from directly observing internal ongoings first hand, they are often forced to take the unit's formal informational outputs at face value, as a legitimate representation of ongoings within units. Thus, formal information serves as the legitimate evidence for higher level authorities that the unit is doing as it is supposed to within the formal structure. The fact that information must be tremendously reduced, summarized and abstracted contributes to barriers to perception. Only abstract representations are communicated formally, while the situation being represented by the abstract summary, as well as the abstraction process itself, are lost in the communication process.

The key question, therefore, relates to the process of abstraction. How is information summarized, in a fair, unbiased, representative manner, or in a selective, biased manner that presents the unit in an unrealistic positive light? The formal structure assumes the information is representative and unbiased. However, the fact that people and units have been assigned responsibilities that carry the risk of sanctions for not doing as they are supposed to, creates incentives to emphasize positive information reporting—incentives that are amplified by the nested structure of interests going up the hierarchy.

As a result of the need within formal structures to rely on formal information to represent ongoings within units, formal responsibilities can be legitimately satisfied not only by "doing good things" but also by "saying good things." That is, although the formal structure may be established as a mechanism to control activities through the formal assignment of responsibilities, in practice, it can really only control the formal informational outputs of organizational units, not their activities directly. The degree to which formal structures constrain or control the actual events and ongoings within organizational units, depends on the degree of correspondence between the events and their representations in formal information. Hence, for vague, ambiguous formal structures, such as a requirement to implement a "team program," there may be a very weak correspondence between the actions taken within a unit and the informational outputs. For more concrete structural constraints, like a requirement that a manufacturing unit produce 100 pieces per hour, the correspondence may be much stronger. The relationship between information and events necessitates a consideration of the role of language in formal information processing.

3.6 The Categorical Structure of Language

The twentieth century has seen an explosion of research and philosophical inquiry into the workings of human language. It is not the intention of this dissertation to summarize this development in detail, much less to debate the conclusions of various thinkers on the subject. Rather, the purpose is to draw upon some of the more established ideas of language that have a direct bearing on aspects of formal hierarchical communication within organizations. Two key features of language will be considered: i) the categorical relationship between language and events—that is, the idea that the same word can be used to refer to a variety of different events; and ii) the arbitrary or "loose" connection between particular words or representations, and the events they refer to or represent. These properties of language have been described in various terms by many of the major writers on language in the twentieth century.

For example, Russell wrote in 1927: "Often (in traditional philosophy) when philosophers intended to be considering the objects meant by words they were in fact considering only the words, and when they were considering words they made the mistake of supposing, more or less unconsciously, that a word is a single entity, not, as it really is, a set of more or less similar events." Writers in the so-called "General Semantics" tradition have emphasized the arbitrary relation between words and their referents, as succinctly captured in the statements, "the map is not the territory" and "the word is not the thing" (Korzybski, 1958, 1964; Hayakawa, and Hayakawa, 1990). Semiotics researchers have considered the arbitrary relationship between signs (including words in language) and signifieds (or referents) (Fiske, 1990), in which the relationship is determined by social rules and conventions rather than any intrinsic properties of signs (or words) themselves. Researchers of the sociology of science (and the sociology of knowledge in general; e.g., Woolgar, 1988) have focused on the idea of "representation" and the loose connection between systems of representation and the underlying phenomena they are supposed to represent.

Hence, the same word may be used to refer to many different events, in a "one to many" (1: many) relationship. For example, the word "team" may refer to a variety of different sports teams, or within an organizational context, to a committee, a group of interdependent coworkers, or a group of senior executives. Nothing intrinsic in the word "team" connects it to any particular event in the real world, and there are many possible events that could legitimately be given the label "team," based on the social rules and conventions associated with the word. Thus, rather than having a single meaning or referring to a single event, words have multiple meanings and can be used to refer to many

different events. We shall refer to this idea as the categorical characteristic of language, because words can be treated as labels which may refer to any member of a category or set of possible events or referents.

As Wittgenstein (1968) has argued, the meaning of words can only be understood by examining how they are used within particular contexts or social settings. The meaning of words is inseparable from the social interactions, or "language games" in which words are used. The connection between a word and its referent at any particular time can only be understood through an understanding of the language game in which the word is being used. Thus, Wittgenstein argued that to understand a language one must understand a "form of life," that is, the totality of all language games, or all ways in which words are used, within a social setting (Taylor, 1985).

Goffman (1974) has made similar arguments, using his notion of "frames," which like Wittgenstein's "language games," are defined in terms of social interactions that connect words, gestures or other means of signification, to their specific meanings, based on their use within an interaction context. According to Goffman, to understand how words and gestures are being used—that is, to understand what they mean, or refer to within a frame—one must be physically or psychologically present within the frame. For example, to understand what it means when someone points and says "that," one must be present in the interaction frame to understand what the "pointing finger" and "that" refer to. Similarly, sociologists of the "symbolic interactionist" (Mead, 1934; Blumer, 1969) and "social construction" (Berger and Luckmann, 1966) traditions have also emphasized that meaning develops through social interaction within the context of social settings.

Using the idea that words may represent sets or categories of events, Rapoport (1950; 1965) has discussed the contrast between "extensional" and "intensional" definitions in language. Defining words intensionally amounts to placing words in other word categories as a means of defining them. For instance, defining a bird as a type of animal simply places the category "bird" in the category "animal." On the other hand, "extensionally" defining a word amounts to drawing the connection between the word and its referent in a particular situation. Hence, one might define "bird" by pointing out some examples of birds. Rapoport also discusses the "operational definition" used in science, as perhaps one of the most precise ways of extensionally defining words. In science, words (or scientific concepts) are operationally defined by elaborating a method for demonstrating and measuring the concept. Thus, words like "force" or "energy" are defined in terms of experimental methods and measures that demonstrate the concepts in particular instances.

While Rapoport (1965) discussed operational definitions from the perspective of understanding the requirements of an "operational philosophy"—that is, understanding the relationship between philosophical concepts, knowledge and actions—the concept will be used somewhat differently here. The idea of operationalization will be considered in the formal structures of organizations as follows. The formal structure of an organizational unit essentially amounts to an operational definition of the concept of "good" for the unit. That is, the formal objective of any unit is to "do good" as contextually, or operationally defined through the unit's formal structure by its legitimate authority. The formal structure constrains the unit's outputs, by creating output demand "categories," that is, structural demands stated in language. Satisfaction of the output demands of the formal structure—that is, "doing good" as the unit is supposed to—therefore, amounts to a categorization process, whereby events and ongoings within the unit are categorized (i.e., labeled, or mapped on to) the output demand categories of the unit's formal structure.

Thus, as formal structures are operationalized down the hierarchy, each unit extensionally defines "good" by starting with its output demand categories and elaborating formal structures in terms of these output categories, for the next level down in the hierarchy. In the upward reporting process, units intensionally define events and ongoings by categorizing (labeling, mapping) them according to the output demand categories which have been defined for the unit by its legitimate authority. Formal information is generated that labels particular events and ongoings within the unit as formal evidence that the unit is doing "good" as it is supposed to.

To sum up the ideas of language considered above, two key aspects are of note. First, language has a categorical structure whereby words are connected to events in a one to many relationship. The same word can be used to refer to many different events. To understand the meaning, or the event being referred to, in any particular case requires that one understand how language is being used in connection with events within the particular social setting where the word: event connections are being made. If an event is labeled or named using a particular word, the meaning of the word is fully understandable only by understanding the event that is being referred to. More specifically, to understand the meaning of a word requires that one understand the categorization process—the process by which events are mapped onto word categories. In a formal organizational context, this amounts to understanding how unit ongoings and events are categorized, or mapped onto, the formal language (or information) used to represent them. Because "good" is operationally defined for organizational units through formal structures as legitimate output demand categories, the categorization process amounts to a mapping of unit ongoings and

events onto the output categories of the unit's formal structure. The one to many relationship between a word and the events it might refer to, provides a great deal of flexibility to individuals and units in the generation of formal informational outputs. Depending on the degree of flexibility in the output demand categories, there may be many possible events individuals and units can draw upon as evidence that they are doing as they are supposed to. Hence, the hypotheses of formal structures can be confirmed to some extent at least as a result of individuals and units taking advantage of language flexibility inherent in the definitions of their formal structures.

Second, the connection between words and events is arbitrary in the sense that there is nothing intrinsic about an event that connects it to a particular word, nor is their anything intrinsic about a word that connects it to a particular event. Rather the connections are established through social rules or conventions. In the context of formal organizational structures, the implication is that there may be more or less legitimate "mappings" or "categorizations" of events onto words. Based on the formal or informal conventions established within an organization, some events may be considered to be legitimate uses of a word, while other events may be considered illegitimate uses of the word. Thus referring to a "committee" as a "team" to satisfy the demands of a formal team implementation program may or may not be considered a legitimate use of the word "team."

The preceding discussion raises a number of implications with respect to formal hierarchical communication. One implication is that the categorical nature of language and the fact that words can be interpreted in many different ways is absolutely essential for downward communication within large complex organizational hierarchies. Because of this property of language, senior executives are able to define broad organizational goals in vague language that can be interpreted by individuals and units throughout the organization, within their own particular context. Thus, a corporate "team program" makes a certain amount of sense to everyone, since everyone may be able to come up with some definition of "team" within their own situation.

Another implication has to do with upward hierarchical communication. Due to the need for information reduction as information moves up the hierarchy, it gradually "loses meaning" as information is collapsed into ever broader and more general categories. Thus, information about the contextual meaning of words—that is, exactly how words are used in the context of organizational units—is lost as formal information is communicated upward. After one or two successive categorizations the only information left in a message is the idea that the lower level unit did "good" as it was supposed to. With respect to managerial decision making, this implies that upper level managers could not possibly have accurate

decision models about the situations they manage if these models relied strictly on formal information. Either they systematically receive sufficient informal information to make up for information loss and bias associated with formal information, or their decision models are simply inaccurate and biased.

Furthermore, as formal information moves up the ranks of the organizational hierarchy, the information becomes increasingly disconnected from concrete events associated with the physical manufacture of products or the provision of services to clients. Thus, the "events" that are mapped onto words tend to be increasingly language-based or informational events, rather than physical events. Hence, while at the lower levels of the organization the categorization process is largely one of mapping physical events onto words, at higher levels the process amounts to mapping words onto other words.

Finally, before proceeding in the development of the conceptual framework by examining the idea of event complexity, it is worth briefly considering formal information that is not language based. For example, a great deal of formal information in organizations is represented in statistics, charts, graphs or diagrams. While language-based reports are often regarded as somewhat subjective and ambiguous, statistical reports are normally considered to be more rational and objective. However, like language-based reports, information represented in statistical, graphical or chart format is also categorical in relation to the events it represents. Examples of the misuse of statistics have been well documented by a number of writers (e.g., Huff, 1954; Wallis and Roberts, 1956; Norman, 1993; Paulos, 1995). These examples illustrate that the relationship between events and their representation in statistics, charts, graphs, or diagrams can be very loose indeed. The same set of data can be used to create a wide variety of statistical reports, all of which may appear to provide extremely rational and objective representations of the data.

However besides potential manipulations in how data is presented, a more fundamental relationship exists between language and statistical reporting. Like figure and ground, before something can be counted, itemized or statistically analyzed, the phenomena in question must first be defined and abstracted from the ongoing flow of events (Allport, 1954). This first step is essentially a linguistic process, identical to naming, labeling or categorizing the referent in language. That is, statistics and charts may be viewed as merely more abstract versions of language based reporting. As an example, statistics used to summarize the number of sick days per employee, can only be understood if one examines how the words "sick," "day," or "employee" have been operationally defined. Charts summarizing an organization's monthly sales can only be understood if one knows how the words "sales" or "month" have been operationalized. Marketing departments may be well

aware of the flexibility available within the language categories of "sales" and "month," because they often seem able to produce sales forecasts and summaries that show increasing trends, even during the most adverse market conditions. In summary, before ongoings and events can be represented in statistics, graphs, or charts, there is an initial step of naming and operationally defining the phenomena in question. This is a language process that is subject to the one to many relationship between words and events just the same as any other language reporting process.

3.7 Event Complexity

Not only can the same word be used to refer to many different events, but the same event can also be labeled by many different words. This is due to the fact that events are complex, multi-dimensional, or multi-featured. Depending on which features of an event one pays attention to, the event might be able to be mapped onto a wide variety of different word categories. As an example of a simple "event," a coffee mug has many features: its colour, size, material, shape, process of manufacture, weight, etc. It can also be viewed as being a member of many possible sets or categories, for instance: dishes, kitchen items, things people drink from, things that hold water, art, things in offices, things people grow plants in, innovative designs, etc., etc. These possible ways of categorizing the coffee mug can be considered as features of the mug, just like the more obvious features of colour or shape. The example raises an important point, namely the logical equivalence of a "feature" of an event and a "way of categorizing" an event. That is, one feature of the coffee mug is that it can be considered as a thing people can grow plants in.

Furthermore, the features of events are also categorical in structure, partly due to the fact that features are represented and described in categorical language, but also due to the physical structure of the world, whereby one can always examine events from many levels of analysis. That is, features have features, which also have features, and so on, down to the level of precision or detail one is interested in examining an event. As an example, consider the feature "process of manufacture" of the coffee mug. One could describe the manufacturing process in terms of a number of process steps. For a pottery mug, some steps might include mixing the clay, molding it into the shape of the mug, painting it, firing it in a kiln, etc. Each of these features, or process steps, could be broken down into further detail. For instance, molding the clay might include spinning it on a potter's wheel, shaping it by hand, attaching the handle of the mug, etc.

The point is, events can be analyzed at many levels of detail, which can be stated in language with varying degrees of precision. The language labels used to represent features

(or sub-features, etc.) are categories which may be loosely connected with the underlying events (features, sub-features) they refer to. This event structure, coupled with the categorical structure of language, adds tremendous flexibility to the categorization process in formal hierarchical communication. If events at one level of analysis do not legitimately map on to the output demand categories of a unit's formal structure, perhaps re-analyzing the situation at a different level of analysis will produce a legitimate mapping.

An example will illustrate the process. An official program of team implementation places output demands on organizational units to provide evidence of team activities. The concept of a "team" is a language category with many possible sub-features, and there are many possible events that could legitimately be labeled as "team activities." Within the context of a manufacturing unit, teams might be considered to have one or more of the following features: a group of workers, problem solving, group discussions, meetings, redesigning manufacturing tasks, people working together, shared work loads, etc. Now, if a standing committee within the unit has already been meeting for several years, does this constitute a team? If the manager is under sufficient pressure to report team activities, perhaps referring to the standing committee as a "team" will satisfy the formal output demands of the program. After all, the committee is a group of people, working together, and as such it meets some of the criteria for a "team." If a quality problem has been recently solved due to an in-depth study by an external engineering department, does this constitute a team activity? Again, if the pressure to report team activities is great enough, perhaps referring to the solution as a "multi-disciplinary team effort" will satisfy the demands of the formal structure. After all, people were involved, and a problem was solved.

The example raises the question of necessary versus sufficient conditions for legitimate entry into a category. Given barriers to perception and constrained channels of hierarchical communication, often the evidence required to legitimately satisfy a demand category is very limited. It may be simply impossible for upper management or anyone else to know or find out whether the above quality problem was solved as a team or not. Merely renaming an ongoing activity, rather than actually changing activities may be sufficient to satisfy output demands. That does not mean the reported activity satisfied the necessary conditions for a team, according to the personal definition of some higher level manager or the official definition according to a company team training program. But the detailed information required to test whether actual events satisfied such definitions is not accessible within the formal system. Moreover, the fact that incentives exist for higher level managers to take the information at face value and use it as evidence that they are also

living up to the demands of the formal structure, further adds to the flexibility in reporting that may be available.

Given such complexity in events and ongoings, a great deal of flexibility exists in the formal reporting process of hierarchical communication. Words and events are related to one another in a "many to many" (many: many) relation. Depending on the output demand categories defined by a unit's formal structure, the flexibility in this many to many relationship may allow for a wide range of possible categorizations or mappings. The details of this flexible mapping process requires an examination of certain aspects of the idea of categories, and in particular their role within formal communication.

3.8 Categorization in Formal Communication

Two perspectives on the role of categories in formal hierarchical communication are worth considering: i) the perspective of a unit receiving a categorical output demand from its legitimate authority, and ii) the perspective of someone outside of the unit, such as a superior, receiving a formal report stated in categorical language.

From the first perspective, a unit confronted with an output demand category that it must somehow respond to, needs to find some event or events within its domain of authority that will satisfy the demands of its legitimate authority. In order to satisfy the output demand, some events must be reported that legitimately meet the criteria for entry into the category. A trivial (albeit somewhat absurd) example will illustrate how we believe the process works.

Suppose a unit is expected to report evidence of "furniture implementation" within its domain of responsibility. This output category has a certain "set structure" (Purdy, 1989) from the perspective of the unit. That is, from the unit's perspective, a certain variety of events can be considered to be members of the category "furniture." This set structure is determined at least partly by the variety of events already available within the unit, which could be considered as exemplars of "furniture." Thus, if the unit has a chair or sofa available, these events can be reported as evidence of "furniture." Similarly, if the unit has a ping-pong table, this event could be legitimately reported as "furniture," even though a ping-pong table might not be the first thing most people outside of the unit would think of when they hear the word "furniture." Within the unit context, a ping-pong table fits within the set structure of "furniture," because for one thing it is available, and also because it meets certain minimum criteria for legitimate entry into the category "furniture."

Such criteria have typically been discussed in the literature in terms of two general types of categories: feature based and exemplar based. Categories defined in terms of

features are typified by biological taxonomies in which animals or plants are identified as being members of certain species, based on whether or not their features match the defining features of the species (Tversky, 1977). Thus, a bird may be identified as a "robin" if it has all of the defining features of the species "robin." Features may be "defining" or "characteristic," where defining features are necessary for admissibility into the category, while characteristic features may or may not be present in an item within a category (Leahey and Harris, 1993). Wittgenstein (1968) has noted with respect to language categories, that often there may be no defining features which all items must possess to be considered as members of the category. While such categories may be defined in terms of various features, entry into the set is not determined by complete feature matching, but perhaps by a minimum number of feature matches. Thus, the category "game" may be defined in terms of a number of features that games could potentially have, but no particular game possesses all of these features. Exemplar-based categories have more "fuzzy" boundaries, in the sense that items are considered members of the set based on their degree of similarity to a representative exemplar (Rosch, 1978). For instance, a "robin" may be considered representative of the category "bird." Other animals that are sufficiently similar to robins are also labeled as birds. Similarly, "sofas" or "chairs" might be considered representative members of the category "furniture," while a "ping-pong table" may be viewed as a more atypical member of the set.

Returning to the example, if the unit can not draw on events that are already available and meet the legitimate criteria for entry into the category "furniture," what then? It must come up with something to report, since it has been given the formal responsibility to do "furniture" and could be held accountable if it does not demonstrate that it is doing as it is supposed to. In this case, the unit may try to do something that produces events that can be legitimately labeled as "furniture." It may designate a "furniture budget," establish a "furniture implementation team," send unit members out for "furniture training," or begin a "furniture pilot project." It is worth noting that these activities themselves, even prior to the appearance of any actual "furniture" within the unit, may be used in formal hierarchical reports as legitimate evidence of the unit's progress towards "furniture implementation." Thus, it is legitimate to report as part of the "furniture" program, that all staff have received "furniture training." The fact that these activities share the common "feature" of being formally designated as being connected with the "furniture program"—that is, being labeled as "furniture efforts"—serves as sufficient justification for them being reported as legitimate evidence of "furniture" for upper management.

Finally, after some time, the unit actually manages to implement "furniture." It acquires a sofa, chair, ping-pong table, and water bed. In addition, it also acquires a new computer and a lawn mower, purchased using money from the "furniture budget." The manager of the unit was granted informal approval from his superior to include the computer and lawn mower in the furniture budget, since both items were desperately needed to meet production quotas and improve productivity, and could not be purchased under any other budget category because of corporate cutbacks. All items are acquired on a "blanket purchase order" from a well-known furniture supplier, who also happens to sell electronics and garden supplies. The unit manager formally reports to the superior that the unit has implemented "six pieces of furniture," and as an example, includes a detailed report documenting the sofa implementation. The superior, who has received similar reports from three other units, reports to upper management that her department has collectively implemented 24 pieces of furniture, and passes on the executive summary page from the sofa report as an example. A while later, after the computer and lawn mower have begun to impact production levels, she is also able to report an increase in department productivity resulting from the successful implementation of the "furniture program."

An objective observer might not consider all six items as equally legitimate members of the category "furniture." While the sofa and chair may be quite representative members of the set, the ping-pong table and water bed are rather atypical. The only features that connect the computer and lawn mower with the category "furniture" are that they were purchased from a furniture supplier, and paid for with money from the furniture budget. While such mappings may vary in their degree of legitimacy, the details of how word categories are operationalized are hidden from the formal system by barriers to perception which constrain formal information processing. Within such a constrained information system, the minimal features that link the computer and lawn mower to the "furniture" category may be enough to satisfy the output demands of the formal structure, particularly since these atypical items were reported in aggregate form, rather than as unique exemplars, which serves to further constrain perception.

Furthermore, although there may be obvious exemplars of "furniture," in many organizational situations formal structures are stated in language categories for which no good representative exemplars exist. For instance, in the team implementation described in the introduction, one of the most common complaints of managers charged with implementing teams was that they did not know what upper management meant by "team." Corporate training programs did very little to elaborate a formal definition of the concept, concentrating mainly on sports analogies that made little sense in the context of

manufacturing departments. Similarly, what is meant by buzzwords like "Re-engineering," "Total Quality Management," or "Just-in-Time"? Good exemplars for such concepts are difficult to find, giving units charged with their implementation a good deal of flexibility to determine their own operational definitions (e.g., Safayeni, et al., 1991).

The informal approval of the computer and lawn mower purchases by the superior may be regarded as an adjustment within an informal hierarchical frame of interaction, to accommodate the demands of a formal structure, while simultaneously working within the other constraints that affect unit operations. Since the authority and responsibility structure is nested, the superior may appreciate the production and productivity constraints affecting the unit, and informally grant tacit approval for such atypical operationalizations of output categories. As a result, both the unit and the superior are able to demonstrate that everything is working as it is supposed to. They are able to meet output demands for both "furniture" and "production and productivity" within the constraints of the structure, by taking advantage of the flexibility in the many to many relationship between words and events. Meanwhile, the superior may be "protected" within the system by the fact that her approval was given informally, rather than formally. If an auditor should ever question the legitimacy of the computer and lawn mower purchases, the superior could argue that she knew nothing about them, and provide the formal documentation as evidence. Instead, the problem could be defined as a "mistake," or in the worst case, blamed on local "bad apples" within the unit.

Overall, the "furniture" set structure from the perspective of the unit includes a higher variety of "furniture" definitions than one might expect, based on the word taken at face value. Some of these definitions may be informally shared with the next level up in the hierarchy, while others may not. For instance, the unit may not bother asking whether or not counting a ping-pong table as "furniture" would be legitimate, even though it may be an atypical member of the set. Phenomenologically, people in the unit experience an output demand as a category to be filled with something. Depending on the amount of pressure on the unit to respond to output demands, the rigidity of the other constraints acting on the unit, and the degree of flexibility available in legitimate word: event mappings, there may be more or less adjustment made to the category boundaries, and the set structure defined to operationalize the category.

The amount of mapping flexibility depends on the degree of "representational transparency" in the word: event relationship. By that I mean the degree to which one may be able to predict reliably the specific events referred to by a representation (language, statistics, etc.), based only on the representation itself. Representational transparency is,

therefore, a function both of the inherent ambiguity of the representation and the degree to which the communication system constrains perception of word: event mappings. Thus, other things being equal, a demand for "furniture" would be less transparent than a demand for "red armchairs." However, if the formal communication system is totally constrained to perception, not even "red armchairs" would be very transparent. Perhaps "blue bar stools" could be reported as "red armchairs" with little risk of detection.

The point can be taken even further. Since output demands require some action to be taken, if the degree of representational transparency is low, just doing something—anything—may be considered as legitimate and sufficient evidence in response to the demand. For instance, if the demand is for increased manufacturing efficiency, implementing a new plant layout or purchasing a new piece of equipment may be evidence of doing "good" with respect to that demand category. This is irrespective of the technical merits of the equipment or the layout, according to some objective evaluation. Such technical details are often simply inaccessible within the formal structure. Simply labeling the action as "good" may be enough to satisfy the demands of the formal structure. Furthermore, doing "something" creates movement—a re-shuffling—within a unit that may uncover new events, new patterns, or new ways of interpreting existing facts, which could then be reported as evidence of doing "good."

The set structure from the unit's perspective is, therefore, an adaptive structure. The category boundaries and the criteria for entry of an event into the category can be adapted to meet the formal informational constraints on the unit's output, while accommodating the other constraints that may be acting on the unit. For the lack of a more agreeable label, I have come to refer to this adaptive set structure as the "supposed to structure" of the unit. The "supposed to structure" reflects the fact that regardless of other constraints acting on the unit, it is formally supposed to report "good" as defined by its legitimate authority, to demonstrate that it is doing as it is supposed to. Since many of the constraints acting on organizational situations are considerably more rigid than language constraints, language flexibility allows units to adapt to their output informational demands despite the other constraints that may exist.

Let us now consider the perspective of outsiders, such as upper level managers, who receive formal reports about unit ongoings and events, stated in categorical language. Using the "furniture" example again, the unit manager formally reports that the unit has implemented six pieces of furniture, including a sofa for which a detailed report has been completed to document the successful implementation. Thus, the report includes three key pieces of information: a category (furniture); an aggregate summary of the category

contents (six pieces of furniture); and detailed information about one exemplar for the category (the sofa). How does an outsider interpret this information?

Phenomenologically, it is doubtful whether receivers of such information would interpret it as the high variety set with many possible referents that it actually represents from an insider's perspective. Rather, it would likely be interpreted based on the most obvious and convenient interpretation, given the available information. Thus, the information would tend to be interpreted as representing an implementation of six "sofa-like" pieces of furniture. That is, when we hear a word category like "furniture," what tends to come to mind is the most typical or representative member of the category, in this case "sofa" or "chair." Such a typical interpretation of "furniture" based on most representative items of the category would be reinforced in the example, by inclusion of the detailed report on the "sofa implementation." The sofa report would serve to define the contents of the category for upper management. It helps position the results of the implementation in the centre of the output demand category, creating the impression that all items reported in the set are similar to the sofa, in terms of their degree of similarity (or typicality) within the category "furniture."

Someone receiving the unit's formal report would also tend to assume more uniformity in the "furniture" category than the report actually represents. Aggregate reporting, both in statistics and in language, removes variability from the events being represented. Thus, by reporting "six pieces of furniture" rather than the unique details of the six items, the impression is conveyed that there is a higher degree of similarity among the items than actually exists. Hence, due to aggregation, the receiver of the report is given the impression that the contents of the category are more homogeneous than they actually are. Thus, from a receiver's perspective, the impression is conveyed of a set structure for the category "furniture" that is both more homogenous and more typical or representative than is actually the case.

It is important to note that in hierarchical settings, it is the upper manager who has formally assigned the category "furniture" to the unit in the first place and as such, would already have some model, image, or set structure, of "furniture" in mind, with which to interpret the formal report. This model would tend to be simpler and more homogeneous in content than the "supposed to structure" of those within the unit, because it considers "furniture" in isolation, not in the context of the many conflicting constraints acting on the unit. That is, it would have the same basic characteristics and set structure as the image conveyed by the unit's formal informational outputs. This is very helpful from the perspective of the unit, because it means that an upper level manager would receive a report

about "furniture" that is quite consistent with her pre-existing image of "furniture." Receiving a report that conforms to one's expectations would tend not to raise as many questions about its accuracy or validity as a report that contradicts one's expectations.

With respect to further reporting up the hierarchical ranks, a number of issues are worth mentioning. First, the nested structure of responsibility creates incentives to take formal information at face value and use it without too much questioning, as evidence for higher level reporting that everything is working as it is supposed to. Second, while aggregation and information reduction is inevitable as it moves up the ranks, some extremely typical exemplars may be reported without aggregation. Hence, the "sofa report" may be processed up the ranks as evidence of an extremely representative member of the category "furniture," that several levels of management may wish to use to define their unit activities with respect to the "furniture" category. On the other hand, items which represent atypical operationalizations of a category, such as ping-pong tables or lawn mowers, would be most likely aggregated to reduce contradictory information with respect to the formal reporting category.

Third, because of the different formal definitions of "good" that exist at different levels of the hierarchy, information may be labeled, aggregated and re-labeled in several different ways as it moves up through several layers of the hierarchy. As discussed earlier, events are complex, have many features, and can be categorized in many different ways. Thus, a "robin" could be considered as a member of the category "bird," but on the other hand, the fact that a robin is a "bird," implies that "birdness" can be regarded as being a feature of "robin." Similarly, "birdness" can also be considered as a feature of "sparrow." That is, not only can "robin" be categorized as "bird," but "bird" (or "birdness") could also be categorized as "robin" or "sparrow." In a hierarchical communication setting, where perception and information processing is severely constrained, this reflexive property of categories can lead to some peculiar, paradoxical and even absurd results, as a couple of trivial examples will illustrate.

For instance, if at one level of the hierarchy, output demands call for "birds," a robin might be reported as evidence of "birds." However, if at the next level up, "sparrows" were called for, "birds" might be reported as evidence of "sparrows," since a legitimate categorization procedure exists between "birdness" and "sparrows." Thus, flexibility in the categorization process through two levels of reporting, can lead to a "robin" being transformed into a "sparrow" as follows:

robin-->bird-->sparrow

More peculiar examples could be imagined, such as the following three step categorization:

robin-->bird-->animal-->dog

In this example, "robin" is reported as a member of the set "bird," "bird" as a member of the set "animal," and "animal" (or "animal-ness") as a feature of "dog." After only three levels up the hierarchy, a robin can be turned magically into a dog.

Such examples strike us as odd because they use words with high representational transparency and because we have learned over time that there is a "natural" way of categorizing such things as robins, sparrows, birds, and dogs. With respect to representational transparency, we may already have a model or image of a "robin" in mind when we go through the categorization process. Furthermore, we also have a model in mind of the structural relationship between "robins" and "birds." We tend to see a robin as a member of the super-ordinate set "bird," but it is not so easy to see how "bird" or "birdness" can be considered as a feature of "robin." Finally, in such transparent examples, we can also see why rules are being broken in the multi-level categorization process. Going from "robin" to "dog" makes no sense to us, because first the categorization is based on membership within super-ordinate sets (robin-->bird-->animal), but then suddenly the categorization process switches to one based on features (animal or animal-ness-->dog).

In organizational contexts, all of these "constraints" on normal processes of categorization are relaxed during formal hierarchical reporting. First, language usually has far less representational transparency in organizational settings than in the above examples. Words are often used that have no well established connections with events. Words like team, innovation, or efficiency are vague language categories that can be used to represent a wide variety of events. In such words, there are no generally agreed upon pre-existing models which define either the particular events represented by the word, nor any "natural" categorization rules governing the structural relationships between word categories. For instance, with respect to the word categories "team" and "committee," which is the super-ordinate category and which is the subordinate category? Is a "committee" a particular kind of a "team," or is a "team" a particular kind of a "committee"? Both of the following categorizations would seem reasonable if encountered in a hierarchical reporting process:

committee-->team
team-->committee

Similarly, a "computer" can be viewed as a member of the category "technology," but "technology" can also be considered as one of the elements or features that make up "computers." "Management" and "innovation" could also be viewed as elements of one another, as the following two statements illustrate:

"Our management is very innovative" (i.e., innovation-->management)
"Innovation depends on good management" (i.e., management-->innovation)

Furthermore, barriers to perception and constrained channels of communication may hide the multi-level categorization sequence from someone receiving a formal report. Thus, being told that "dog" has been defined based on the fact that dogs are animals (i.e., a feature-based categorization) may not be considered unusual, unless one is also told that "animal" in this case actually represents a category of "birds," which includes "robins." The switch from a categorization process based on membership in a super-ordinate set to one based on features, is hidden from the perspective of an upper manager who only receives the formal report.

Although the preceding instances may represent hypothetical cases, examples from organizational settings can have a similar, if not quite so obvious structure. For instance, in a recent study of a major auto manufacturer's supplier development program, it was discovered that the car maker's supplier development teams routinely took credit for discovering and solving problems associated with the supplier's manufacturing process, that the suppliers already knew about and had often already solved (Rogers, 1996). The fact that these problems were discussed at a meeting between the supplier and the supplier development team, meant that they would be included in the list of "problems discussed at the meeting." The problems on this list were then reported to the management of the supplier development program, as being "solved by the supplier development team." The categorization sequence worked as follows:

problem already solved by supplier-->
-->problems discussed at meeting-->
-->problem solved by supplier development team

Thus, "solved problems" were turned into "problems discussed" but not solved, and then back into "solved problems," but now solved by the supplier development team rather than by the suppliers. The first step grouped problems that were already solved together with other unsolved problems into the category "discussed at meeting." Then these problems were reported as "solved by the supplier development team," through a feature-based categorization, using as the common feature the fact that all appeared on the list of problems discussed at the meeting. Thus, contradictory features of the reported events (e.g., the fact that many of the problems had already been solved) were systematically "abstracted out" of the formal report through the categorization process.

It is also worth briefly considering one final aspect of event categorization in formal hierarchical communications. Until now, the discussion has concentrated on the reporting of lower level unit events, based on explicit output demands from their legitimate authorities, defined in terms of a unit's formal structure—that is, a "top-down" demand that triggers the process of event reporting. However, there are also many situations that arise in which the process starts with the "event" rather than the output demand category, triggering a "bottom-up" reporting process. Events may simply occur within organizational units, that have either a positive or negative "valence" according to some broadly accepted legitimate definitions of "good" or "bad." For example, if a university professor wins the Nobel Prize, this "good" event will be reported within the formal structure of the university, even though there was no pre-existing demand category for reporting Nobel Prizes. Similarly, negative events such as a spill at a nuclear plant, or the murder of a Somali teenager by members of the Canadian military, must often be formally reported despite the fact that they may reflect badly on units or individuals within the organization.

The "bottom-up" reporting processes that occur in such situations also rely on flexibility in the relationship between events and language. When a "good" event occurs, units typically engage in efforts to amplify and broadcast the event, in an attempt to use the event to define broader categories of activities. For instance, a Nobel Prize might be reported as evidence of research excellence throughout the entire university, in attempts to obtain increased government grants or industrial contracts. Similarly, individuals and units may try to define themselves in connection with the "good" event, in order to claim some degree of credit. For instance, in the team implementation described in the introduction, the positive research report about the successful team lead to a job promotion for the facilitator of the team program, even though the formal program had nothing to do with the success of the team, which had already been operating before the official program began. Thus, by claiming to be "in the same category" as the good event, individuals and units may be able

to claim credit for the event. Such behaviours may not be attributable to pure political maneuvering on the part of such individuals or units. They may simply see themselves as being part of the same category and, therefore, having the legitimate right to claim credit, in the same way that Canadians may feel a certain pride when a fellow Canadian wins an Olympic gold medal. Regardless of the reasons for such behaviours, attempts to position the "good" event within one's legitimate domain of authority allows the individual to claim the event as formal evidence that everything is working as it is supposed to (if not even better than it is supposed to).

When "bad" events occur, the opposite behaviours result. Since "bad" events convey the impression that things are not working as they are supposed to, individuals and units may try to distance themselves from the event by claiming to be in a different category, to avoid being held accountable. For instance, sprinter Ben Johnson was very quickly labeled by the Canadian media as "Jamaican born," after being caught using steroids during his 100 metre win at the 1988 Olympics, even though he had been treated as thoroughly "Canadian" immediately before. Several well known strategies exist for re-categorizing a "bad" event. The existence of the event may simply be denied—that is categorized as "non-existent"—or blamed on "external factors." If the event is not unambiguously "bad," individuals and units may attempt to take advantage of word: event flexibilities to re-label the event in an attempt to move it from a "bad" category into a "good" one (or at least into a "neutral" category). Military euphemisms are well known in this regard. For instance, the label "collateral damage" used in reference to the accidental bombing of innocent civilians, provides a neutral category with no pre-existing set structure in the minds of the general public. In political settings, such re-categorizations are often referred to as "spin doctoring" or "damage control." Finally, often used as a last resort when language flexibilities have reached their limits, the "bad" event may be attributed to specific individuals or units, formally defined as "bad apples" who have not lived up to their responsibilities and may, therefore, be sanctioned or eliminated from the organization as a formal solution to the problem.

3.9 Formal Structure as Image Construction and Maintenance

Overall, an organization's formal structure is viewed as an elaborate system of statements in language, that defines what is supposed to be going on in the organization, and what individuals and units of the organization are supposed to do, to live up to their formal responsibilities within the structure. As such, the formal structure plays a key role in the ongoing construction and maintenance of organizational images among various

internal and external publics, by placing constraints on the informational outputs of organizational units and by providing organizational members with a legitimate, normative language to use to represent what is going on. Within this context, formal hierarchical communication in organizations is viewed as an ongoing, collective process of contributing to organizational image construction and maintenance, by mapping unit events and ongoings onto the legitimate image categories defined by the formal structure.

On the one hand, the constraints of the formal structure place organizational members in the paradoxical situation of having to confirm an image of organizational reality that is inherently too simple and too positive to realistically represent the situation as they experience it. On the other hand, language provides organizational members with a tremendous resource, that enables them to cope with the inherent dissonance created by these structural constraints. Since these constraints are based in categorical language, they are not necessarily fixed constraints, but may be quite flexible and adaptive. By working within the context of various other constraints that may be acting on organizational units, flexibility in the "many to many" relationship between language and events is used to map complex and variable events and ongoings onto the relatively simple, positive images that define the organization's official reality.

Image construction and maintenance is highly functional for organizations and their internal units. All organizations and units must maintain legitimacy with respect to key publics that hold some degree of power over them, to maintain the resource flows and exchange relations that sustain them within the larger networks in which they participate, and image maintenance is a key element of this process (Blau, 1964; Pfeffer, 1981). However, constrained communication channels prevent the complete and reliable exchange of detailed information about events and ongoings between organizations and units. Therefore, all organizational communication (indeed, all communication generally) must rely on grossly simplified models or images to represent complex situations. In particular, there seems to be a "satisficing" (March and Simon, 1958) limit to the degree of image complexity one unit may hold about another, depending on the degree to which an accurate model is important to the interaction. Images simplify interactions among units by increasing the efficiency (if not always the effectiveness or accuracy) of communication and information processing. For instance, decisions can be made quickly if a simple model or image is already available for interpreting decision information, just as stereotypes are often used to quickly process information at an individual level (Ashforth and Humphrey, 1995). Positive images constructed through formal structures and information processing are, therefore, key to maintaining legitimacy with respect to other organizations externally, and

among interdependent units internally. Since communication constraints prevent contradictory, or negative, information from being fully explained or represented in context, negative information contributes to the creation of negative images, which reduce organizational or unit legitimacy. To preserve legitimacy in a constrained communication context, images must be constructed which over-emphasize the positive and overstate the homogeneity of events and ongoings within organizations and units.

On the other hand, image construction and maintenance is the not the only role played by formal information systems. Formal communications must often convey "signal" information in addition to "symbol" information (Feldman and March, 1981). Hence, the preceding discussions have noted that there may also be dysfunctional aspects to the fact that formal structures and formal communications convey images. Language flexibilities in a context of constrained communication implies that formal images may not accurately represent internal events and ongoings. Since responsibility creates pressures on individuals and units to emphasize positive reporting, management control systems may control little more than the formal informational outputs of organizational units, rather than unit actions directly. Thus, while image construction and maintenance is functional from the perspective of a unit projecting information outward, these processes may be dysfunctional from the point of view of an outsider trying to "see through the image" and understand or control what is actually going on within a unit. The functional and dysfunctional aspects of image constrained hierarchical communications will be further discussed in Chapter 7.

3.10 Overview: Formal Hierarchical Communication as a "Pseudo-Scientific" Process

Formal hierarchical communication may be considered as a particular kind of language game (Wittgenstein, 1968) that has been examined in this dissertation in terms of: i) the social forces that place constraints on communication and language use in organizational settings, associated with the formal structure and its system of responsibility and authority; and ii) the affordances (Norman, 1993), flexibilities, or opportunities available to participants within this language game, resulting from the "many to many" relationship between words and events. As a convenient way of summarizing the theoretical framework, formal hierarchical communication can be contrasted with another well known language game, that of an ideal scientific process, in terms of the rules governing moves in each game and the approaches used in both situations to understand and represent empirical phenomena.

Science has developed over the last few centuries as an approach for understanding the world and for representing knowledge about the world in terms of theories and paradigms. A careful scientist develops theories about the workings of some phenomenon in the natural or social world. Theories describe relationships among concepts, which are defined in language or mathematical form to represent some phenomenon or class of events in the world. Based on the theory, an hypothesis is developed—a statement that predicts in a particular way how events in the world ought to unfold under certain conditions. A measurement technique is then developed in order to collect careful, reliable and representative information about the phenomenon in question, and test as rigorously as possible the validity of the stated hypothesis. When measurements have been taken of the phenomenon, the results are analyzed and compared with those predicted by the hypothesis. If the empirical results are consistent with the prediction, the hypothesis is said to be supported. If the results are inconsistent with those predicted, the hypothesis is said to be unsupported. This "operationalization" process from general theory, to specific hypothesis, to precise measurements, defines how particular words or concepts are connected by the scientist to particular events in the world during a scientific study. Any conclusions to be drawn from the study are limited by the particulars of this operationalization process. Thus, support for an hypothesis under one set of conditions does not necessarily imply support under other conditions, and certainly does not imply full support for the general theory.

The process is cyclical in the sense that further clarification and refinements of theories, hypotheses, and measurement techniques, may improve the correspondence between theory and phenomenon over time. Theories or hypotheses that do not correspond well with empirical findings are eventually discarded in favour of those that do. That is, the phenomenon is assumed to exist "out there" in the world, and it is the scientist's job to gain an understanding of the phenomenon, and come up with a theory that describes as accurately as possible how the phenomenon works under various conditions. At each step the careful scientist needs to ensure his or her own biases are kept out of the process. Thus, measurement and analysis techniques are designed to rule out bias as thoroughly as possible. Statistical sampling and data analysis techniques are well known in this regard. Although many actual scientific studies fall well short of the scientific ideal, the approach of testing theories about the world against empirical evidence drawn from the world—the ultimate arbiter of scientific truth in a sense—is well understood in science. Human fallibility and bias may limit the success of the scientific approach, but its objectives are well understood.

Formal hierarchical communication in organizations stands in sharp contrast to the ideal scientific model. Instead it may be regarded as a pseudo-scientific process: a system of representing organizational phenomena that is deliberately and systematically biased in the direction of theory and hypothesis confirmation. Formal structures may be viewed as biased theories or hypotheses about the internal ongoings within organizations and organizational units, as for example a theory that "a re-engineering program would be good for the company." Theories and hypotheses are "biased" precisely because of the fact that they have formal legitimacy within the structure, and as such serve as the official definition of organizational reality, rather than as predictions about organizational reality. These biased structural theories are operationalized down the ranks as elaborated formal structures that define "good" for the individuals and units who have been assigned the formal responsibility to confirm them.

The "downward" operationalization process is not designed to test the validity of structural theories in an unbiased manner, but to confirm their validity. Thus, lower level structures are operationalized in a biased manner in order to provide evidence that can be used to confirm higher level structures. At each stage in the process, biased measures are devised to report back up the ranks that everything is working as it is supposed to, thus confirming the hypotheses of upper levels within the hierarchy. Formal measures selectively report events and ongoings in terms of the output demand categories defined by legitimate authorities. Flexibility in "event: word" and "word: word" mappings are used at each stage of downward operationalization and upward reporting, to connect, however loosely, the internal world of the organization, to the legitimate categories of the formal structure. Formal structures and measures also structure the perception and attention mechanisms of individuals within units. That is, just as one might scan a photograph and quickly focus in on the person one is looking for, output demands focus individual attention on events and features of events that fit the demands.

Compared to scientific standards, the "rules of evidence" or "standards of research methodology" are often very loose, based on minimal language correspondences, rather than rigorous criteria for reporting representative information, or for demonstrating the validity of formal measures. Similarly, temporal or spatial constraints on data collection in science may be relaxed in formal organizational reporting. Reporting one "planned" event, two "current" events, and three "past" events in an aggregate manner as six "good" events, may serve as legitimate evidence of a unit living up to its responsibilities within the formal structure. Finally, in science, methods of operationalization and data collection are subject to the scrutiny, examination and re-testing of others in the scientific community. That is,

the communication system in science is designed to open up the process of "event: word" and "word: word" mappings to other scientists for their assessment and criticism—to remove the curtain separating front-stage from back-stage in terms of Goffman's (1959) theatrical analogy of social interaction. In formal organizational communication, "event: word" and "word: word" mapping processes are largely hidden behind barriers to perception by severely constrained communication channels. Legitimate others are not given the opportunity to fully scrutinize mapping procedures and must often take the results at face value. The nested structure of hierarchical responsibilities creates a setting of vested interests in which face value is good enough to satisfy the informational demands of the structure.

The comparison of formal organizational communication against an ideal model of science immediately raises the corresponding question of the degree to which science itself works as a process of image construction and maintenance. Kuhn's (1970) well-known arguments about the process of scientific revolutions creates an image of science as a social phenomenon in which ideas attain hegemony within a scientific community, much like buzzwords or formal structures may attain legitimacy within an organization, and with much the same affects of informational control on scientists themselves. Similarly, sociological studies of scientific practice have suggested that scientific facts may be constructed in a manner not unlike the process of organizational event reporting described above (e.g., Woolgar, 1988; Latour and Woolgar, 1986). Science always takes place within social and organizational settings that are constrained in many ways, just like any other social or organizational settings. To varying degrees, these constraints cause scientific practices to deviate, sometimes significantly, from the ideal model of science.

While such considerations are interesting they are nonetheless somewhat beside the main point here. The suggestion that formal organizational communication is some distance from the ideal scientific approach to representing the world is no less valid if scientific practice itself often falls short of the ideal model. In practice, there certainly is "bad" science, which may function much like formal hierarchical communication in organizations, simply restating the received wisdom of a scientific discipline, and unthinkingly collecting and analyzing data in terms of this received wisdom. But there is also "good" science, which attempts to find reasonable and reliable ways of representing phenomena that are perceived to exist in the world, while self-consciously acknowledging the limitations of language and method in the process.

3.11 Hypotheses

Based on the preceding theoretical development, several hypotheses can be developed and explored empirically to examine the idea of "positive" biased reporting within formal hierarchical communication. These can be divided into two types: hypotheses related to "category selection bias," and those related to "within category bias."

"Category selection bias" has to do with the idea that the formal structure, by virtue of its inherent legitimacy within the organization, pre-structures the output demand categories used to define "good" behaviours on the part of organizational members. The formal structure, therefore, provides individuals and units with a pre-established legitimate language for representing what is going on within the organization. It can be viewed as a "coding scheme" that members of the organization use to structure their formal reports about ongoings and events within their domain of authority. All members of organizations use this coding scheme because that is what they are supposed to do, according to how their roles and responsibilities are formally defined within the structure.

"Within category bias" refers to the idea that the "many to many" relationship between words and events provides a great deal of flexibility for individuals and units to strategically select and abstract events, and represent them in language for formal communications, in ways that make them look good within the structure. Given a variety of possible ways of summarizing events for formal communication purposes, people will tend to choose those that reflect most positively on them and their units, based on what has been contextually defined as "positive" or "good" within the formal structure.

The relationship between the two kinds of bias is immediately clear. Upper level authorities operationally define "good" for lower level units through the assignment and legitimation of formal unit responsibilities. These output demand categories serve to define some official theory or image of the unit's role within the formal structure. Formal information is demanded within these categories that tends to confirm the official image. These formal categories are chosen by legitimate authorities as operationalizations of higher level formal structures, to provide positive information for the authority with respect to his or her own higher level authorities. Thus, "category selection bias" may be viewed as "within category bias" at the next level up in the hierarchical structure.

3.11.1 Category Selection Bias:

H1. Formal information about ongoings and events within units will tend to be reported in output categories defined and legitimated for the unit by its legitimate authority within the hierarchical structure.

Corollaries:

H1a. Formal information that is consistent with unit output demand categories will tend to be encouraged by formal authorities, and perceived by unit members as potentially leading to individual or unit rewards.

H1b. Formal information that is inconsistent with unit output demand categories will tend to be ignored or discouraged by formal authorities, and perceived by unit members as potentially leading to negative consequences or sanctions for individuals or the unit.

H1c. Unit members will feel pressure to report information that they perceive to be consistent with unit output demand categories and to filter out (or screen) information that they perceive to be inconsistent with output demand categories.

H1d. Changes in legitimate output demand categories will be associated with changes in formal information reported as representative of ongoings within units.

H2. Formal authorities will define the output demands of lower level units in ways that provide formal information about unit ongoings which confirms that the formal authorities are themselves meeting the formal responsibilities defined for them by their higher level legitimate authorities.

Corollaries:

H2a. The formal output demand categories defined by formal authorities will not be viewed as fully representative of unit ongoings from the perspective of unit members.

H2b. Output demand categories are more predictive of the informational constraints on the unit's legitimate authority than they are of events and ongoings within the unit.

The images outsiders have about ongoings and events within a unit will result from both formal and informal communications and interactions with unit members. People "organizationally closer" to the unit may have access to more "back region" information about unit ongoings and events, and thus their images of the unit will tend to be more representative of unit ongoings (and more similar to those held by unit members themselves), than the images held by people "further organizationally" from the unit. People further away from the unit develop images about unit ongoings increasingly from the formal informational outputs of the unit and less from informal interactions with unit members.

H3. The less informal interaction and communication people outside of a unit have with unit members, the more their images of unit ongoings will correspond to the formal representations provided by the unit within its formal output demand categories.

Corollary:

H3a. The further organizationally people are from a unit, the more their images of unit ongoings will correspond to the formal representations provided by the unit within its formal output demand categories.

The definition of formal responsibilities for units by legitimate authorities also constrain the language used by units in their formal reports about unit ongoings.

H4. The language used in formal hierarchical reports generated by units will be consistent with the language used by formal authorities to define the unit's output demand categories.

Corollaries:

H4a. Words and language used to define legitimate categories by formal authorities will acquire a positive or negative valence from the perspective of unit members.

H4b. Positive valence words and language will tend to be used more frequently in formal hierarchical reports to represent unit ongoings than negative valence words and language.

3.11.2 Within Category Bias

Unit members will develop perceptions about the kinds of information higher level authorities deem to be "good"—that is, about the kinds of information superiors would like to receive in formal reports within an output demand category. These perceptions may be based on explicit performance indicators defined for each output category (as in Blau's 1955 study discussed earlier), or based on less explicit interpretations built up through formal or informal interactions and negotiations with the unit's formal authority. These unit member perceptions provide a set structure to the output category from the perspective of formal authorities, and may include perceptions about features of typical or ideal category exemplars, perceptions about the (maximum or minimum) number or quantity of items expected to be reported per unit time, etc. This perceived set structure may be more or less "correct," if compared to the set structures actually held by superiors. Thus, it is quite conceivable that impression management efforts on the part of unit members may fail due to misperceptions of what superiors "want to hear."

H5. Events will be abstracted, selected and labeled from unit ongoings for formal reporting within output categories based on the degree of similarity, or match, between these events and unit member perceptions of the set structure of the output demand category.

Corollaries:

H5a. The more an event is perceived by unit members to be highly typical (i.e., to have a high degree of similarity with perceptions of the set structure) of the output demand category from the perspective of formal authorities, the more likely the event will be included in formally reports.

H5b At each successive level of formal reporting up the hierarchy, information perceived to be inconsistent with output demand categories at that level will be omitted.

Reported events may or may not be generated as a result of actions taken on the part of unit members as efforts to change or modify their tasks in accordance with formal responsibilities.

There are several possible categorization mechanisms involved in the event abstraction and selection process which contribute to "within category bias." The degree to which these mechanisms are used, depends on the degree of pressure on the unit from its formal authorities to provide formal information within an output demand category, and on the degree of "representational transparency" associated with the reporting process (i.e., the degree to which perceptions of the "event: word" categorization process are constrained to unit outsiders, and the degree of inherent ambiguity in the language used to define the category).

H6. As demands (or pressures) from formal authorities increase for formal reporting within an output category, criteria for the selection and labeling of events as members of the category will be relaxed.

Corollary:

H6a. Under high demands for reporting the number of feature matches (i.e., the degree of similarity) between reported events and perceptions of typical or ideal events for the output demand category will be reduced.

H7. As the degree of representational transparency decreases in the formal communication process, criteria for the selection and labeling of events as members of an output demand category will be relaxed.

Corollaries:

H7a. As the degree of representational transparency decreases in the formal reporting process, the number of feature matches (i.e., the degree of

similarity) between reported events and perceptions of typical or ideal events for the output demand category will be reduced.

H7b. As the degree to which outsider perceptions of unit ongoings are constrained increases, the number of feature matches (i.e., the degree of similarity) between reported events and perceptions of typical or ideal events for the output demand category will be reduced.

H7c. As the ambiguity of language used to define output demand categories increases, the number of feature matches (i.e., the degree of similarity) between reported events and perceptions of typical or ideal events for the output demand category will be reduced.

Within category bias not only results from the selection or interpretation of unit events, but also from the style in which formal reports are presented. Events may be reported as exemplars or in aggregate form, depending on the degree to which they are perceived to be similar to the kinds of events authorities would ideally like to see within the category.

H8. The set structure of an output demand category, as operationalized within a unit, will be more heterogeneous from the perspective of unit members than from the perspective of formal authorities.

H9. Formal reports with respect to an output demand category will be structured to convey the impression that the set structure as operationalized within the unit, is highly similar to the set structure from the perspective of the formal authority, as perceived by unit members.

Corollary:

H9a. Formal reports will be presented in ways that convey impressions of a set structure that has a lower degree of event heterogeneity than the reports actually represent.

H9b. A unit outsider receiving only formal reports provided by the unit within an output category, would tend to under-estimate the variety and heterogeneity (i.e., over-estimate the degree of similarity) of events represented by the formal reports.

H10. Events perceived by unit members to be highly typical (i.e., to have a high degree of similarity with perceptions of the set structure) of the output demand category from the perspective of formal authorities, will tend to be formally reported as individual exemplars, rather than in aggregate form.

Corollaries:

H10a. Events which are formally reported as individual exemplars will be those events perceived by unit members to be most similar to what they perceive to be an ideal exemplar of the output demand category from the perspective of formal authorities.

H10b. Events perceived by unit members to be highly typical of output categories will tend to be formally reported in more detail, including more information about features of the event, than events perceived to be less typical of output categories.

H11. Events perceived by unit members to be less typical (i.e., to have a low degree of similarity with perceptions of the set structure) of the output demand category from the perspective of formal authorities, will tend to be formally reported in aggregate fashion, rather than as individual exemplars.

Corollary:

H11a. Events which are formally reported in aggregate fashion will be those events perceived by unit members to be least similar to what they perceive to be an ideal exemplar of the output demand category from the perspective of formal authorities.

To varying degrees the formal structures defined and legitimated for organizational units may influence the actions and task structures of unit members. Tasks may or may not be structured such that unit members "actually" feel they are doing what they perceive is demanded of them by the output categories. As Blau's (1955) study of employment agents suggested, unit members may operationalize output demand categories in ways that lead to a restructuring of tasks to maximize formal perceptions of effective performance within a category, even if this leads to actions that may be objectively viewed (by outsiders or by people within the unit) as being in opposition to other legitimate "goods" defined for the organization.

H12. The higher the degree of representational transparency associated with an output demand category, the more likely that unit members will restructure their tasks and unit actions in response to the category.

Corollary:

H12a If a unit is formally expected to satisfy what its members perceive to be competing, or conflicting, output demands, other things being equal, output demand categories with higher degrees of representational transparency will tend to have a greater influence on the structure of unit tasks and actions.

H13. The higher the demand or pressure on unit members to report information within an output demand category, the more likely that unit members will restructure their tasks and unit actions in response to the category.

Corollary:

H13a. If a unit is formally expected to satisfy what its members perceive to be competing, or conflicting, output demands, other things being equal, output demand categories with higher demands or pressures to report information will tend to have a greater influence on the structure of unit tasks and actions.

H14. Individual tasks and unit actions will tend to be structured in ways that allow unit members to most easily formally report tasks and actions within the output demand categories defined for the unit.

Finally, it has been suggested that the nature of formal reporting becomes an increasingly abstract process at the higher levels of hierarchical organizations. At lower hierarchical levels, people experience what they do as formally describing concrete actions and activities. At higher levels, managers are increasingly involved with summarizing and re-reporting information about actions performed by others at lower hierarchical ranks. That is, people at higher levels of organizational hierarchies are increasingly involved in mapping "informational-events" or "language-events" onto output demand categories, rather than physical events.

H15. The degree of representational transparency in formal information used to represent lower level activities, decreases at higher levels of the organizational hierarchy.

Chapter 4

4. Case Study Part 1: The Staging Organization

4.1 Introduction

An in-depth case study has been chosen as a method of empirically examining some of the preceding theoretical issues. The study began in June 1995, as a contractual research project within a new facility of a large manufacturing firm, which will be referred to as "The Company." The contractual research was completed in April 1996, while data collection continued through July 1996 with respect to the dissertation. The original intent of the research contract was to explore ways of improving communication, coordination and work flow arrangements both internally within this new facility (referred to as the "Staging" organization) and also externally between this organization and the network of other organizations it deals with during the course of its operations. Thus, the project began as an effort to understand and help improve the lateral communication and coordination linkages associated with this new manufacturing facility.

Very soon after the project began, however, it became apparent that the situation was a good deal more complicated than it had originally appeared and presented an extremely interesting setting from which to collect data related to this dissertation. It was learned that the Staging organization was regarded very negatively by people in other large units of the company, primarily because the formal information generated by the unit, to demonstrate that it was meeting its organizational goals and objectives, reflected very badly on several other powerful units of the Company. That is, in the process of making itself "look good," the new facility made other units "look bad" within the formal structure of the Company. This created a politically charged climate that, during the course of the study, eventually led to the Staging organization being closed down at the end of May 1996, barely a year after it had begun operations. The case study as a whole, therefore, provides an "insiders" perspective on the development of this organizational sub-unit, from shortly after the unit began until its official closing.

The method of research involved three forms of data collection: i) formal in-depth structured interviews with members of the Staging organization; ii) the collection of various written organizational documents and records produced by members of the Staging

organization; and iii) extensive informal data collection conducted in a "participant observation" approach, involving frequent interactions from June 1995 to January 1996, less frequent visits between January and July, 1996, and occasional discussions, telephone calls and meetings with Company employees since July 1996. A more detailed discussion of the methodology will be given in a later section. However, before proceeding with a detailed analysis of the case data, a general overview of the situation and history of the Staging organization will be provided, drawing largely on the participant observation and documentary data.

It should be stated at this point that for the purposes of this dissertation, all aspects of the case study have not been documented in detail. The objective here is not to present a rich ethnographic description of an organizational situation for its own sake. Rather, the intention is to examine aspects of the case that relate either directly or indirectly to the theoretical arguments about hierarchical organizational communication advanced in this dissertation. The findings and analyses to be presented, therefore, have been selected with regard to examining the validity or range of applicability of the theory. The data collected during the study that shed most light on the theory's validity will be examined in most detail, while less relevant data will be dealt with more superficially or simply not reported at all. From any lengthy study of this kind, many possible stories may be told and I must limit my efforts here to the one that relates most closely to the theory proposed.

4.2 Overview of Case Study Situation

"The Company" is a large manufacturing firm, which produces complicated, large-scale, high technology industrial equipment for North American and international markets. It has numerous manufacturing facilities throughout North America and in various other international locations, which each produce sub-components of the overall complex product, referred to as a "customer order," or "system." "Unit" is the name given to the major sub-assemblies that make up a customer order, and each order could have anywhere from one to 30 or 40 Units, along with a wide variety of other minor components. Prior to the end of 1994, the standard procedure for delivering orders to international customers was as follows. Components from various North American manufacturing facilities were consolidated into customer shipments in a centralized warehouse facility located in Canada. These consolidated orders were then shipped to the international customer's installation site. A crew of Company "field Installers" would accompany the order to the customer's site, and assemble the components on-site until the equipment was operational. An average

order would cost the customer several million dollars and require at least six weeks to install.

The Staging operation was established to address the existence of persistent quality problems with customer orders that were not being detected until the order reached the customer's installation site. These problems included incompatible components produced by different manufacturing sites, errors in equipment specification, late, missing or lost components, incorrect components, etc. The sources for these problems are distributed throughout the Company's operations, from marketing, engineering design and specification, manufacturing, through shipping and logistics. For the most part, the problems go undetected until all of the components making up a complete order come together for final assembly and installation at the customer's site.

Staging was established, therefore, to provide a final check of complete customer orders prior to shipment overseas. The objective for the Staging operation was to ensure 100% complete and accurate customer orders destined for international markets by making sure i) that the equipment specified (or "spec'd") for a customer matched the customer's actual needs; ii) that the equipment manufactured by the Company corresponded to what had been spec'd for a customer; iii) that the complete system as spec'd and manufactured would actually work when it arrived at the customer's installation site; iv) and finally, that what the customer was billed accurately reflected the equipment that had been supplied to the customer. The basic strategy was to perform a combination of "cold staging" and "hot staging" of customer orders before exporting the complete orders to international customers. "Cold staging" consisted primarily of checking the components of an order against specifications to ensure that all the required components were accounted for and consistent with customer requirements. "Hot staging" involved partially assembling several of the key components of a customer order, starting up the system and running it, to ensure that it would work as expected when fully installed at the customer's site. A detailed outline of the Staging Process is provided in Appendix B.

4.2.1 The Need for a Staging Function Within the Company

A) Company Image and Installation Costs

The rationale behind the establishment of the Staging operation was fairly straight-forward and based on two factors. First, errors not detected until the product reaches the customer site reflect badly on the Company's image in front of the customer. Second, it costs the Company a great deal more to correct problems at isolated foreign installation sites

than it does if the problems are detected and corrected domestically prior to shipment. With respect to the Company's image in front of the customer, the common analogy given by Staging staff was that of a person buying a new luxury automobile, only to find that after arriving in his driveway, it can not be used for a few weeks because it is missing a seat, has an extra rear-view mirror, or has a door of the wrong colout on one side. So the car dealer is left scrambling in front of the customer, trying to repair obvious errors and make up excuses as to why the errors were made in the first place. While this image problem was difficult for people in the Company to quantify financially, it was clear that leaving such problems undetected until they arrived at the customer's doorstep amounted to "airing dirty laundry" in front of the customer, damaging the Company's image in the market place.

In terms of the more tangible costs of repairing problems in foreign locations rather than domestically prior to shipment, delays increase the cost of installation and postpone final payment from the customer. Furthermore, when shipping to certain countries, Customs Duty and other importing costs can be dramatically higher for extra shipments of late or replacement parts than if the material had all been shipped at once as a single consolidated order, adding extra costs whenever separate shipments were needed to correct problems detected in the field. Finally, when unnecessary material is incorrectly specified for an order, it must be shipped back to North America from the foreign market, or if that is considered to be too costly, it may be simply discarded. Discarding valuable equipment in front of the customer also reflects negatively on the Company's image, particularly in low income or developing countries, where customers may feel they have paid a great deal of money for equipment that was not even needed, or that they could have been given a better price if the Company had eliminated inefficiencies.

B) Product and Organizational Complexity and Change and the Need for a System Level Check

The basic reason for the appearance of a wide range of problems during field installation seems to be related to a high level of product and organizational complexity. The Company is a very large, complex organization, in terms of the number of separate organizational units that each perform a small part of the overall task of producing complete customer orders. Manufacturing locations are distributed across North America and in various other international locations. Each customer order is an extremely complex system, made up of thousands of components which undergo frequent design modifications and

updates, requiring hundreds of isolated process steps to design and manufacture, and involving thousands of communications and information exchanges.

After a sale has been made, the process of putting together a customer order begins when an "Equipment Applications Engineer" (EAE) works with an industrial customer at the customer's international location to develop a list of the major pieces of equipment to be included in the customer's order. A "Building Planner" then works with the customer to decide how the equipment can be best arranged in the customer's building facilities. Both the EAE and the Building Planner produce a set of "engineering notes," which are then given to a "Systems Applications Engineer" (SAE). Working from the engineering notes, the SAE uses a computer database to generate a detailed specification (or "spec") for the customer order. The spec provides all of the detailed instructions and component lists needed by the Company's various manufacturing units to purchase necessary components and raw materials from suppliers and to begin building the major sub-components of the order. After the components have been manufactured according to the specs, they are shipped from the various manufacturing locations to the Company's main warehouse to be consolidated for shipment to the international customer's installation site. The entire process from Spec Writing (EAE's, SAE's and Building Planners are collectively referred to as "Spec Writers") through manufacturing and shipping involves hundreds of people distributed across the Company and is spread over a period of several months.

It should be noted that as with most modern manufacturing organizations, each process within this complex manufacturing network is subject to its own internal quality control checking procedures. Each component and major sub-assembly is tested and retested several times during the manufacturing process. Despite this testing, however, problems still arise when the components come together at the end as a complete system. The reason seems to be that the kinds of errors found during field installation do not typically result from problems internal to a single process or organizational unit. Rather the majority of problems seem to arise from difficulties in communication and coordination between distributed processes and units.

For example, a common problem occurred when an order was taken for one or more units to be added as an "extension" to an existing system already owned by the customer. In such cases, if the customer's existing equipment was a number of years old, the doors on the units would be painted an "old" colour that was no longer sold by the Company as its "standard" colour. For aesthetic reasons, however, customers normally requested to have the doors of their new equipment painted the same colour as the older equipment already in operation. Thus, EAE's would indicate in the engineering notes that

the colour of the equipment should match units already in the field. For various reasons, however, SAE's often overlooked this requirement and simply specified the standard colour. Manufacturing would then produce doors of the standard colour as indicated in the SAE's specs. When the units arrived in Staging, the doors would have to be replaced with ones of the correct colour to match the customer's existing equipment. The error in this case could not have been detected in the manufacturing process by standard quality control inspection procedures, since the doors had been produced exactly according to the specifications provided by the SAE. Instead, the problem occurred "between processes," resulting from some sort of a communication error further "upstream" between the EAE and the SAE.

Given the sheer complexity of the product and the organizational complexity associated with the internationally distributed manufacturing process, many such problems "slipped through the cracks" and would not be detected until the components came together as a complete customer order. Before the Staging operation began, the only place where the order would come together to be tested as a complete system was at the customer site, where problems would have to be resolved at higher cost and in open view of the customer. Quality control procedures already in place within the Company's various manufacturing sites, only checked for quality at a component or "unit" level, rather than at the level of the entire order. The Staging organization was, therefore, created as an attempt to provide a "system level check," so that problems could be detected and resolved out of sight of the customer and prior to shipping orders to remote international installation sites.

4.2.3 An Overview of Staging's History Within the Company

The Staging organization was forced to adapt to an extraordinary amount of administrative and organizational change during its short existence within the Company. While the study began after some of these changes had already taken place, it is worth briefly summarizing Staging's history as an organizational unit, beginning with the initial idea in 1993. The following overview is presented as a simple factual account, and I believe that by and large, it is a factual account. I have attempted to identify with additional comments, areas where the facts of the case are more or less in doubt.

A) Initial Proposal of a Staging Operation

- The initial idea for a staging activity grew out of the Company's International Installation Department, based on the recognition on the part of its members of persistent quality problems and difficulties associated with the installation of customer orders in remote international markets.

- During the Fall of 1993, a group of people within International Installation ran a series of staging trials, in which eight international customer orders, comprising a total of 146 "units," were "staged" prior to shipment overseas. The results of this trial run, were summarized in a report presented to the Company's senior management. The report provided estimates of the financial savings resulting from the eight trial runs and stated that if the Company were to stage all international orders, "conservative estimates" of savings would be more than double the cost of performing the Staging function. The report identified improved "customer perception" of the Company as the main intangible benefit of Staging.

- A business plan and budget request to establish a full scale Staging operation were submitted for management approvals in the Spring of 1994. The business plan requested sufficient funds to establish an organization large enough to stage 100% of the Company's customer orders destined for both North American and international markets. Organizationally, it was proposed that Staging would be set up as a department within the Canada-based International Installation Department (see Figure 4.1).

- Within its North American operations, the Company operated a number of manufacturing plants in Canada and the United States. Two warehouse operations, located near the largest Canadian and US factories were used to consolidate units and other components into complete orders to be shipped to customers. International orders were shipped from the Canadian warehouse, while North American orders were shipped from the US warehouse. It was proposed, therefore, to establish two Staging operations, near both the main Canadian and main US manufacturing locations.

- The proposal also recommended the merger with Staging of an existing unit inspection department located at the US unit manufacturing plant and reporting to

the Quality Department within the US Manufacturing Division. This operation, referred to as "WIN/WIN" (which stands for "What I Need/When I Need it"), had been in existence for some time, performing a final inspection function on units manufactured at the US plant. The proposal suggested that rather than just inspecting units in isolation, it would be better to merge the WIN/WIN activity within a more comprehensive Staging operation that performed a system level check on the entire customer order.

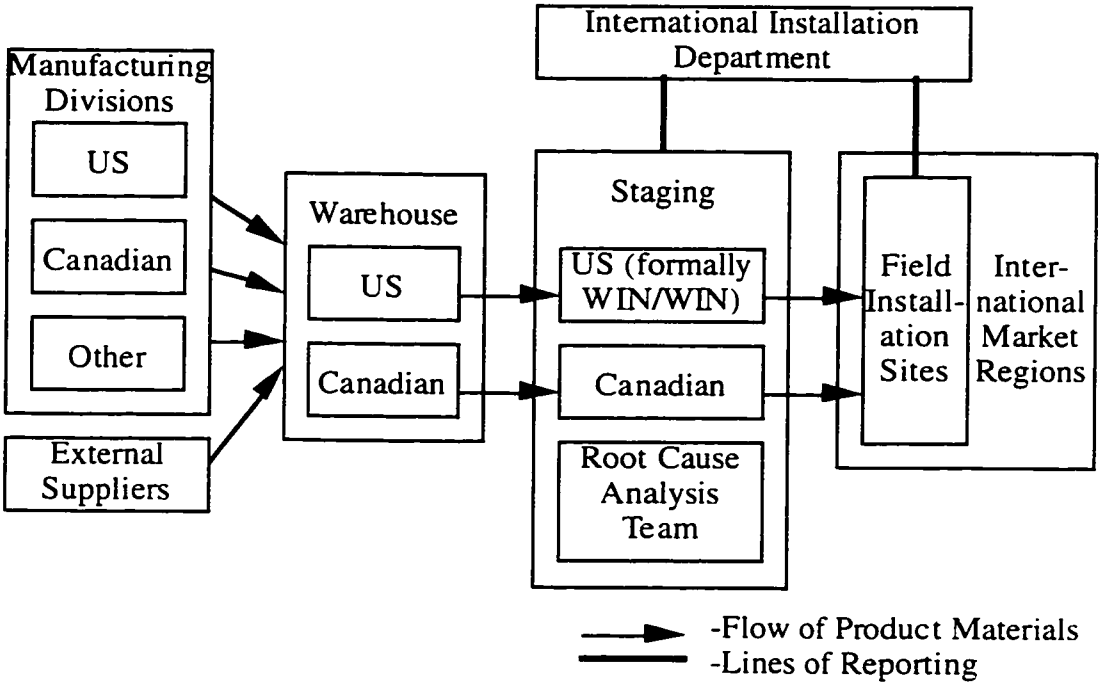

Figure 4.1. Staging structure within the Company, as proposed in the original business plan.

- Finally, the business plan also proposed the establishment of a "Root Cause Analysis Team." This team would be responsible for tracking down the "root causes" of "chronic problems" found in Staging, in order to implement permanent solutions rather than having to cope on a continual basis with repetitive problems. The proposal stated that "the objective of the overall plan . . . is to provide

continuous process improvement, to drive back resolution of known problems at the root cause with the ultimate goal of improving the quality of delivered product, to the point where additional inspection is not necessary." In the language of the people within Staging, this overall goal amounted to a long term objective of "working themselves out of a job" by solving all of the quality problems at the "root cause."

B) Management Approval Granted With Several Modifications

- Approvals were granted by senior Company management to establish a Staging operation connected with the Canadian manufacturing plant. However, several modifications to the original business plan were made by management during the approval process. Thus, from the outset, only certain aspects of the plan were formally approved and implemented.

- At some point during the management approval phase, the decision was made that Staging would report to the Canadian Manufacturing Division, rather than to International Installation (See Figure 4.2). The exact reason for this decision was unclear during the study. Various theories were put forward by Staging personnel, the most consistent being along the following lines: since most of the problems Staging intended to solve were perceived as Manufacturing problems, it made sense that the cost of solving them should be paid for out of the Manufacturing Division's budget, rather than by International Installation. Moreover, since Manufacturing's budget was much larger than Installation's anyway, it would be much easier for Manufacturing to absorb the costs of the Staging operation than Installation. Hence, the Canadian Manufacturing Division assumed both the budget and management of the Staging operation.

- Approval was not granted for establishing a parallel Staging operation connected to the US Manufacturing plant and no formal merger was approved between the WIN/WIN unit at the US manufacturing plant and Staging. Again, it was unclear during the study as to the precise reasons for this decision. Staging people suggested that there had been historic disagreements between the manager who had prepared the Staging business plan and the Quality Director at the US

Manufacturing plant as to the need for "hot staging." The WIN/WIN unit performed a function analogous to "cold staging," but only checked the output of the US Division's own unit manufacturing operation. It did not check at the level of complete systems, nor did it assemble units up into complete systems for hot staging. The Quality Director, who managed the existing WIN/WIN operation and reported to the US Manufacturing Division, was apparently of the opinion that cold staging would catch the majority of problems with customer orders, and the extra time, effort and cost involved in hot staging was not worth the additional benefit. Another likely reason for the decision not to establish a US Staging operation was that the US warehouse shipped primarily to customers located within North America, while International shipments were all shipped from the Canadian warehouse. Perhaps senior management considered the costs and difficulties associated with solving problems at these domestic installation sites to be low enough not to warrant staging.

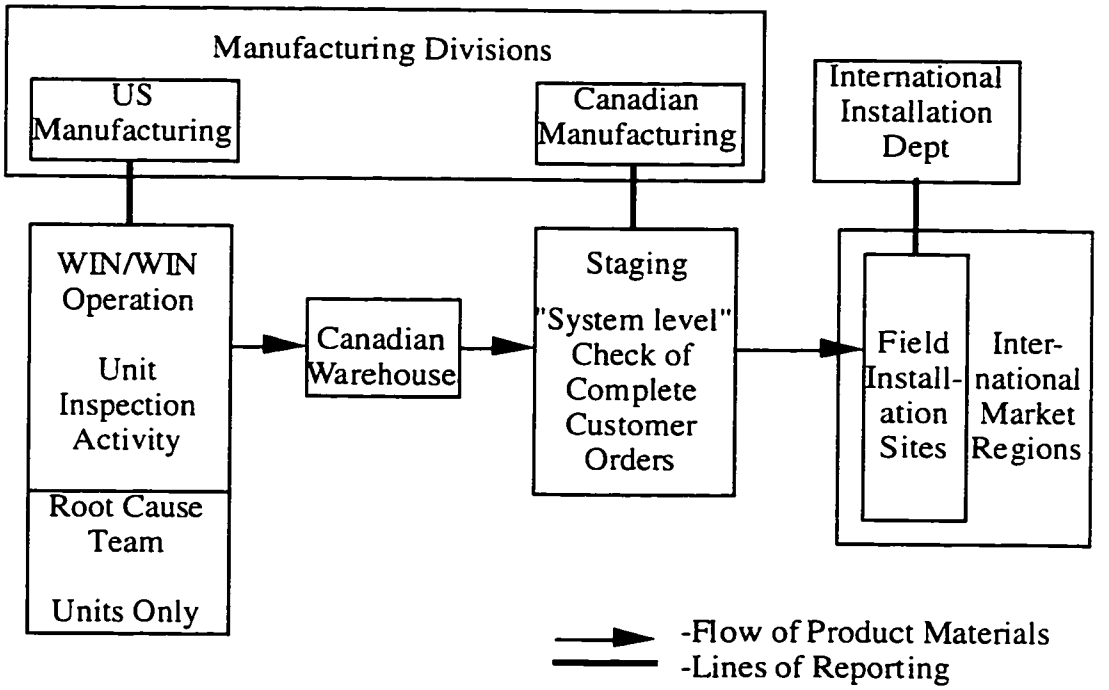

Figure 4.2 Staging structure within the Company, as actually approved by Senior Management and implemented.

- While "Root Cause" problem solving was approved as a theoretical objective of the Staging organization, it was not officially mandated, nor was budget approved to acquire the additional people and resources needed to establish a dedicated Root Cause Analysis Team. The reason for this decision seems to have been related to the fact that a small department with the mandate of solving manufacturing problems at their root cause, was already in existence within the US Manufacturing Division, connected with the WIN/WIN unit. People in Staging suggested that senior management probably viewed their proposal for a Root Cause Analysis Team as being redundant with activities already performed within the Company. However, from the perspective of people in Staging, there were significant differences between the two groups. Like the WIN/WIN operation itself, the US root cause department dealt with problems internal to the US Manufacturing Division's operations, focusing strictly on problems with "units," rather than at the "system level" as proposed for Staging. Thus, many of the problems that a Staging Root Cause Analysis Team would have dealt with were beyond the scope of the existing US-based group.

- Finally, Staging was not given formal approval to stage 100% of international orders, as the business plan had proposed. Rather, the staging function was left as an optional service to be provided at the discretion of the Company's International Market groups. More specifically, the Company's International Market operations are divided into five geographically-based market regions: North America; Central and Latin America; Australia and South-East Asia; China; and the United Kingdom and Europe. Within each region, Project Managers are assigned the responsibility of coordinating the entire shipment of a customer order from the time an order is placed by the customer, until the equipment is actually installed and in operation at the customer's site. Rather than mandating that all customer orders be staged, senior management left the decision of whether or not to stage an order to the discretion of the Project Manager responsible for the order. It was felt that the Project Managers wanted to retain control over the decision of whether or not to stage their orders, because of the fact that equipment can often be so late coming from Manufacturing that delivery deadlines might not be met if extra time was devoted to the Staging activity. Thus, Project Managers were given the option to stage their orders if time permitted, or forego staging if they felt the delivery

schedule was already too tight. (Later, through its own negotiation efforts, Staging was able to negotiate 100% Staging of customer orders for the China market.)

C) Start of Staging

- With the approval of senior management, a temporary Staging operation was set up at the back of the main Canadian Manufacturing plant towards the end of 1994. Work began on a nearby dedicated staging facility down the road from the Company's main warehouse for International orders. Staging personnel moved into this facility during February and March of 1995.

- The Staging organization consisted of two main groups: Staging Engineering and Staging Installation (Figure 4.3). Staging Installation was the group of people who actually performed the physical inspection and problem solving work on customer orders. They were trained technicians who officially were members of the International Installation Department, but were "contracted" by Staging to perform the technically demanding Staging process. Staging contracted with the International Installation Department for its skilled people because only trained Installers who had worked in actual field installations and understood the complex product technology as well as the sorts of problems normally encountered during installation, knew enough about the product to be able to efficiently check it for potential installation problems.

- Staging Engineering reported directly to the "Staging Manager" and was made up of "Operations Engineers" and "Process Engineers." Each Operations Engineer was assigned to a particular international market region and was responsible for bringing orders into Staging, coordinating with external Company groups to solve staging problems, and for reporting statistics on "problems per frame" and "cost avoidance." Their work tended to be somewhat routine and repetitive, involving the same basic set of activities for each customer order processed through Staging. Process Engineers were responsible for establishing, documenting and maintaining the various processes used within the Staging operation. Their work tended to be less routine and often involved performing special projects as new processes or modifications to existing ones were required. The Staging Manager was formally

responsible for the overall operation of Staging, and reported to the Director of Manufacturing Quality, within the Canadian Manufacturing Division.

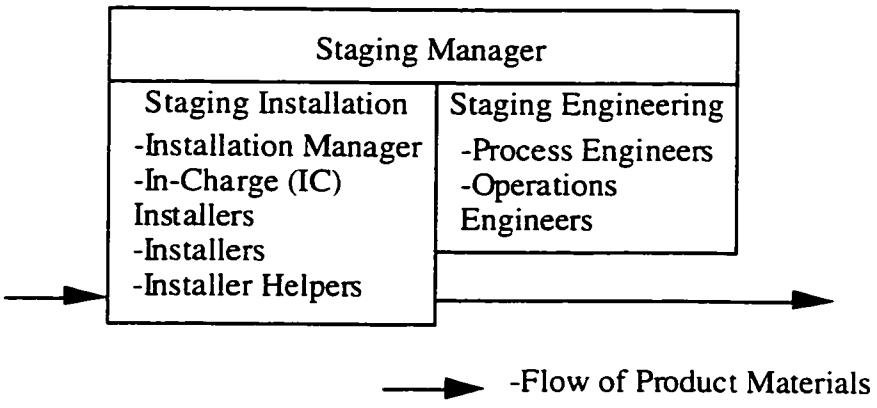

Figure 4.3 Staging's internal departmental structure.

- The Staging Installation group was made up of four job classifications: Installation Manager, In-Charge Installers, Installers, Installer Helpers. The Installation Manager managed the Staging Installation group. He formally reported to the Installation Director within International Installation department, but also reported indirectly to the Staging Manager, on a "dotted line" relationship. Reporting to the Installation Manager were a number of In-Charge Installers (ICs). These were highly trained field Installers who were responsible for performing the Staging inspection and problem solving process for each customer order. Each IC had a number of Installers and Installer Helpers reporting to him. The Installers were also trained field Installers, but normally had less experience or had received less technical training than the ICs. Installer Helpers were less skilled than the Installers and performed activities requiring the least skill.

- The Staging organization was given the formal mandates to ensure that orders were "100% complete and accurate" prior to shipment overseas, and to generate cost savings for the Company on a 2:1 ratio to its expenses. That is, for every

dollar it cost to run the Staging operation, Staging was supposed to generate two dollars in savings for the Company.

- In accordance with Staging's formal mandate and goals, two primary metrics were established to track Staging's performance: "Cost Avoidance" estimates for each month and quarter of operation, and the "Number of Problems per Unit" detected and solved.

- A "problem database" was developed to compile information from staging orders, about the types and frequency of problems detected and solved by Staging Installation. This enabled the Operations Engineers to generate statistics on the number of problems detected and solved per unit, and to produce Problem Summaries—reports documenting the kinds of problems solved on each customer order, that were sent out to Project Managers and Company Field Installers, after orders were completed.

- The problem database was also used by the Operations Engineers to calculate estimates of how much money was being saved for the Company (how much cost was being "avoided") as a result of Staging's activities. A document was prepared that outlined "conservative estimates" of cost savings for the various kinds of problems solved in Staging. For each class of problems encountered, Staging personnel had estimated the costs that would have been incurred, if the problem had not been solved until the order reached an international customer's installation site. These estimates were approved by upper management, incorporated into the problem database, and used by Operations Engineers to generate cost avoidance statistics for formal information reporting. Statistics on problems solved per unit and total cost avoidance were reported to management within the Canadian Manufacturing Division on a monthly and quarterly basis.

- Almost as soon as the Staging organization began operation, it became clear to people in Staging that the operation was being perceived negatively by upper management within the US Manufacturing Division. Since the US Division was responsible for the production of units and units made up the majority of the complete order, the US Division was generally viewed as being the major source of customer order problems within the Company. Consequently, as the Staging organization began to formally report to its management in the Canadian Division

about the number of problems it had solved per unit and associated cost savings, this information was viewed as reflecting badly on the US Division. In particular, complaints were expressed by senior US managers that Staging was only identifying and solving problems in a "band-aid" approach, rather than helping to solve problems permanently at the root cause. People in Staging felt these complaints were unfair, given the fact that they had not received formal approval nor sufficient funding to establish a Root Cause Analysis Team.

- The contract research project (and this case study) began at the beginning of June 1995. At the initial meeting for the project, the idea of focusing the contract research efforts on root cause problem analysis was suggested by the researchers and discussed. However, people in Staging felt that since "Root Cause" was not their mandate, it should not be the focus of a research project. Thus, the project was designed to support the basic inspection and problem solving mandate of Staging, by examining the lateral communication linkages between Staging and other Company groups involved in solving problems detected in Staging.

D) Restructuring

- At the end of June 1995, Company officials unexpectedly announced the shut down of the main Canadian manufacturing plant. The announcement stated that the factory would be closed down over the next few months, with its operations moved to other Canadian or US factories. In addition, changes to the management structure within the Company's Manufacturing operations meant that remaining Canadian operations would now report to management within the US Manufacturing Division.

- Shortly thereafter, the Staging organization was reassigned to report to the Manufacturing Quality Department of the US Manufacturing Division (see Figure 4.4). It was formally merged with the WIN/WIN unit in the US, under the name of Staging. Despite the merger, throughout 1995, US Staging (formally WIN/WIN) continued to strictly cold stage units manufactured at the US plant rather than perform a full staging operation on complete customer orders.

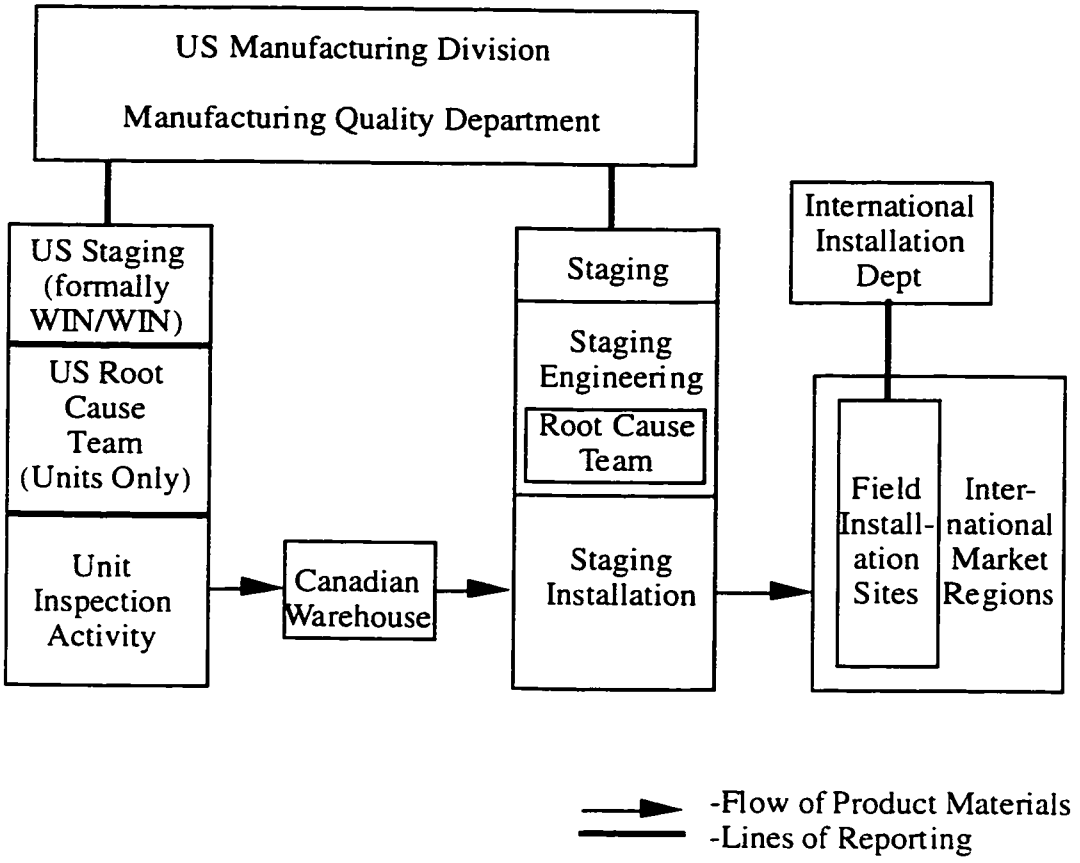

Figure 4.4 Staging structure after restructuring and change in mandate to "Root Cause."

- Under the management of US Manufacturing Quality, Staging's official mandate was formally changed by early fall 1995, to emphasize Root Cause problem solving in conjunction with the small US Root Cause group, and to reduce the emphasis on continuous checking of customer orders. Staging was instructed to continue performing its basic staging function under existing arrangements with the market regions and Project Managers, but to no longer "sell the business" to expand staging activities. That is, since Staging had never been given the mandate to stage 100% of customer orders, it had been forced to engage in the "selling" of its services to the Project Managers. During most of 1995, the organization actually staged about 30% of the Company's total international customer orders.

- At the first monthly Operations Review (OPS) meeting with the new management, the Staging Manager was also explicitly told to stop reporting Staging's activities using the Cost Avoidance metric.

- Staging was also told to delete certain information from the Problem Summaries, which documented the problems detected and solved in Staging for each customer order staged and were sent out after staging to Project Managers and International Installation. Specifically, they were told to stop reporting information about the "percentage on-time delivery" of equipment from Manufacturing. Staging people estimated that on average only about 60% of the equipment produced in Manufacturing was delivered on time.

- Informally, during the Fall of 1995, people within Staging began to express opinions that the new US management group would most likely close down the Staging operation.

- During October 1995, Staging participated in a one-day "Excellence Day" event hosted by the Company's Vice-President (VP) of Customer Service, designed to highlight activities within the Company that led to improved customer service. About a dozen groups from within the Company participated, giving presentations about their activities. A couple of Staging engineers had put together a proposal for the organization to participate in the event prior to the change in management structure. At the time, it was felt that participating in the event would be a good way of promoting Staging's activities within the Company. A presentation was prepared, outlining the kinds of problems being found and solved in Staging and the amount of money Staging was saving for the Company. After the change in management, however, the new Director expressed his displeasure about the fact that Staging was going to participate in this event. However, since it had already been scheduled, he told the Staging Manager that they could go ahead and participate if they wanted to, but were not permitted to talk about "cost avoidance" during their presentation. That is, Staging people were not permitted to discuss the amount of money the operation was saving the Company as a result of its inspection and problem solving activities. Staging staff reluctantly agreed to this directive and developed a new presentation emphasizing their new Root Cause mandate and not mentioning cost avoidance. Out of the dozen Company groups represented at the event, Staging was selected to give the keynote presentation at the

executive banquet dinner. This was interpreted by Staging people as strong evidence that their department's activities fit the Company's customer service goals. Staging received second prize overall, for its presentation and contribution to improved customer service.

- By mid-fall 1995 a Root Cause Team had been established within Staging, involving members of the Process Engineering staff as well as individuals from the US Staging operation. Weekly Root Cause conference call meetings were held, and often attended by the Staging Manager's immediate superior, the US Director of Manufacturing Quality. Efforts were made to categorize problems from the problem database to better understand the types of chronic problems being encountered and to explore possible long term root cause solutions. Problem categories were ranked according to their frequency, to identify the "top ten customer affecting problems" for each of the Company's international market regions.

- The Root Cause Team also developed a standardized set of step-by-step processes and procedures for solving root cause problems. For instance, a computer-based form called a "Causal Analysis Report" was developed to track the progress towards solution of each root cause problem being addressed.

- By late fall it was clear to Staging Engineering staff that US management intended to close down the Staging operation at some point in 1996. The Staging Manager was told by the Director of Manufacturing Quality that Staging's budget for 1996 would be cut to about half its 1995 level. He was instructed to develop a budget for the operation that met this overall constraint. All of the Staging engineers began looking for positions elsewhere within the Company and with other firms.

- By the end of 1995, a handful of chronic quality problems had been solved as part of Staging's Root Cause efforts. In December 1995 Staging put together a Root Cause newsletter and distributed it to a large number of people throughout the Company, outlining the efforts and accomplishments to-date of the Root Cause Team and its future plans. The newsletter reported that over 4000 problems had been found and solved in Staging since it had begun operations. The most frequent problem noted in the report was the late delivery of equipment from the

Manufacturing Division. Prior to its release within the Company, Staging members of the Root Cause Team sent a copy of the newsletter to the Director of Manufacturing Quality for his approval, requesting that he respond within a week if changes to the report were required. After a week, the Director had not responded, so the Team decided to send out the report anyway. While the details of the situation were somewhat sketchy, Staging people mentioned that they had later received a "slap on the wrist" from the Director, because the newsletter had included information about "manufacturing late delivery" being the number one problem, and that the report had been sent to the VP of Customer Service without the Director's permission.

- Weekly Root Cause conference call meetings with people in US Staging stopped taking place during December 1995, and were not resumed in 1996. The perception of people in Staging was that Root Cause problem solving activities were of rather low priority to the US-based members of the Root Cause Team.

- At the end of 1995, only a few days after the Root Cause newsletter had been distributed, Staging was directed by US management to reduce its Installation staff dramatically to reduce costs. All but 4 Installers and about 20 Helpers were transferred out of Staging back to International Installation. As a result of this manpower reduction, Staging services were effectively cut off for all markets but China for the beginning of 1996. Staging continued to service the China market because of the pre-arranged agreement to stage 100% of their orders.

- A formal announcement of the closing of the Staging operation was expected for mid-January 1996. Anticipating the formal announcement, a couple of Staging Engineers transferred to new jobs in other Company Divisions during January 1996. The others gradually left over the next few months. Several of the Staging Engineers were offered the chance to take jobs in the US Staging operation, but all declined.

- The Company's Manufacturing and Customer Service organizations were formally merged in January 1996 under a common management structure. The former VP of Customer Service, who had hosted the earlier "Excellence Day" event that Staging participated in, was appointed Senior Vice President (SVP) of the merged organization. The expected announcement of Staging's closing was

delayed. For a couple of weeks, the closing of Staging seemed less certain as a result of this unexpected management change. Some of the Staging staff expressed hopes that the new SVP might perhaps "turn things around" and preserve the Staging operation because of its contribution to improved Customer Service. The Staging Manager expressed concern that his Engineering staff was leaving during this uncertain period, because he felt he may "have to grow the business again."

- After a couple of weeks, the uncertainty over Staging's future subsided and it was again clear that Staging would close eventually. Apparently the delay in the formal announcement had nothing to do with the new executive management structure. Rather, it was because the Company's Human Resources Department had informed the Manufacturing Quality Director of various official policies regarding the layoff of unionized staff, that had to be met before layoff notices could be issued. An announcement was expected to come as soon as these policy requirements had been met.

- During the first few months of 1996, US Staging activities were reported to have increased in volume to make up for some of Staging's reduced capacity. (The study did not involve visits to the US operation, so this can not be confirmed.) This was apparently done at the demand of the market organizations to either maintain the Staging operation or provide an alternative method of preventing quality problems from reaching the customer installation sites. US Staging personnel visited the Staging operation to learn more about their processes. The plan, as presented to people in Staging, was for the US Staging operation to increasingly stage jobs for international markets and expand their existing unit inspection process to eventually include hot staging of complete switching systems. The US Staging operation was proposed to continue to stage customer orders for the foreseeable future.

- A formal announcement was made April 3, 1996 that the Staging operation would close at the end of May 1996.

- A small crew of Installers continued working until the end of May and then transferred to jobs in International Installation. Layoff notices were issued to the Helpers as their skill level was considered to be too low for jobs within International Installation. Most of the Staging engineers found other positions

within the Company's Canadian operations. Two left the Company and took jobs with other firms. The Staging Manager moved to the US Division and took over management of the US Staging operation.

- Office furniture and equipment were transferred to other divisions of the Company. The processing equipment and various structural additions that had been made to the facility were removed and scrapped. Another division of the Company took over the building and renovated it according to their needs.

4.2.4 Theories as to the Reason for the Shut Down of Staging

An official reason for the closing was never made public within the Company by the US Manufacturing Division management. When the formal announcement was made, it was simply stated that Staging's activities would be "rationalized" within the US Staging operation. However, a number of "semi-official" explanations were provided to the Staging Manager over the months leading up to the formal announcement, which he in turn provided to the people in Staging Engineering. These explanations varied as time went on, but generally went along the following lines: First, as the original business plan had indicated, the intent had always been that Staging would "work itself out of a job," by solving all of the problems with customer orders at their Root Cause. Hence, the formal change in Staging's mandate to emphasize Root Cause problem solving would help Staging work itself out of a job. Second, the Company was in the process of setting up new unit manufacturing operations in the U.K. and China, and these groups would eventually stage their own orders locally within these countries. As a result, the demand for International orders produced and staged in North America would be reduced. Third, with the closing of the main Canadian manufacturing plant, it made little sense to have Staging operating in Canada since the majority of equipment would come from the US manufacturing operations anyway. It would be more efficient to stage the orders close to the manufacturing plants rather than shipping them all the way to Canada first. Fourth, since a parallel Staging operation (the former WIN/WIN operation) was available in the US, it could handle any Staging activities that needed to be done, so it would be redundant to have two Staging facilities. Related to this explanation, US Management suggested that the size of the Staging operation was too large and costly compared to the amount of information it was collecting about problems with customer orders. Instead of trying to Stage 100% of customer orders and finding the same problems over and over, efforts would be focused on

Root Cause problem solving, supplemented with "sample staging" to identify any new problems that might come up. Thus, the smaller scale US Staging operation would be more cost effective according to US Management, because it would not check all customer orders, but only a "statistically significant sample" and use the information obtained to help solve problems at their Root Cause.

Informally, people within Staging developed a very different theory to explain US Manufacturing Management's intention to close the operation. Their theory went along the following lines. First, although Staging was funded through manufacturing budgets, any real cost savings resulting from Staging's activities showed up in department budgets elsewhere within the Company, such as the budget of International Installation which benefited from Staging's activities because less costs were required to install a staged order compared to an unstaged order. Thus, Staging was an added cost at a time when there were organizational pressures to reduce costs within the US Manufacturing Division. Second, Staging reported to US Manufacturing Quality, a unit responsible for ensuring that the quality of the product was up to standard, yet Staging's reports about problems solved and cost savings to the Company continually highlighted the fact that there were problems with product quality. Moreover, since the US Manufacturing Division was responsible for the production of the units that made up the majority of the complete customer order, it was generally viewed within the Company as being the major source of customer order problems. Thus, the new structural arrangement with Staging reporting to US Manufacturing put them in the extremely awkward position of formally reporting to the same organization that had previously been most negatively affected by Staging's reports. For instance, information about "cost avoidance" or "problems per unit" raise potentially embarrassing questions for US Manufacturing about who was responsible for these problems and wasted costs in the first place. Although Staging may have improved the actual quality of customer orders and, therefore, improved the Company's image with the customer, in the process under the new structure, Staging now made its own senior management look bad internally within the Company. Thus, the informal theory about Staging's closing was that it was a "politically" motivated decision on the part of US Manufacturing management. They felt that Staging reflected negatively on the US Manufacturing Division's image within the Company and at the same time cost the Division money, since Staging's costs were covered under the US Manufacturing budget.

Perhaps the main reason alternative theories develop in organizational situations like this is that the official theories are simply viewed as implausible and not believed. Several weaknesses and contradictions were recognized in the official theory provided by US

Management. First, the idea of Staging "working itself out of a job" by solving all of the problems at their Root Cause was generally regarded as sheer nonsense, since Staging's own data had identified over 4000 problems in 1995 (as documented in the December Root Cause Newsletter), and only a handful of these had actually been solved permanently. Furthermore, a small organizational unit like Staging, operating with minimal staff at the "downstream end" of the manufacturing process, faced extreme difficulties trying to solve Root Cause problems in larger, more powerful upstream units like Manufacturing. As it became clear during the Fall of 1995 that Staging was to be closed by mid-1996 at the latest, it also became clear that solving many problems at their Root Cause within that time frame was impossible. Second, while the U.K. manufacturing operation was expected to be running within a reasonable time frame, nobody expected the China facility to be operational until late 1996 at the earliest, well after the expected closing of Staging. Third, the closing of the main Canadian manufacturing operation had little direct impact on Staging other than the fact that it had formally reported to management within this organization. This plant had primarily produced smaller sub-components that fed into the US unit manufacturing plant, and had never shipped finished products directly to Staging. The main connections Staging had with the Canadian plant were with non-manufacturing units, such as Customer Service and Spec Writers, which would continue to be located at this site after it stopped manufacturing operations. Fourth, with respect to the ability of the US Staging operation (i.e., WIN/WIN) to handle any required Staging activities, as noted earlier, Staging personnel held a strong view that the two Staging operations were the same in name only, but not in function. Staging performed hot and cold staging at the system level, dealing with the entire customer order, including components produced at various Company sites, while US Staging only performed a limited cold staging on individual units manufactured within the US manufacturing plant. Thus, from Staging's perspective, US Staging was more like a unit final inspection process, not at all a system level Staging activity.

Finally, Staging personnel also noted inconsistencies between the different official explanations. If Staging was supposed to be solving all of the problems at Root Cause to work itself out of a job, why would Staging still need to be performed at the US location, or in the U.K. and China? Wouldn't Staging also be working these groups out of a job if all of the problems were solved? Furthermore, because of the process differences between Staging and WIN/WIN, it was clear that for the WIN/WIN operation to actually replace Staging it would have to expand its processes and operation to be able to handle system level checking and hot staging. This would require significant start-up investments in

equipment and learning—investments that had already been made in Staging. Financially, it seemed to make little sense to close an operation that had already been paid for and worked through its start-up learning curve, only to invest more money in US Staging to create the same sort of operation without the base of experience.

Based on their belief that the official theories were implausible, people in Staging also developed theories about the role of the official explanations themselves. With respect to Root Cause, it was felt that Staging may have been given the official Root Cause mandate in order to give the Market Regions the impression that Staging was no longer needed, because all of the problems had been solved. For instance, it was suggested that "Root Cause may be just smoke and mirrors." People also felt that one of the main reasons the name "WIN/WIN" had been changed to "Staging" within the US operation, was to create the impression at the executive level that the two Staging activities were the same. Thus, closing down Staging would raise no eye-brows with the Market Regions, because an alternative operation was available anyway. Overall, there was a sense that US Manufacturing Management was planning to close the Staging operation against the best interests of the Company and its customers, in order to achieve local objectives specific to the Manufacturing unit. To do so openly would never have been accepted by the Company's Market groups or customers, so an alternative, more rational explanation was required. One interviewee summed up the situation as follows: "We have to be in line with what they want. We're supposed to put ourselves out of business and (US Manufacturing Management) have to look good doing it. So we're supposed to prove Root Cause is successful in 6 months. Politics are behind it."

Both the official version of Staging's closing and theories developed by Staging personnel are still just theories, and neither version necessarily reflects the overall situation completely and accurately. Although no one in Staging expressed the view that they accepted the official theories at face value, that does not imply that the alternative theories developed within Staging were entirely correct either. It could be that the theories developed internally overlooked some basic facts of the situation and there were other reasons for closing the operation that no one in Staging recognized. This study has not explored all of the relevant perspectives, but has only focused on the theories developed within Staging. Specifically, no one within US Manufacturing Management could be interviewed for the study.

4.2.5 Aftermath

Between the closing of Staging and this writing, various events have unfolded that add to the Staging story. In particular, certain facts seem to refute the "semi-official" explanations for closing the Staging operation provided by US Management. This information is based on occasional meetings and discussions with former members of Staging, now working elsewhere within the Company, and with other Company employees working in the main Canadian warehouse and two of the Market Region organizations.

- Based on information from people who formally worked in Staging, US Staging was expanded to some degree and has been in operation since Staging closed. The size and scope of the US Staging operation is unclear, however. For instance, it is unclear whether it now performs any system level hot staging activity on complete customer orders, or still primarily inspects at the level of units produced by the US Manufacturing Division.

- No information has been obtained as to the status of any Root Cause problem solving activities within US Staging specifically, or US Manufacturing generally. Although many of the documented processes, procedures and computer based tools developed to support Root Cause problem solving in Staging were transferred to the US location, I have no evidence of whether or not a new US Based team was put in place to work on Root Cause problems. The fact that Root Cause Team meetings ended at about the same time the December 1995 Root Cause newsletter was released, suggests that this activity was of rather low priority for US Manufacturing management.

- Contrary to US Management's suggestion that staging in Canada was inefficient since most of the manufacturing occurred in the US, customer orders for all international markets continue to be consolidated and shipped from the Company's main Canadian warehouse operation. The Company has continued to ship equipment from its various manufacturing locations, including the US unit Manufacturing plant, to the Canadian warehouse prior to overseas shipment. Since these orders only come together as complete systems at the Canadian warehouse, it is clear that they are not being staged as complete systems by US Staging. Furthermore, although unit manufacturing has begun in the UK, the predicted

China manufacturing operation had still not begun full operations by mid-1997. Thus, US Management was apparently incorrect about the reduced demand for Staging as a result of either the closure of the main Canadian Manufacturing plant or the start-up of a new factory in China.

- Rather than declining demand, there has been a significant growth in demand for one of the Company's newer product technologies, referred to as "W Tech," which incorporates units made in the US, along with several other major components manufactured at one of the Company's Canadian factories. These products continue to be shipped internationally from the Canadian warehouse, meaning that complete orders for these systems are not being staged by US Staging.

- Discussions with people in two of the Company's Market Region operations have suggested that the problems solved by Staging continue to exist, causing many installation difficulties, costs and image problems for the Company. The late delivery of equipment from Manufacturing remains the most significant problem encountered in field installation. These people generally expressed disapproval over the closing of Staging. They also expressed strong opinions that the Company still needed a function like Staging, suggesting that Staging had been performing a necessary function within the Company and that US Staging was not providing the same level of service. This also seems to largely refute any suggestion that Staging managed to "work itself out of a job" by solving all of the problems at their Root Cause.

- Perhaps the most intriguing organizational response to the closing of Staging has been the establishment within the Canadian warehouse operation of a new process called "Open Box Inspection" (or OBI). The OBI process began shortly after Staging closed in 1996 and has continued to the present. It basically amounts to a process virtually identical to "cold staging," whereby the boxes containing equipment are opened so that the contents of customer orders can be checked against what was spec'd for the customer, to make sure that all items are accounted for prior to shipment. This process does not involve connecting the equipment, starting up the system and running it, so does not provide as thorough of an inspection process as "hot staging." The OBI process was set up through an arrangement between the warehouse and some of the Market Region organizations,

without the involvement of US Manufacturing, to address the same sorts of problems Staging had been set up to deal with. When asked about the similarity between the OBI process and "cold staging," people in the warehouse commented that they "were not supposed to call this 'staging.'" Thus, some of Staging's activities have continued within the Company, but are being performed by another department, under a new name, as a sort of "underground" activity. The perceived need for such a process among members of the Company's market groups, whether referred to as "cold staging," "OBI," or any other name, again strongly refutes the idea that Staging "worked itself out of a job."

4.3 Research Methodology

As pointed out earlier, the method of research involved three basic forms of data collection: i) formal in-depth structured interviews with members of the Staging organization; ii) the collection of various written organizational documents and records; and iii) extensive informal data collection conducted in a "participant observation" approach, involving weekly site visits from June 1995 to January 1996, less frequent visits between January and July, 1996, and occasional discussions, telephone calls and meetings with Company employees since July 1996. These visits involved extensive discussions and interactions with members of the organization, attendance at several meetings, and participation in special events (such as the "Excellence Day" event mentioned earlier). All of the formal structured interviews as well as some meetings and informal discussions were tape recorded. Other information was documented in hand written notes, either during discussion or shortly afterwards.

4.3.1 Participant Observation

An extensive, informal, participant observation approach was considered absolutely necessary to carrying out this research project. Personal experience with similar organizational studies, has convinced me that one must take the time to develop a certain level of trust and social rapport with the members of the setting under study, before they are willing to openly express their opinions and feelings about such potentially risky topics as those considered in this dissertation. For instance, it is extremely doubtful that members of Staging would have openly shared their views about the "political nature" of the facility's eventual closing with a researcher who had just come in for a "one shot" interview, much less with one who had sent them a mail-in survey form. Furthermore, as

has been argued in this proposal, to some extent each organizational setting has its own "language," and a researcher must invest a certain amount of time within the setting just to be able to learn the language of its members. Without understanding how words are connected to events within the unit context, a researcher can hardly expect to be able to describe the internal workings of the unit. Such a perspective has been put forth in many different terms by various researchers, such as "the direct examination of the empirical social world" (Blumer, 1969), "direct research" (Mintzberg, 1979b), and "intensive research" (Weick, 1984). It is also implicit in Wittgenstein's (1968) view that to understand a language, one must understand a "form of life" (Taylor, 1985).

4.3.2 Structured Interviews

In the structured interview portion of the study, individuals were asked various questions about the nature of their job-related interactions and communications with other individuals and organizational units. The schedule of interview questions is included in Appendix A. Interviews were documented both by note taking and tape recording. Most of the interviews lasted between one and three hours. One interview, with the Process Engineer who served as the main Staging liaison for the research project, lasted approximately six hours.

The questionnaire consisted of several sections. First, interviewees were asked general background questions related to their job responsibilities and their history with the organization (questions 1 - 4). Then they were asked a number of detailed questions about their communications and interactions with others in the Staging organization or in other units of the Company (questions 5 a - d). Using the diagram shown in Appendix A, the respondents were asked to identify the individuals or organizational units, either internal or external to the Staging operation, with whom they interacted most during the course of doing their jobs. After identifying the main network of connections associated with their jobs, individuals were asked to answer four questions about each connection. They were asked to provide concrete examples from their work situation of: 5 a) things the people or units they interact with did that were helpful to them in their job, and 5 b) things these others did that were not so helpful to them in their job. They were also asked to provide concrete examples of things that they did which they felt were: 5 c) helpful and 5 d) not so helpful to the others they interacted with while doing their job. In each of these questions (5 a-d), the wording of the question would be modified to fit the particular connection or interaction being discussed. For instance, if an Operations Engineer was discussing interactions with an external group like Project Managers, the question would be re-worded

to focus on the level of group to group interactions (i.e., Staging as a group to Project Managers as a group), rather than at the level of a single Operations Engineer interacting with a single Project Manager.

This style of questioning, referred to as "echo questions," is based on a method developed by Bavelas (1942), that has been well established as a reliable and useful approach for analyzing the communications and interactions associated with networks of interdependent task relations, from the perspective of those involved (e.g., Barthol and Bridge, 1968; Barthol and de Mille, 1969). By encouraging the interviewee to come up with concrete examples of positive and negative things that happen during the course of routine interactions on the job, these types of questions are very useful from the perspective of building up an accurate picture of the task constraints acting within the person's work situation and an understanding of the workings of the organizational networks associated with their jobs. The method limits the opportunities for people to say only what they think the researchers would like to hear, to say only what someone else or the company expects them to say, or to provide various theories and conclusions about their work situation that may not reflect actual practice. In terms of the theoretical framework, the method encourages individuals as much as possible to provide "event" information in a relatively "unprocessed state," rather than providing information that simply identifies the "good" and "bad" "output categories" associated with their jobs.

In the last section of the questionnaire, interviewees were asked several direct questions about hierarchical reporting processes (questions 6 - 8). They were asked to identify the formal reporting and evaluation mechanisms associated with their job (question 6). They were also asked to describe the kinds of things that would be either "good" or "not so good" to report to their boss, and to estimate the relative percentage of items from their actual reports that would be considered "good" or "not so good" to report (question 7 a - c). They were then asked to estimate the same three items for their boss in relation to his boss. That is, they were asked to describe what they thought would be "good" or "not so good" for their boss to report to his boss, and the relative percentage of items in their boss's actual reports that would be considered "good" or "not so good" to report to his boss (questions 7 d - f). Finally, they were asked to give examples of how their formal reports were either helpful or not helpful to them in their jobs, and helpful or not helpful to Staging as an organization (questions 8 a - d).

4.3.3 Strength and Reliability of the Three Types of Data

From a research perspective, the three kinds of data collected for the case study (formal interviews, documents produced by the Staging organization, and informal participant observation data) differ in terms of their strength and reliability. The observational data, while rich in detail is likely least reliable, since it relies heavily on my own skills of observation and interpretation. It is also highly selective for a variety of reasons, the most obvious being the fact that human perception itself is a highly selective process. It is also selective because in any research setting, the perspectives of certain respondents will tend to outweigh others because of the force of their opinions, their ability to articulate their views, their willingness to discuss potentially risky topics, or simply their level of interest or desire to cooperate with an outside researcher for the purposes of a study from which they may have very little to gain in return. Certainly in this study, there were some individuals who took a keen interest in the study and frankly shared information and provided their opinions, while others tended to be more reserved and "kept their cards a little closer to their chest."

The documents produced by members of the Staging organization, are perhaps the strongest source of data, because they represent actual examples of reports (including some hierarchical reports) produced within the Staging context. Unfortunately, they have their own limitations. For instance, a set of overhead charts used in a formal meeting for hierarchical reporting will rarely tell the complete story of what was actually reported in any given case. That is, while the charts may represent what was shown on the screen at a formal meeting with upper management, they do not necessarily represent what was actually discussed during the meeting. In addition, like observational data, the collection of documents is also a selective process, in that it depended on the degree to which members of Staging were willing to provide copies of their formal reports. As a researcher, I was not granted an entirely "free reign" to collect whatever documents I wished, but had to request copies of formal reports from the individuals involved. Some members were simply too busy to devote much time to compiling such data, while others may have felt this data was somewhat too personal to provide to a researcher. As a result, both the observational and documentary data is somewhat ad hoc, limited and fragmented.

The structured interview data may be regarded as being of a mid-range strength and reliability, somewhere between the other two data types. It is less selective than both of the others, but relies on second-hand information, in the sense that interviewees are asked to describe the events of their work situation and the nature of their hierarchical reporting behaviours, which is never quite as reliable as if these could be observed directly. On the

other hand, the use of a standard set of questions yields a much more organized data set and provides opportunities for making comparisons across different people or groups and examining emergent patterns.

For the purposes of this dissertation, I will focus primarily on results from the interview portion of the study, since they most directly address the theoretical issues of concern. The next chapter, will summarize some of the interview results, providing a variety of analyses where appropriate. The responses to questions most directly related to hierarchical communications (e.g., 6, 7 a-f) have been examined using data from the interview transcripts, while those less directly related to the theoretical framework have, for the sake of convenience, been analyzed using the handwritten notes. Besides forming the basis for the preceding case overview, some of the observational and documentary data will be presented throughout the analysis and discussion in the form of examples and anecdotes. As such, while the observational and documentary data will have an indirect impact on the analysis and interpretation of results from the interview data, it will not be directly subjected to a thorough analysis itself.

Chapter 5

5. Case Study Part 2: Interview Results and Analysis

Fifteen individuals were interviewed using the questionnaire in Appendix A. For data analysis purposes, they were "code named" P01 - P15. Their positions within the Staging organization were as follows:

1 Staging Manager (of 1; P11);
8 Staging Engineers (of 8); including 4 Process Engineers (P01, P02, P07, P08) and 4 Operations Engineers (P03, P04, P05, P06);
1 Installation Manager (of 2 individuals who occupied this position consecutively; P10);
2 In-Charge (IC) Installers (of 6; P09, P12);
2 Installers (out of an average of 10 individuals at any given time; P13, P14);
1 Installer Helper (of 20; P15).

The numbers in brackets indicate the total number of people within each of these job classes. In addition to these individuals, 2 other ICs (P17, P18) and the other Installation Manager (P16) were interviewed prior to the main interview phase of the study, using a preliminary shorter version of the questionnaire (essentially just questions 5 a,b). Where appropriate, data from these interviews have been included in the results. Only a few ICs, Installers and Installer Helpers could be interviewed because of the significant staff reductions which affected these groups during the interview phase of the study, at the end of 1995.

The interviews were conducted over a period of several months (September, 1995 to January, 1996), after Staging had already been "restructured" under the US Manufacturing Division. As such, while the results do provide a significant amount of evidence about organizational reporting adjustments associated with the change in formal structure, they do not provide a clean "before and after" perspective on how reporting requirements changed under the two different formal structures. Moreover, while the change from a "cost avoidance" and "problems per unit" measurement regime to one emphasizing "Root Cause" may represent the overall plot of the "Staging narrative," the

interview data also provides a great deal of evidence about the nature of hierarchical reporting in general, irrespective of the particulars of the Staging situation. In terms of the theoretical framework, from Staging's perspective the major change represents a significant example of category selection bias, in which two different formal structures led to the imposition of two different output demand categories on the Staging organization. However, even if the major change had not occurred, the data also provides a great deal of evidence about the workings of "within category bias" and other aspects of "category selection bias" and sheds light on the variety of constraints influencing formal hierarchical communication within the Staging organization.

5.1 Overview of "Echo" Data

The largest bulk of interview data resulted from responses to the "echo" questions (5 a - d). Figure 5.1 shows the ten major connections identified by interviewees. Six external connections were identified: Project Managers, Customer Service, Spec Writers, the Canadian Warehouse, International Installation Department, and US Manufacturing Management. Four internal connections were identified: Staging Engineering, Staging Installation, Staging Manager, and Root Cause Team. (The Root Cause Team included both internal members from Staging and external members from US Staging.) Only the connections identified by at least two people during the interviews were examined in detail. Connections identified by only one person were omitted.

A complete analysis of this data will not be presented here, since it was primarily collected for the purposes of the contract research project, to identify areas of potential improvement in communication and coordination within Staging's internal network of tasks connections and its external network of connections with other Company groups. To illustrate the method, the comments made about interactions with the Staging Manager and US Manufacturing Management will be examined here, since these connections represent hierarchical interactions within the organization. However, since most of the other connections identified in Figure 5.1 refer to lateral linkages within Staging or the Company, they will not be discussed in detail. Instead, Tables documenting these remaining responses are provided in Appendix C for the reader to examine as needed.

Some of the connections have been documented from a number of perspectives in Appendix C. For example, Staging Installation was identified both by people in Staging Engineering and by people within Staging Installation itself. However, since these two groups had rather different points of view about the role of Installation, it made little sense to combine these different perspectives, so both have been documented. Similarly,

comments about Staging Engineering are summarized from the perspective of Staging Installation and the perspective of people within Staging Engineering. The same is true of the Root Cause Team, where several perspectives are also documented: the perspective of people in Staging Engineering who were not members of the Root Cause Team, the perspective of members of the Root Cause Team about their own group, and the perspective of the Staging Root Cause Team members about Team members from US Staging.

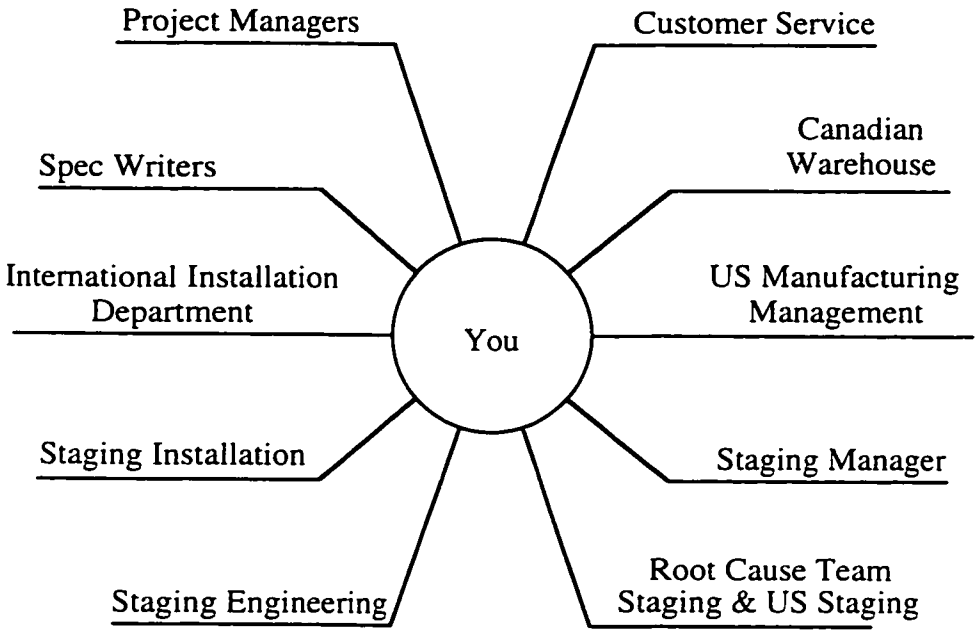

Figure 5.1 Main connections identified by interviewees.

5.1.2 Interactions with the Staging Manager

Tables 5.1 summarizes the comments made by Staging personnel about their interactions with the Staging Manager (SM). Table 5.1 is divided into four sections corresponding to questions 5 a–d (Q5a-d) of the questionnaire respectively: A) How the Staging Manager is Helpful; B) How the Staging Manager is Not so Helpful; C) How

Staging Personnel are Helpful to the Staging Manager; and D) How Staging Personnel are Not so Helpful to the Staging Manager. Within each section of the table there are a number of comment categories, showing the number of people who made various types of comments about the SM. For instance, 3 people made a total of 6 comments about the fact that the SM "defined priorities, direction and performance criteria"—something they felt was helpful to Staging.

Table 5.1
Comments made about Staging Manager

Comment Category	Number of People	Number of Comments
A) How the Staging Manager is Helpful		
Defines priorities; direction; performance criteria	3	6
Escalation of issues; Supports me	2	3
Feedback on work	2	3
Filters/selects information for upper management; handles political/delicate issues	2	3
Shares information; political views	2	2
Pays me	2	2
Task allocation	2	2
Provides exposure with upper management	1	2
Agree on political response to "Root Cause"	1	1
Nothing	2	(2)
B) How the Staging Manager is Not so Helpful		
Not promoting Staging's or the Customer's perspective within the Company	4	10
Task allocation; treatment of employees	4	7
Too focused on measures of his own performance	3	6
Not reporting problems to upper management	2	4
Career self-interest	2	4
Poor definition of priorities; direction; poor feedback	1	4
Not dealing with our job security concerns	1	2
Disagree on political response to "Root Cause"	1	1
Nothing	3	(3)
C) How Staging Personnel are Helpful to the Staging Manager		
Skills/Knowledge/Doing a good job	5	9
Provide information he needs to meet his objectives; make himself look good	4	10
Agree on political response to "Root Cause"	1	2
Tell about problems before they're too big	1	1
Nothing	1	(1)

D) How Staging Personnel are Not so Helpful to the Staging Manager		
Not political enough	2	3
Disagree with his political views	2	2
Risk of Root Cause not being a success	1	2
Not giving information he can use to make himself look good	1	1
Take a new job too early	1	1
Nothing	2	(2)

*A total of 7 people commented on this connection.

The "number of comments" used here refers to the number of distinct examples given in response to each question by the interviewees. The style of questioning was such that interviewees were encouraged to come up with as many examples as they could for each question and each distinct example is counted as one comment, regardless of the number of words used or the length of the comment. An obvious weakness in this method is that some interviewees were more redundant in there responses than others, leading to higher counts. Thus, as a means of providing a kind of weighting on the comment counts, Table 5.1 also reports the number of people making responses in each category.

The categorization approach used for this question assumed comments could be placed in no more than one category. In results to be presented later for other questions, a different approach has been used which allows for comments to appear in more than one category. Both approaches have advantages and disadvantages. The latter approach allows for a more fine-grained coding of responses, but adds complexity to the categorization process. (A computer package for analyzing qualitative data called "NUDIST" has been used for these more complex analyses in later sections.) For the responses to this question, since they are less directly related to the theory, the simpler assumption of mutually exclusive categories was considered acceptable.

Sample comments for each of the categories in Table 5.1 are provided in Table C.1 in Appendix C. By referring to Table C.1, it can be seen that one of the comments made about how the SM "defined priorities, direction and performance criteria" was the following:

> "I guess the whole purpose for Root Cause; why we're doing it and why it's good; underlining it in my mind; justifying it in my mind; reaffirming it"

This comment suggests that with respect to the change in mandate to Root Cause problem solving, it was considered helpful that the SM defined why Staging was making the change, explained why it was considered a good thing to do, and so on. The comments about the SM quoted in Table C.1, (as well as those about US Manufacturing Management in Table C.2 in relation to the next section) have been taken directly from the interview transcripts. However, for convenience, the remaining "echo" results presented in Appendix C are based on an analysis of the interview notes, not the tape transcripts. Thus, the remaining sample comments provided in Appendix C are not always exact verbatim quotes of what interviewees said, but should be considered as very close approximations.

Several of the items in Table 5.1 can be considered in relation to the theoretical framework. Specifically, one way of interpreting the responses is to divide them into two groups: i) a relatively small proportion of comments related to the actual "task" being performed, and ii) a larger proportion of comments related to information processing. For instance, task related comments include mixed reviews about "task allocation" performed by the SM. On one hand, it was considered helpful that he performed the role of assigning tasks to individuals (2 people), but on the other hand there were complaints about his "task allocation behaviours and treatment of employees" (4 people). Similarly, 2 people mentioned that the SM "pays them," but 1 mentioned "job security concerns" associated with the planned shut down of Staging. Two people said the SM did "nothing" helpful, while 3 said he did "nothing" that was not helpful. In terms of task related activities performed by Staging staff (section C and D of Table 5.1), 5 felt their "skills, knowledge" and ability to "do a good job" were helpful to the SM, while one mentioned there was a "risk of the Root Cause effort not being successful." One felt he did "nothing" to help the SM, while 2 felt they did "nothing" that would not be helpful. These responses suggest a fairly mixed review of the SM's role with respect to task related issues. He was viewed as supportive in some instances but not others, by certain people but not others. Staging staff viewed their own behaviour as being more helpful than unhelpful, but again their review is somewhat mixed.

More relevant to the theoretical framework are the responses related to information processing, which seem to indicate a variety of different informational roles held by the SM on the one hand and a variety of informational demands from the SM on the other. Several of the SM's informational roles can be noted in the responses given in sections A and B of Table 5.1. As an interface between the Staging staff and US Management, the SM plays a number of helpful roles in downward communication. He "defines priorities, direction and performance criteria"; he "shares information and his political views"; and within the

context of Staging itself, he provides "feedback on work." On the other hand, he was also viewed as being not so helpful in downward communication by providing a "poor definition of priorities and direction, and poor feedback."

In terms of upward information flow, it was considered helpful that the SM "supports people" by serving as the main avenue for the "escalation of issues." ("Escalation" is a term used within the Company to refer to asking someone of higher formal rank to help solve a problem that can not be resolved by the person of lower rank.) "Filtering and selecting information for upper management, and handling political or delicate issues" was also regarded as helpful, as was the fact that he "provided" opportunities for certain members of staff to receive "exposure with upper management." Finally, the SM had a particular point of view as to an appropriate "political response to the Root Cause" mandate, which at least one other person shared and considered helpful. (This "political response" essentially amounted to a plan to generate quick evidence of successful root cause problem solving, by reporting on problems that had already been solved prior to the change in mandate to Root Cause. This approach was in response to a perceive demand for quick results from the US VP of Manufacturing, so that he in turn could use the information to demonstrate to the market groups that Staging was solving root cause problems. See Table C.1 section C for a sample of these comments.)

On the other hand, the SM was viewed as not helpful in upward communications because he did "not promote Staging's or the Customer's perspective within the Company," was "too focused on measures of his own performance" and/or "career self-interest," and did "not report problems to upper management." Some people disagreed with the SM's "political response to Root Cause," and one commented that he was "not addressing" with upper management "the job security concerns" people had in relation to the imminent plant closing.

The results in sections C and D of Table 5.1 provide an indication of some of the informational demands placed on Staging staff by the SM. All the informational comments in these sections refer to upward communication from staff members to the SM. For instance, staff members felt they were helpful by "providing information" to the SM that "he needs to meet his objectives and make himself look good." "Objectives" refers to the formal performance criteria defined for all non-unionized members of the Company. Managers, in discussion with their subordinates, define formal objectives to be met over the next period of several months or a year. In order to track the "performance to objectives," all managers within the Company hold formal monthly "operations review (OPS) meetings," where subordinates report information about their activities. At the end

of the year, a formal evaluation takes place, in which the manager provides a formal evaluation of how well he or she feels the subordinate has achieved these formal objectives. (The evaluation system used in the Company seems to be based on Drucker's [1954] "management by objectives" [MBO] scheme.) In terms of these comments, it should be noted that for all practical purposes, the performance of the SM is tied directly to the formal performance of Staging as an organizational unit. His "objectives" are essentially identical to Staging's formal mandate: originally "cost avoidance" and "problems detected and solved" under the Canadian Management; later "Root Cause" under US Management. Thus, Staging engineering staff helped the SM by providing information under these categories every month at their OPS meeting, that he in turn could report to his superiors "to make himself look good." Other things Staging staff did that was helpful in terms of upward communication was to "agree on the political response to Root Cause" and to "tell him about problems before they were too big."

Two members of Staging said that they would be regarded as not so helpful to the SM because they were "not political enough," and two said they "disagreed with his political views." One mentioned that "not giving information he can use to make himself look good" would be regarded as not helpful by the SM. Finally, one person mentioned that if he "took a new job too early" it would not be considered helpful. Although not explicitly related to information processing, the person who made this comment happened to be the Staging Engineer responsible for preparing the SM's monthly "OPS charts." Leaving for another job "too early," while Staging was still in operation, would leave the SM without a key component of his upward information processing system.

Overall, the results summarized in Table 5.1 provide an indication of how members of Staging staff interpreted the SM's behaviour in relation to the changing formal structure imposed upon Staging, as well as an indication of their own behaviour within that context. Many of the items reflect a somewhat negative view of the SM by members of staff. The most significant issue raised is directly related to the SM's role as the point of contact between Staging and US Manufacturing Management. In some sense, these comments can be considered as a case of "blaming the messenger" who is the "bearer of bad news." Considered in isolation from his connection to US Management, the relationship between the SM and staff is not all that bad, as the mixed comments on task-related issues suggest. However, when viewed as a representative of US Management, some of the negative feelings associated with their intention to close the Staging operation reflected on the SM.

The issue of not "promoting Staging's or the Customer's perspective within the Company" relates to the perceived unwillingness on the part of the SM to stand up to US

Management and oppose the planned shut down, but rather to go along with their plan in favour of "career self-interest." Since Staging staff were quite convinced that they were doing something of value for the Company and its customers, US Management's plan to close the operation was seen as senseless and as an something that went against Company objectives in favour of narrow Manufacturing objectives. Consequently, among Staging staff there was an expectation that the SM should oppose US Management's plans, perhaps by "going over their heads," despite the potential career risks involved.

The resulting situation for the SM can be viewed as a classic "no-win" conflict position within the organizational hierarchy, in which one's subordinates have different expectations than one's superiors. On one hand, the SM was formally expected to yield to the demands of US Management. On the other hand, this formal hierarchical responsibility did not change the expectations of subordinates within Staging, who felt US Management's plans should be opposed. Ironically, although staff members felt the SM ought to oppose Upper Management and complained that he was too focused on "career self-interest," they also recognized that going over the heads of Management themselves to prevent the closing would be regarded as a "career limiting move" within the Company—a risk they were themselves unwilling to take. For all practical purposes the decision to close Staging was not debatable and not preventable by anyone within the Staging organization who was interested in preserving their own careers. It did however lead to considerable dissatisfaction with US Management on the part of Staging staff. Some of this dissatisfaction "rubbed off" on the SM, not necessarily because of his personal characteristics, but because of his formal connection to US Management and desire to preserve his own career by going along with their wishes.

5.1.3 Interactions with US Manufacturing Management

Table 5.2 summarizes the response to Q5a-d in regard to the connection with US Manufacturing Management (USM). Table C.2 in Appendix C provides sample comments for each of the response categories identified in Table 5.2. USM consists of two individuals primarily: the Director (D) of Manufacturing Quality within US Manufacturing (the SM's immediate superior), and the Vice President (VP) of US Manufacturing (the Director's immediate superior). The organization of Table 5.2 is the same as Table 5.1 for the SM, with one exception. Each response category in Table 5.2 is designated as "SM" and/or "SE," indicating comments made by the Staging Manager and/or Staging Engineers respectively. If a category includes comments by both the SM and SEs, the corresponding numbers (e.g., SM-2, SEs-8) indicate the number of comments made by each.

Table 5.2
Comments made about interactions with US Manufacturing Management

Comment Category	Number of People	Number of Comments
A) How US Manufacturing Management is Helpful to Staging		
Seem serious about Root Cause (SEs)	2	3
Positive attributes (SM)	1	8
Share political information; insights; advice (SM)	1	7
They pay me (SE)	1	2
Nothing (SE)	1	(2)
B) How US Manufacturing Management is Not so Helpful to Staging		
Political agenda to use Root Cause to shut down Staging (SM-2, SEs-8)	4	10
Poor direction, feedback, support (SM-3, SEs-7)	3	10
Narrow manufacturing quality focus (SM-1, SE-10)	2	11
Have to be in line with their objectives (SEs)	2	4
Make decisions without full information (SM)	1	2
Concern over job security (SE)	1	2
Demand quick Root Cause success (SE)	1	1
C) How Staging is Helpful to US Manufacturing Management		
Buffer the customer from their problems (SEs)	2	5
Solving Root Cause problems (SEs)	2	5
Please them; Help meet their objectives (SM)	1	15
Give information for their decision making (SM)	1	4
Staging make's them look good within the Company (SE)	1	2
Cost saving if they shut us down (SE)	1	1
D) How Staging is Not so Helpful to US Manufacturing Management		
Expose them; make them look bad (SEs)	2	10
Cost of Staging (SM-1, SE-2)	2	3
Lack of "political astuteness" (SM)	1	4
Point out difficulties of closing down Staging (SM)	1	2
Give information that's not relevant (SM)	1	2
Not focusing on the right priorities (SM)	1	1

*A total of 4 people commented on this connection. Categories designated "SM" are based on comments by the Staging Manager. Categories designated "SE" are based on comments by Staging Engineers. Numbers (e.g., SM-2, SEs-8) indicate the number of comments made by either the SM or SEs.

The results indicate that the SM and SEs held rather different views of USM. Only in section B of Table 5.2 do their responses overlap significantly. In sections A, C and D, the SM and SEs provide different and often contradictory views of USM. On the whole, these differences support the view that the SM was more willing to adjust to the demands

of the new management than the SEs, and are consistent with the results of the previous section that suggested Staging staff viewed the SM negatively because he did not oppose USM's plans to close Staging.

US Management was regarded as having a variety of helpful "positive attributes" from the point of view of the SM, with whom they also "shared political information, insights and advice." On the other hand, from the point of view of the SEs, besides "nothing," the only things mentioned as helpful were "they pay me" and that USM "seemed serious about Root Cause." Overall, the SEs held a rather negative view of US Manufacturing Management, primarily due to what was perceived as their unhelpful "political agenda to use Root Cause to shut down Staging"—a view the Staging Manager also shared. For instance, even the "helpful" comments that USM "seemed serious about Root Cause" really amount to a back-handed compliment. If there were no other agendas operating besides the officially stated agenda, it is debatable whether anyone would have bothered to wonder about the seriousness of US Management's official goals and objectives. Related to this were comments about "poor direction, feedback and support" on the part of USM, and what was perceived as a conflict between USM's "narrow focus" on the quality of units produced within the US Manufacturing Division and Staging's broader system level focus on complete customer orders. Despite their disagreement with USM's agenda and narrow focus, some SEs felt that they were being forced to cooperate, stating that they "had to be in line with USM's objectives." Other concerns expressed by SEs related to "job security" and USM's "demand for quick Root Cause success." The SM complained that his superior (the US Manufacturing Quality Director) "made decisions without full information" about their potential implications or the difficulties associated with their implementation.

The differences in attitude towards USM between the SM and SEs are quite sharp in section C of Table 5.2. The Staging Manager made a large number of comments about how he tried to help USM by "pleasing them, helping them meet their objectives," and "giving information for their decision making," regardless of what those objectives or decisions happened to be. On the other hand, the comments by SEs fall rather neatly into two groups, based on Staging's two mandates, before and after the change in management structure. For instance, Staging "buffers the customer from their problems," reflecting the idea that by catching Manufacturing problems before they impact the customer, Staging helps Manufacturing avoid complaints and, therefore, "makes them look good within the Company." Meanwhile, under the new mandate, "solving Root Cause problems" helps USM, as will the "cost savings" that will result "if they shut Staging down."

In terms of things Staging does that are not so helpful to USM, the SEs emphasize the fact that Staging "exposes them and makes them look bad" by generating information about manufacturing problems and the cost savings that result from solving these problems. One SE and the SM mention the "cost of Staging" as something USM regards as not helpful. The SM also mentioned "lack of political astuteness," which may manifest itself as "pointing out potential difficulties associated with closing down Staging," "giving information that's not relevant" and "not focusing on the right priorities," as things he may do that would be considered not helpful to USM.

The contradictory comments about making USM "look good" and "look bad" reflect the rather ambiguous position Staging found itself in relative to USM, after the change in structure. On the one hand, people in Staging felt they were helping USM by solving problems that otherwise would cause problems in the field during installation—problems that could be blamed on US Manufacturing. This perspective fit with the original logic by which the Staging operation had been justified in the first place. If problems were allowed to reach the field, they may have led to larger repercussions, such as the potential loss of a customer, which in turn would make Manufacturing look bad within the Company if they were seen as being the cause of the problems. On the other hand, within the internal context of the US Manufacturing organization, Staging also generated information that made Manufacturing look bad, by reporting about product quality problems and the amount of money that would be saved by solving them. Since this information highlighted the fact that problems existed, it reflected badly on USM, since Manufacturing was responsible for producing a quality product.

These responses draw attention to an interesting aspect of communication within large organizations like the Company. When Staging began, it was originally structured under Manufacturing, apparently based on the simple logic that because Staging would be solving product quality problems and Manufacturing had produced the product, Manufacturing should pay for Staging. Yet Staging's actual experience and data demonstrated that the problems were often not attributable to Manufacturing at all. Many problems resulted from other activities, like Spec Writing, while many resulted from communication and coordination difficulties associated with product and organizational complexity. However, despite these realities of the situation, the simple impression seemed to persist that problems found in Staging were the "fault" of Manufacturing. A more accurate but complicated view of the situation seemed to be very difficult to communicate effectively within the larger organization. As a result, as one person pointed out, USM "takes the heat" for all product-related problems, even those beyond their direct

control in which the components may have been produced by another division or an external supplier. If USM "takes the heat" for all problems related to the product, the activities of an organization like Staging is bound to make them "look bad" within the Company by highlighting errors that exist.

5.1.4 Relation of SM and USM "Echo" Results to Theory and Hypotheses

In terms of the theoretical framework, the "echo" results for the hierarchical interactions with the SM and USM provide indirect support for a number of the proposed hypotheses and evidence for both "category selection bias" and "within category bias" (see section 3.11). In addition, the results provide some general information related to how people in Staging perceived and responded to what they referred to as "politics." Since the label "politics" may be a common way of referring to a wide range of phenomena of concern to this dissertation, comments about politics will be examined separately below in relation to the theoretical framework.

A) Category Selection Bias

Hypotheses 1 (i.e., H1) suggested that members of organizations tend to report information in categories defined and legitimated by hierarchical authorities. Several comments about interactions with the SM and USM relate to this idea. For instance, the idea of the SM "defining priorities; direction and performance criteria," referring to the SM's role of establishing output demand categories for lower levels units like Staging Engineering, came up as both a helpful and not so helpful item (e.g., "poor definition of priorities; direction; poor feedback"). The idea of giving information related to "objectives" that can be used by the SM or USM to make themselves "look good" was also mentioned frequently. As noted earlier, in the Company parlance, an "objective" is essentially a goal, or in the terms of this dissertation, an output demand category, and the achievement of formal "objectives" is directly related to "looking good" within the Company. Providing information related to the SM's objectives helps the SM look good, while not providing such information is considered not helpful (H1a). Similarly, the SM mentioned that he helps USM by "helping them meet their objectives" and thereby "pleases them." Meanwhile, some members of Staging pointed out that the SM was "too focused on the measures of his own performance," and less concerned about other factors relevant to the Staging activity. These comments are also consistent with H2 and suggest that the formal reporting categories of concern to the SM were not fully representative of ongoings within

the Staging operation (H2a), but instead reflected the performance constraints acting on the SM (H2b).

In addition to the idea of providing information relevant to the SM's objectives, it was also clear that there was a certain amount of pressure on Staging from USM to respond to the "Root Cause" objective in a way that they would consider acceptable. For instance, there were comments about "having to be in line with their (USM's) objectives," about USM's "demand for quick Root Cause success," and about agreeing or disagreeing with the SM's "political response to Root Cause" (H1a, H1b). And as noted earlier, although various people "disagreed with the SM's response to Root Cause" and disagreed with USM's "political agenda to use Root Cause to shut down Staging," nonetheless, it was viewed as something that could not be opposed by the SM or other people in Staging, if they were interested in preserving their careers. While complaining that the SM was "not promoting Staging's or the Customer's perspective within the Company" in favour of "career self-interest," the SEs also noted that going over USM's heads themselves to fight the closing would constitute a "career limiting move" within the Company. That is, both the SM and SEs systematically did not report information contradictory to USM's objective of closing down Staging (H1c). This is also consistent with H2. The reporting about Staging under USM was consistent with USM's objectives and more reflective of the reporting constraints imposed on Staging than of actual ongoings within Staging (H2a, H2b).

A few of the other items mentioned also relate to category selection bias. For instance, the comments related to the "cost of Staging" being not helpful to USM and the "cost savings" that will result for USM "if they shut Staging down" point to the significance of the "cost" reporting category within USM. This was a change relative to the situation under Staging's previous management, which formally regarded Staging's costs as being acceptable as long as they were outweighed by the "cost avoidance" resulting from Staging's activities (H1d). Comments about USM's "narrow manufacturing quality focus," relative to Staging's system level quality focus on complete customer orders, reflect the view that reporting within US Manufacturing was not representative of all aspects of the product's quality (H2a). Finally, some general comments made by the SM about how he may not be helpful to USM reflect an interesting aspect of category selection bias (e.g., H1). He said that he "lacks political astuteness," and as a result sometimes does "not focus on the right priorities" or "gives information that's not relevant" (such as "pointing out difficulties associated with closing down Staging"). In essence, the SM is suggesting that to be an effective manager, he needs to improve his skills of appropriate behaviour in

response to the output categories defined by his boss. (The idea of "political astuteness" will be considered further below.)

B) Within Category Bias

Later analyses will focus explicitly on the "set structure" of reporting categories like "Root Cause," but the "echo" results do provide some evidence of how certain reporting categories fit together that relates directly to the idea of "within category bias."

At the USM level, it is clear that "Root Cause" is seen as "good," as is "shutting down Staging" and the "cost savings" that will result from doing so. "Exposing them or making them look bad" is certainly "bad," as is the "cost of Staging" or "pointing out the difficulties of closing down Staging." Within the "Root Cause" category, people mentioned "solving Root Cause problems" and USM's "demand for quick success." These two items can be viewed as "features" of the Root Cause reporting category. In other words, from Staging's point of view there is clearly an internal structure to the "Root Cause" category, with respect to the sorts of Root Cause events that ought to be reported: USM would not like just any Root Cause information, but would like to receive information "quickly" about "solved problems," that can be used as evidence of the "success" of its Root Cause program.

At the SM level, this "set structure" is confirmed in the comments about a "political response to Root Cause." For instance, the following quote (full quote in Table C.1) from the Process Engineer (PE) who was designated as coordinator of Staging's Root Cause Team reflects this category structure almost exactly:

> "I saw the politics almost immediately behind it. My read on it was 'quantity of problems now with resolution as quick as possible, we'll worry about the mechanics and logistics later.' <The VP of Manufacturing> has a very specific need of standing up and saying 'We're doing something about Root Cause, . . . we're not just putting the band-aid on anymore, we're now trying to investigate why the problem happened, and eliminate it forever.' And '. . .I need evidence that things have been happening', right. And I can show you the memo I wrote. I said, 'I'm going to pull a whole bunch of problems that we've known about for a long time, that are closed <i.e., solved already>. And I'm going to show them as ones that we've basically put through our process, . . .' . . . it was very strategic in the sense that, I'm going to be strategic in what I pick, and the intent is to show a volume of problems that are completed."

The PE was "strategically" selecting events from Staging (i.e., previously solved problems) and reporting them as exemplars of quick Root Cause success, because of the VP's "very specific need" to report evidence of Root Cause problem solving. Also, at the SM level, comments about the "risk of Root Cause not being a success" further support this interpretation of the Root Cause set structure.

The categorization sequence implicit in these results goes something like this:

Problems Already Solved --> Root Cause Problems Solved -->
Root Cause --> Root Cause Success

"Root Cause Success" in turn feeds into the other categories of concern to USM mentioned above:

Root Cause Success --> Shut down Staging

And:

Shut down Staging --> Cost Saving
Shut down Staging --> No Longer Expose Manufacturing or
Make Them Look Bad

Thus, there was a kind of "pseudo-logic" operating that related major categories to one another and defined the overall "narrative" structure of the "story" Staging was supposed to tell through its formal reports. This overall structure, in turn, placed constraints on the contents of major categories like Root Cause, because only certain contents would allow the overall story to "fly." Without "quick" "problems solved" and "success," there was no way that "Root Cause" could have been used to "shut down Staging." These contents were pre-requisite elements of the overall story.

These results provide rather strong support for a number of hypotheses related to "within category bias." For instance, H5 (and H5a) suggested that events most similar to the perceived set structure of higher level authorities will be the ones most likely to be reported. H6 suggested that as pressures to report "good" within an output category increase, the criteria for selection of reportable events will be relaxed, and this was clearly the case here, where "previously solved problems" were reported as part of the "political

response to Root Cause." This also provides support for H7, which stated that event selection criteria would be relaxed as the degree of representational transparency decreased: no one outside Staging could possibly have known whether the reported problems were solved before or after the official program began (H7a, H7b). Clearly, the results also suggest that the "Root Cause" set structure was considerably more heterogeneous from Staging's perspective than from the perspective of someone receiving its formal reports about "problems solved" and "success," but mentioning nothing about "unsolved problems" or a "lack of success" or about the fact that the reported problems had been previously solved (H8 and H9).

C) "Politics"

Finally, several of the items in these "echo" responses refer to the idea of "politics." These comments are worth examining as a group, because they seem to provide information about how people learn about the reporting constraints that exist within the formal structure, and also learn to adapt to these structural constraints. In terms of the theoretical framework, the comments about politics are suggestive of the process by which the people in Staging learned about the "supposed to structures" within which they operated, both in terms of "category selection bias" and "within category bias." Furthermore, they provide some interesting evidence of differences that seem to exist, in terms of how different individuals respond to the "political" constraints they encounter in organizations.

For example, at both the SM and USM levels, respondents commented on the idea of "sharing information and political views" (SM level; or "sharing political information; insights; and advice" [USM level]) as being helpful from the point of view of subordinates. These comments relate to informal communications between superiors and subordinates, that help the subordinate understand what's going on at higher levels of management. For instance, in the words of the SM (see Table C.2 for the full quote) USM is helpful because they:

> "Provide insights into business situations that help me to understand the scope of the situation. Again, not that I need to know it, but it's useful information. . . . It helps me to understand the mind-set and the way people operate and behave at that level."

Off the record, informal sharing of "political information" down the ranks, helps subordinates "understand the mind-set" of people at higher ranks. In terms of the theoretical framework, this is equivalent to saying that it helps people understand the "supposed to structures" they operate within: what is good, what is not good, what are the valences (positive or negative) on various categories, etc. In addition, this informal interaction helps people to learn what is acceptable to communicate formally. That is, while some categories may be informally viewed as "bad," it may not be acceptable to say so in formal communications. For instance, in the preceding quotation, the SM was referring to the official versus unofficial reasons for "shutting down" the main Canadian Manufacturing plant (see Table C.2 for the full quotation). On the one hand, there was the "text book business answer" that the plant's activities were being "outsourced" because it was inefficient. On the other hand, was the unofficial reason according to USM: "because we've got a militant union who's not willing to cooperate." It is important to note that the "real" reason for closing down the plant could have been some combination of these two, or neither of them for that matter. That is really beside the point here. In terms of the "mind-set" operating at higher levels of management, the example shows plainly that "uncooperative unions" are considered to be "bad," but since this can not be legitimately used as a formal reason for closing down a factory, the situation must be cast in more legitimate language—in this case the language of a "textbook business answer" related to the ideas of "efficiency" and "outsourcing." Thus, the downward sharing of political information helps people to learn what the positive and negative valence categories are from upper management's perspective (i.e., category selection bias). It also helps them to learn how to appropriately respond to these categories (i.e., within category bias).

There were also comments by subordinates related to their response to "politics" at higher management levels. These were mentioned as both helpful and not so helpful behaviours. For instance, at the SM level, one SE (the PE who was coordinator of the Root Cause Team) "agreed with the SM's political response to Root Cause," while others "disagreed." Some SEs felt they were "not political enough" or "disagreed with the SM's political views." Similarly, in relation to USM, the SM mentioned that he "lacked political astuteness" required to fully understand and respond appropriately to USM's demands, while SEs and the SM commented on the unhelpful "political agenda to use Root Cause to shut down Staging." These responses reflect two separate issues that should be disentangled to avoid confusion.

First, the results suggest a range of behaviours and attitudes on the part of individuals towards what they describe as "politics" at higher levels. Some people "agree."

Some "disagree." Some "lack political astuteness" and would like to acquire these skills, while others ". . . know it's a game and . . . don't want to get involved in playing that . . ." (to quote an SE who felt he was "not political enough" for the SM). This apparent range can be seen in the following interaction with the coordinator of the Root Cause Team (P01), about different approaches among Team members:

> "They may feel that I'm saying more politically than they would be comfortable with. . . . What I mean by that is, there's a lot of politics. It's a bit of a game that we're playing, to be quite honest. . . . But I recognize that, . . . I play a bit of the game . . . where a lot of the people don't believe in that. The political side, you know."
>
> [How? Maybe you could get into this a little more specifically. What do you mean by that?]
>
> "I guess at the beginning, . . . we were talking about . . . setting up a Root Cause team. And there was a lot of urgency to just get some results. And normally someone else would say, 'Well I don't believe in that. I think first we have to put down the roles and responsibilities, what our objectives are, get buy-in by all the people, put the plan in place, do all the preventative stuff up front.' Which is the right way to do it, but recognizing that that's not what the VP wanted at the time. He wants something to be able to stand up next week, put up a chart and say 'Staging has done this. Accomplishments.' So I designed it in reverse, that: 'Hey, we're going to take some problems that we know the answers to right now. We're going to write them up . . . just give him the results immediately, before we actually have a formal process . . .. Where somebody else would say 'Ughh?!'—they get very nervous, like: 'Ohh, we're doing it wrong.' I know we're doing it wrong, but we still have a VP who's saying 'I need something.' . . . You can't say 'Well no, I'm not going to give you anything, because I don't believe in that.' You have to say 'Here's your results'—which are legitimate results, but it's sort of done in reverse. . . . Where someone else would say 'I don't want to use that problem, because really it didn't go through our formal Root Cause channels' . . .. But I'm saying 'Hey, I don't care, we did it. We found it, we solved it, we didn't go through a formal process, but we didn't have one back then. But let's give that to the VP, so he can stand up and say 'Hey, they solved this problem.'"
>
> [Would it just be <P07> and <P03> who would be more aiming towards trying to follow the rules?]

"Yeah, <P07> and <P03>. The way I describe it is, <P07> is relatively new, he's been with <the Company> for 2 years. So . . . he's in the stage of being molded very easily. He's trying to find out how people do things, understand and try to make decisions. Where <P03> has got a very—he's got a unique style to himself. He's not political, has no aspirations to do anything other than real technical stuff. And because of that he just says 'No, I don't agree, I'm not political.' He's not a political guy. He's not comfortable with the presenting side. . . . Whereas <the SM> and I are much more political. Ahhh, I don't want to say (that). Intuitive of the politics that happen, just through our experiences. . . . It's too bad, because . . . there's a fine line between, you know becoming too political and sort of giving up your values and ethics and morals . . . and I don't know, you've got to find that balance and be comfortable with it. Whereas <P03's> balance is pushed farther back than maybe <the SM> and I. . . .<P03> is more inclined to do it the way it should be done theoretically, right."

[That's interesting, so basically . . . <P03> would be at the extreme of wanting to set up a system correctly?]

"Yeah, relative to the rest, he would be the farthest. I wouldn't say he's by any means extreme. He's probably willing to take some chances, but relative to us, he's the most extreme."

[Right, and then <the SM> would be more the other extreme, wanting to show quick results?]

"Yeah, and I think that's a result of him being the guy who's got to show the same chart too, right? . . . It's easy for <P03> and I to say 'Well slow down', because we're not the ones who are going to be grilled at the executive review, saying 'Why haven't you done anything?' 'Well, we're designing a process, and we've got to get buy-offs, and it's going to take 2 years. . ..' Forget it. They need something now. Especially when they're paying for us. They could say, 'Well you're not doing what I'm telling you, get out of here! I'll get someone who will.' That's the way it works."

The range of attitudes, which P01 refers to as finding "that balance and be(ing) comfortable with it," can be described as a kind of tension or dissonance between the image projected, and the real experience one has of the events that are represented by this image. If all images inherently present a simplification of reality, they must to some extent be dissonant with our actual experience of that reality. The question is how much dissonance

can an individual handle? The responses suggest different individuals may feel comfortable with different amounts of dissonance. How much one is willing to "play the game" and "stretch things" to produce a report in line with what upper management is looking for, to some extent depends on how comfortable one feels with the resulting dissonance.

Based on this very limited sample, it seems the SM is comfortable with the highest level of dissonance. For instance, referring to the SM, P01 later commented: "I think he may feel that maybe I'm even being a bit conservative with the approach. He may want to be even more aggressive in the political side. . .." Next on the "continuum" would be P01, who "agreed with the SM on the political response to Root Cause." Then, there would be P07, who "is relatively new," has "been with <the Company> for 2 years," is ". . . in the stage of being molded very easily," . . . and is ". . . trying to find out how people do things, understand and try to make decisions." Finally, at the opposite extreme from the SM is P03, who is ". . . not political, has no aspirations to do anything other than real technical stuff. And because of that . . . just says 'No, I don't agree, I'm not political.' He's not a political guy."

What is the "dimension" that defines this continuum? The word "aspirations" appears in one of the above comments. Is this dimension simply an indication of "career mobility aspirations"—the dimension identified by various previous researchers of distortion in hierarchical communication (see the literature review)? While it may be true that people exhibit different levels of "career mobility aspirations" when examined apart from any social context, I don't think the explanation is quite so simple in this case. This phenomenon does not seem to be strictly related to an internal psychological variable, but has distinctly social properties. For instance, P01 suggests that the SM may be further along the dimension than he or P03 because they are ". . . not the ones who are going to be grilled at the executive review, saying 'Why haven't you done anything?'" In other words, one's position along this continuum could be highly correlated with the nature of the constraints acting on one's role within the formal structure. Consistent with the suggestion in H6 that increased reporting demands or pressures will correspond with the relaxing of reporting criteria, the SM and P01 were more willing to "play the game" than P07 and P03, who were under less direct pressure.

The second issue raised by the comments about "politics" at higher management levels relates to the actual behaviour of people in Staging, regardless of where they happened to "sit" on the continuum discussed above. While people clearly differed in their attitudes towards "politics," they did not differ greatly in terms of how they formally responded to Staging's "political" situation. Although no one claimed to support the

closing of Staging by USM, no one was willing to "stick their neck out" and try to prevent it from happening either. Thus, all of the people in Staging generated formal information consistent with the desired "political agenda" of USM, either actively, such as the SM and P01 who were more willing to "play the game," or passively, simply by not protesting, such as P07 or P03, who did not "play the game."

Where is the distinction here? The SM and P01 were willing to "play the game" at the level of "within category bias." They took the category of "Root Cause" and were willing to adapt its internal set structure in ways that maximized external perceptions of Root Cause success. P07 and P03 (among others in Staging) were not willing to actively play this "within category bias game," but were nonetheless unwilling participants, conscripted into playing the "category selection bias game" imposed upon them by USM. They worked on the Root Cause Team, tried to solve Root Cause problems, and generally contributed to the generation of information within the Root Cause output demand category. While they may have reduced the internal dissonance of their actions by convincing themselves that they were taking Root Cause seriously, rather than being "political" about it, the net result was largely the same in terms of formal informational outputs within the Root Cause category.

There is one final point worth noting about the idea of "politics" as the term was used in response to the "echo" questions. The idea of a "political agenda" on the part of USM "to use Root Cause to shut down Staging," seems most consistent with the common derogatory use of the word "political" (e.g., "playing politics," "political animal," etc.). In this case, from Staging's perspective, USM was imposing upon them a new reporting category (Root Cause) that fit with some undisclosed agenda they had to shut down Staging. In terms of the theoretical framework, this is "category selection bias" from Staging's point of view. From USM's point of view, however, this is "within category bias." USM had various output constraints operating at their level, including "cost reduction" as a specific objective, and "looking good" as a general objective. Since Staging generated information that made them "look bad," this meant there was a need for them to find a new way of operationalizing "good" for Staging, so that they could continue to "look good" as well. Root Cause was the solution that was developed, as an operationalization of "good" for Staging. "Political" is, therefore, being used here as a derogatory label to refer to a biased means of looking good within a category.

This is essentially the same way "political" is being used in the other "echo" comments as well. Desires for increased "political astuteness" on the part of the SM relate to skills at "within category bias." Comments about "agreeing or disagreeing with the

political response to Root Cause," "not being political enough," or "disagreeing with the SM's political views" all refer to agreement or disagreement with particular ways of operationalizing language categories—particular enactments of "within category bias." And as already discussed, comments about "sharing political information" seem to refer to a process of learning about the internal set structures of output categories and appropriate responses to them—learning about "within category bias" for particular categories. Thus, the common words "political" and "politics" generally seem to be used in reference to a variety of language games—in Wittgenstein's (1968) sense, not in the sense of "playing the game"—related to the idea of "within category bias."

These language games deal with the internal structuring or operationalization of output categories in ways that make a unit look good. If this interpretation is correct, it is no wonder there were so many comments about "sharing political information" and "political astuteness." To survive the organizational "form of life" (Wittgenstein, 1968), requires that one learn to play these language games and acquire at least a minimal level of political astuteness. To thrive in this form of life may require a great deal of political astuteness. In the words of the SM:

> "I continue to strive to develop the skill to determine what (information) is really relevant at their (USM's) level, and provide that information, and screen myself. And that I think is a skill that everybody needs to try to develop if they can, and it's also a skill that I'm trying to help my staff to develop."

5.1.5 Some Comments About Other "Echo" Results

Appendix C documents the "echo" responses for the remaining connections identified during the interviews. These results can not be discussed in detail, but are included for the reader to examine as necessary. This section will merely touch on a few items that pertain to the theoretical framework, particularly in relation to comments about interactions with external units within the Company.

Since these external interactions represent lateral relations (rather than hierarchical), one of the basic issues of relevance relates to the coordination of interdependent tasks between people in different departmental units of the Company. In many cases, in addition to commenting about helpful or not so helpful behaviours taking place in these interactions, people in Staging also provided their "theories" about why certain behaviours might take place. In the case of "not so helpful" behaviours, these theories often related to conflicts

between the physical demands of the task and the formal reporting constraints operating on members of the external unit. On the other hand, "helpful" behaviours were often explained in terms of a high degree of "consistency" between the demands of the task structure and the reporting demands associated with the external unit's formal structure.

For example, one of the main difficulties mentioned as "not helpful" in the connection with Project Managers was their apparent tendency to treat "deadlines as being more important that shipping a complete job" (see Tables C.3.1 and C.3.2). On the other hand, the main thing Staging did that was not helpful to them was being an "extra step in the process, and increasing the delivery interval." The basic theory of explanation here was that the performance of Project Managers was primarily being measured in terms of their ability to ship customer orders on time, a behaviour that was tied directly to how the Company measured its sales revenues. Orders shipped late would result in delays in revenue, which would make the Market Region's overall performance look bad. Furthermore, since revenues were formally measured within the Company at the end of every quarter, there would be extreme pressures from the Project Managers to ensure all orders were shipped prior to the end of quarter, so all marginal revenues could be "counted." Often, if it looked like a planned Staging job could not be completed by the end of quarter, the Project Manager responsible for the order would demand that it be shipped incomplete or unstaged, in order to be included in his or her revenue counts. In general, the existence of Staging threatened Project Manager's formal performance ratings because it tended to delay shipments by "increasing the delivery interval," compared to customer orders that were not staged. This example illustrates how a formal reporting constraint operating on one unit can lead to coordination difficulties from the point of view of other interdependent units.

Another example relates to Staging's connection with Spec Writers, who were formally responsible to issue "JIMs" to correct for any errors they may have made earlier, while writing the design specification for a particular customer order. (A "JIM" was simply a form the Spec Writer filled out to request certain corrective actions; see the process description in Appendix B for details.) The main complaint about Spec Writers was their "slow and poor response" to requests for JIMs, while Staging people felt that they would not be regarded as helpful by Spec Writers because "they don't like our feedback; it makes them look bad" (see Tables C.5.1 and C.5.2). The theory in this case was that a key measure of the Spec Writer's job performance was the "number of JIMs" that had to be issued as corrective measures for each customer order. So any time Staging called with a request for a JIM, this meant it could reflect negatively on the Spec Writer's job

performance. As a result, Staging's "feedback made them look bad." The behaviour of Spec Writers in response to this situation was quite interesting. They were perceived as being uncooperative and having a "negative attitude, since they felt Staging was checking up on them." In addition, they were slow to respond to Staging's requests. One particularly creative response on the part of Spec Writers was often mentioned. Since their performance measurement was based on the number of JIMs as opposed to the number of actual problems or errors in a customer order, some Spec Writers would "save up problems" to issue a single JIM to correct a number of different problems. They would do this by simply waiting a few days after a request came from Staging, just in case any additional requests might come in before Staging had finished with the order. As with the Project Managers, this example shows how formal reporting constraints can lead to poor task coordination, and in this case also poor interpersonal relations.

On the other hand, Staging generally had very good relations with the Customer Service unit (see Tables C.4.1 and C.4.2) and with the Canadian Warehouse operation (Tables C.6.1 and C.6.2). Customer Service basically provided an expediting function for Staging, assisting in the tracking of late materials or missing items. The Warehouse operation, which was physically located in the same building as Staging, moved materials in and out of Staging and packed customer orders for shipment after Staging's activities were completed. In both cases, comments about helpful behaviours outweighed not so helpful comments quite significantly. And in both cases, it was pointed out by people in Staging that for the most part there was a kind of "alignment" between the reporting constraints of Staging and those of the other two units. Like Staging, these units were basically responsible for ensuring that customer orders were shipped complete and on time. As such, if Staging "looked good," so did Customer Service and so did the Warehouse. If Staging "looked bad," so did the other two. This structural consistency or alignment seems to have contributed to good working relations and effective task coordination among the three units. Essentially, it is a lateral version of the phenomenon of "nested interests" discussed earlier in the theoretical development.

These examples merely scratch the surface of an issue requiring much more research: the relationship between formal structures and the coordination requirements associated with task structures. For any task involving a network of interdependent activities, there is a "natural" task structure that defines the set of behavioural constraints that must be met if the task is to be accomplished in some reasonable manner. Formal structures create their own set of behavioural constraints—particularly in terms of language, information and reporting constraints—but also to varying degrees in terms of

additional task constraints which affect the coordination of interdependent tasks (as Blau's [1955] study illustrated so well). There is no such thing as a formal structure that can be designed to "align" perfectly with every task related constraint. But as these examples suggest, when formal structures do "line up" with task constraints, coordination is much more effective.

In terms of the theoretical framework, these examples provide support for H12 and H13, particularly as expressed in H12a and H13a respectively. In the Project Manager and Spec Writer examples, conflicting output demands on these units varied in terms of the degree of representational transparency and the amount of formal pressure on these external units to respond. In both cases, Staging was at the losing end of the tug of war. Staging's demands on these units were both lower in transparency and lower in formal pressure, compared with the demands from their own formal authorities. As a result, both Project Managers and Spec Writers structured their behaviours and tasks to respond primarily to the output demands of their formal authorities, rather than to the demands of Staging.

5.2 Reporting Mechanisms

5.2.1 Results

In Question 6, interviewees were asked to identify the main reporting and evaluation mechanisms used in their jobs. Table 5.3 provides a list of categorized responses to this question, organized according to the job class of the interviewee. Only hierarchical reporting mechanisms have been included in the list. In some cases people identified other reports that they either used or produced during their work that involved lateral communications or the retrieval of information from some computer system or database. The hierarchical reporting mechanisms identified in Table 5.3 include both formal job evaluation reports and routine status reports about daily, weekly or monthly job activities.

Because the data for Questions 6 and 7 (about the contents of formal hierarchical reports) related most directly to the theoretical arguments, the categorization procedure adopted for these two questions was somewhat more detailed than that used for the "echo" responses to Question 5. A computer software package for qualitative data analysis (NUDIST) was used to categorize segments of text from the interview transcripts. These categories were not assumed to be mutually exclusive. Thus, the same segment of text could be placed in a number of different categories, depending on the context of the statement or the particular feature upon which the categorization procedure was based. For

instance, in addition to identifying reporting mechanisms, comments given in response to Question 6 would often include information about the contents of the formal reports. Since this content information was relevant to Question 7, these comments would be categorized for both questions, based on the reporting mechanism in one case and the content of the report in the other.

Table 5.3
Evaluative and Status Reporting Mechanisms (Question 6)

Reporting Mechanisms by Job Class	Number of People	Number of Text Units
Staging Manager (SM; n=1)		
Monthly OPS Review Meeting	1	23
High Level Root Cause Presentation	1	18
Weekly Activity Report (WAR)	2 *	18
Weekly Root Cause Meeting	1	12
Annual MFA Performance Review	1	8
Process Engineers (PEs; n=4)		
Informal Reporting To Boss	4	59
Monthly OPS Review Meeting	4	17
Annual MFA Performance Review	3	30
Weekly Root Cause Meeting	2	11
Weekly Staff Meeting	2	6
Monthly Letter to Boss	1	25
Operations Engineers (OEs; n=4)		
Monthly OPS Review Meeting	4	22
Cost Avoidance Spreadsheet	3	66
Annual MFA Performance Review	1	21
Weekly Staff Meeting	1	15
Installation Manager (IM; n=1)		
Informal Reporting To Boss	1	13
Monthly OPS Review Meeting	1	3
ICs (n=2)		
No Formal Evaluation; Do Job Itself; on Time	2	60
Problem Summaries/Logbooks	2	9
Informal Reporting To Boss	2	8
Informal Reporting To OE	1	9

Installers (I; n=2)		
Problem Summaries/Logbooks	2	13
No Formal Evaluation; Do Job Itself; on Time	2	5
Informal Reporting To OE	1	5
Helper (H; n=1)		
Shortage, IR, RMR Lists	1	20
Informal Reporting To Boss	1	15
Problem Summaries/Logbooks	1	5

15 people responded to this question.
* The SM's Weekly Activity Report (WAR) was mentioned by the SM as well as one OE.

Due to an inherent constraint in the design of the software used for categorization, the results reported in Table 5.3 for Question 6 (and in later results to be reported for Question 7) are based on "text unit counts," rather than "comment counts." A "text unit" is the basic unit of information processed by the NUDIST package and represents a single line of word processor text. Text units are, therefore, more or less arbitrary chunks of text from the standpoint of their meaning. Text unit "counts" would correlate highly with simple word counts, but do not correspond directly to comments. One text unit could represent several comments, ideas or examples given by an interviewee, or alternatively, it could take an interviewee many text units to express a single idea or example. This is clearly a drawback from an analytical point of view, but seemed an unavoidable compromise if a computer-based tool was to be used to ease the work load associated with processing a large volume of transcript data in detail and to allow for some of the more complex analytical methods used for Question 7 data.

Monthly OPS (Operations review) meetings were clearly the most salient reporting mechanism for the ten salaried employees within Staging (i.e., SM, PEs, OEs, IM), mentioned by all ten individuals. The "annual MFA performance review" was mentioned by 5 people (MFA stands for "Managing for Achievement," the Company's formal evaluation system for salaried employees. As noted earlier, it was essentially based on Drucker's [1954] "Management by Objectives" scheme.) Other frequently mentioned items included "informal reporting" and the "Root Cause Weekly Meeting" (actually a telephone conference call), which included the SM and PEs on the Root Cause Team, members of the US Staging Root Cause Team, and the US Director of Manufacturing Quality.

Unionized employees (i.e., ICs, Installers, Helpers) were not subject to a formal evaluation process like MFA and tended to mention "informal reporting" to their boss and/or the OEs most frequently. They also mentioned that they had "no formal evaluation,"

but were simply expected to "do the job itself; on time." The main formal reports they generated were the "problem summaries/logbooks," which documented the problems solved in Staging and were given to the OE for entry into the problem database and the generation of "cost avoidance spreadsheets" for each order. The Helper reported lists of "shortages, IRs, and RMRs" (particular classes of Staging problems) to the Installers, who in turn would solve them and later record them in the "problem logbook."

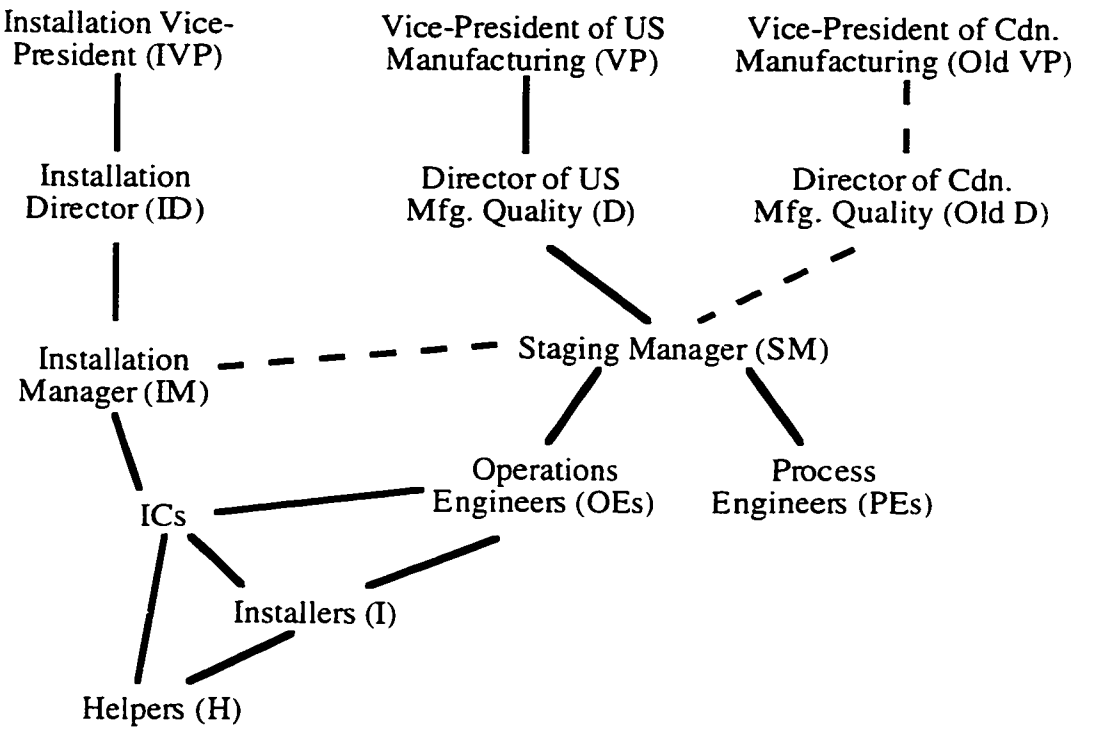

Figure 5.2 Formal lines of hierarchical reporting within Staging. Staging's three hierarchical structures are shown: the Installation Hierarchy, the US Manufacturing Hierarchy, and the Old Canadian Manufacturing Hierarchy.

To put these reporting mechanisms in context, Figure 5.2 shows the formal lines of reporting within the Staging organization. The organization consists of two hierarchies—the Staging Installation hierarchy and the Staging Engineering/Manufacturing hierarchy—which were connected at the lower levels but essentially separate at the higher levels. Helpers report to Installers and/or ICs. Installers report to ICs and OEs. ICs report to the

IM and OEs. OEs and PEs report to the SM. The IM reports on a "dotted line" to the SM. Beyond the boundaries of the Staging organization, the SM reports to the Director of US Manufacturing Quality (D), who in turn reports to the Vice-President of US Manufacturing (VP). The IM reports to the Installation Director (ID) within the International Installation Department, who in turn reports to the Installation Vice-President (IVP). Figure 5.2 also shows the reporting hierarchy prior to the change in structure. The SM used to report to the Director of Canadian Manufacturing Quality (Old D), who reported to the Vice-President of Canadian Manufacturing (Old VP). Thus, Staging was part of three hierarchical reporting structures within the Company: the Installation Hierarchy, the (new) US Manufacturing Hierarchy, and the Old Canadian Manufacturing Hierarchy. Later analyses will focus on some of the differences among these three structures.

5.2.2 Relation to Theory

The results summarized in Table 5.3 provide evidence supportive of the theoretical framework in a number of ways. First, several of the reporting mechanisms can be regarded as "generic" or "content independent" in the sense that they could be used to report any sort of activity:

- Monthly OPS Review Meeting
- Annual MFA Performance Review
- Weekly Staff Meeting
- Monthly Letter to Boss
- Weekly Activity Report (WAR)
- Informal Reporting To Boss
- Informal Reporting To OE
- No Formal Evaluation; Do Job Itself; on Time.

On the other hand, a number of the reporting mechanisms are "content specific," in that they have been established for the purposes of reporting information about specific kinds of activities:

- High Level Root Cause Presentation
- Weekly Root Cause Meeting
- Cost Avoidance Spreadsheet
- Problem Summaries/Logbooks

- Shortage, IR, RMR Lists

These content specific reporting mechanisms correspond directly to Staging's two formal mandates: i) problem solving and cost avoidance under the original Canadian Manufacturing Management (CMM), and ii) Root Cause problem solving under USM. The results support the idea of "category selection bias," as expressed in Hypotheses 1, 2 and 4 (H1, H2, H4). Formal structures within Staging, represented here as formal reporting mechanisms, have been defined relative to both Staging's old and new external formal structures. The lower level structures (Cost Avoidance Spreadsheet; Problem Summaries/Logbooks; Shortage, IR, RMR Lists) had been defined under the original structure, while the higher level structures (High Level Root Cause Presentation; Weekly Root Cause Meeting) were developed after the change in structure. Since the interviews were conducted shortly after the transition to USM, the new Root Cause mandate had led to new structures at the higher levels of the Staging organization, but these newer structures never had a chance to "filter down" to the lower levels within Staging Installation. This corresponds to the idea expressed in H2b, that output demand categories are more predictive of the informational constraints on the unit, than they are of events within the unit. For instance, while Staging Installation continued through the fall of 1995 to solve problems and OEs continued to generate cost avoidance data under the new management structure, the formal output from Staging as a whole (via the role of the SM) emphasized Root Cause, not problems or cost avoidance.

The responses also provide support for H4, in the sense that the language used to define these reporting mechanisms corresponds directly to the language used to express Staging's formal mandates under both of its two authority structures.

In terms of hypotheses related to "within category bias," the results provide evidence in support of H15, which predicted decreased representation transparency at higher levels of the organizational hierarchy. Two kinds of analysis can be performed on the reporting mechanism data to examine its relationship to H15. First of all, a straightforward interpretive examination of the responses illustrates the decrease in transparency as one moves up the hierarchy. For instance, with respect to the formal reporting mechanisms associated with problems detected and solved in Staging Installation, the following categorization scheme illustrates the reporting sequence:

Shortage, IR, RMR Lists (H) -->
Problem Summaries/Logbooks (H-->I-->IC) -->
Cost Avoidance Spreadsheet (OE) -->
Monthly OPS Review Meeting (OE) --> SM
Annual MFA Performance Review (OE) --> SM

The sequence is shown to stop here at the level of the SM because under the new USM management structure, reporting about problems or cost avoidance would not go beyond the monthly OPS meeting report by the OE to the SM. Under the old management structure, the reporting sequence would continue after the OE's report at the monthly OPS meeting:

--> Monthly OPS Review Meeting (SM) --> (Old D)
Annual MFA Performance Review (SM) --> (Old D)

The OEs' and SM's "Annual MFA Performance Review" would consist of aggregate cost avoidance reporting for the year, a key indicator of their individual job performance under the old management structure.

It is clear from the above that reporting about Staging Problems becomes increasingly more abstract (less and less transparent) through each step in the hierarchical reporting sequence:

H-->I-->IC-->OE-->SM-->(old D)

From reporting lists of specific problems (Shortages, IRs, RMRs) at the level of Helpers, the SM would report aggregate total cost avoidance on a monthly basis for his OPS review and on an annual basis for his MFA performance review. It would be impossible to determine from the aggregate cost avoidance reports at OPS or MFA any concrete details about the specific problems that had been solved to generate the cost avoidance estimates in the first place.

A second method of analysis can be applied to the data in Table 5.3 as an indirect test of H15. If one accepts the proposition that "generic" reporting mechanisms should in general be less transparent than "content specific" reporting mechanisms, a simple test can be conducted to assess whether the odds of using a "generic" reporting mechanism increases at higher levels of the reporting hierarchy. (This proposition is based on a

cybernetic view that a generic mechanism would have a relatively higher requisite variety than a content specific mechanism designed specifically for a particular reporting purpose [e.g., Ashby, 1956]. The relationship between requisite variety and transparency is indirect, however. A high requisite variety controller could still be highly transparent with respect to what is being controlled, while a low variety controller could theoretically also be low in transparency.)

First, the percentage of "generic" versus "content specific" reporting mechanisms were calculated for each job class. These percentages are given in Table 5.4, and have been calculated four ways: i) based on the number of reporting mechanisms mentioned for each job class; ii) based on the number of people mentioning each reporting mechanism within each job class; iii) based on the number of text units referring to each kind of reporting mechanism for each job class; iv) based on the number of text units weighted by the number of people. (The weighting used here is based on multiplying the number of people and the number of text units for each reporting mechanism, within each job class.) Then the Sign Test (Siegel, 1956) was applied to each column of Table 5.4 as follows. For each job class pair corresponding to a valid hierarchical reporting sequence, the difference between percentages was assessed as to its positive or negative value. For instance, the PEs report to the SM. Thus, for percentages based on the number of reporting mechanisms (column 1 in Table 5.4), the SM percentage of "generic" reporting mechanisms is 60%, while the PE percentage is 86%. 60% - 86% = -26%; a negative value. The same thing was done for all job class pairs in Table 5.4 representing a valid hierarchical reporting sequence. (These pairs are listed in the note at the bottom of Table 5.4.) The resulting Sign Test probabilities are given for columns 1 through 4 in Table 5.4 ($p=0.133$; $p=0.046$; $p=0.029$; and $p=0.09$ respectively).

Though the probabilities are not all highly significant, they are reasonably strong, given the small sample size and do provide indirect support of Hypothesis 15. Furthermore, inspection of the percentage data given in Table 5.4 shows that within the Staging Installation hierarchy, (H-->I-->IC-->IM) the expected increase in percentages is very pronounced, while the Process Engineering job class, with a very high percentage of "generic" reporting mechanisms, seems to be the main outlier in the four distributions. It should be recognized, however, that this test is inherently weak given the fact that not all of the 14 hierarchical pairings are independent. For instance, if the pairings SM-IC and IC-H both have a positive sign, this implies that SM-H must also have a positive sign. While this is clearly a weakness with this kind of analysis, the intent here is not to provide an irrefutable test of validity, but rather to merely use a simple statistical technique as a means

of demonstrating the existence of an general pattern in the data. A better test would have been to use the Spearman rank correlation test. However, this test becomes extremely conservative for small sample sizes (n=5 here for the Staging/Manufacturing hierarchy; n=4 for the Installation hierarchy). For such small samples, rank orderings must be almost perfectly matched for a statistically significant correlation. In this case, the Spearman correlations would be significant ($p<.05$) for the Installation hierarchy based on the first three measures (not for weighted text units), and not significant for the Staging/Manufacturing hierarchy.

Table 5.4
Percentages of "Generic" vs. "Content Specific" reporting mechanisms for each job class.

Job Class	% of "Generic" Reporting Mechanism Based on the number of:			
	Reporting Mechanisms	People	Text Units	Weighted Text Units
Staging Manager	60	67	62	69
Process Engineers	86	88	93	95
Operations Engineers	75	67	47	38.5
Installation Manager	100	100	100	100
ICs	75	71	90	89
Installers	66	60	43	37
Helper	33	33	38	38
Sign Test p	0.133	0.046	0.029	0.09
Number of Pairs * (n)	13 **	13 **	14	14

*Pairs included: SM-PE; SM-OE; SM-IC; SM-I; SM-H; OE-IC; OE-I; OE-H; IM-IC; IM-I; IM-H; IC-I; IC-H; I-H.
**When values were equal (i.e. the difference was neither positive nor negative, but zero) the pair was omitted, following Siegel (1956).

The general increase in the use of "generic" reporting mechanisms at higher levels in the hierarchy may have implications with respect to the degree of institutional flexibility or adaptability available to an organization or to individuals working at different levels within an organization. For instance, it may be easier for the SM to adapt the contents of his OPS reports based on new output demands, and thereby still look "good" within the organization, than for a Helper or an Installer to adjust their reports which are tied more directly to the concrete realities of their work situation. While this is purely speculative, it was in fact the case that when Staging closed down, the Helpers were laid off by the Company, while the SM took a new job within the Staging department of US Manufacturing.

5.3 Positive versus Negative Hierarchical Report Contents

5.3.1 Results

Question 7 examined in detail the contents of the hierarchical reports, by asking first for examples of things that would be considered either "good" (Q7a) or "not so good" (Q7b) to report to their immediate superior. Then the same questions were asked for the next level up in the hierarchy: "good" things for one's boss to report to his boss (Q7d) and "not so good" things for one's boss to report to his boss (Q7e). The detailed responses to these four questions will be examined in later sections. However, I will first consider the responses to Questions 7c and 7f. Interviewees were first asked to consider the reports they actually provided to their boss and to estimate the percentage of information in these reports that would be considered "good" versus "not so good" to report (Q7c). Next, they were asked to consider the information that they provided to their boss, that might also be reported in some form by their boss, to his boss at the next level up in the hierarchy, and to estimate the percentage of the information in these reports that would be considered "good" versus "not so good" to report to the next level up (Q7f). The responses to these questions are given in Table 5.5.

5.3.2 Analysis and Relation to Theory

The data in Table 5.5 suggests that on average interviewees felt that about 81% of the information they reported to their bosses would be considered "good to report," or positive information. A standard t test (one-tailed) was used first of all to compare the results for Q7c against the null hypothesis that interviewees should report 50% positive, 50% negative information. The results ($t=8.78$, $p<0.0005$, dof 14), suggests the

distribution for Q7c is significantly different from this 50:50 null hypothesis, supporting the idea of systematic positive reporting up the hierarchy.

Table 5.5
Estimates of the percentage of positive content in reports to the boss and in the boss's reports to the next level up in the hierarchy.

Respondent	Estimated % Positive Content in Respondent's Reports to Boss (Q7c)	Of the Information Reported to the Boss by the Respondent, Estimated % of Positive Content in Boss's Reports to Next Level Up (Q7f)
P01	80	100
P02	75	90
P03	60	70
P04	80	90
P05	95	100
P06	99	99
P07	81.8 *	90.9 *
P08	80	99
P09	80	90
P10	70	100
P11	90	n/a
P12	90	90
P13	100	100
P14	50	75
P15	90	90
Average	81.4 %	91.7 %
Standard Deviation	13.9 %	9.4 %

*The unusually precise estimates given for P07 are due to the fact that P07 gave ratio estimates of "4 or 5 to 1" for Q7c (the average, 4.5 to 1 was used), and "10 to 1" for Q7f. Translated into percentages, these ratios yield 81.8% and 90.9% respectively.

Furthermore, on average interviewees felt that of the information they provided to their bosses, when their bosses in turn passed some of this information (in some form) up to the next level of management, the percentage that was "good to report" increased to about 92 %. (P11 did not provide a response to Q7f.) To test whether this shift in percentages was significant, the t test (one-tailed) was used to compare the two distributions in Table 5.5. (The F test was first used to check for significant differences in the variances of the two distributions. The results [$F=2.17$, $p>0.05$] indicated that the

variances were not significantly different, implying that the t test could be used reliably.) The t test was performed twice, assuming paired samples and unpaired samples. The paired samples t test is a less conservative test, but is valid in this case, since the samples were indeed paired. The result ($t=4.18$, $p<0.0005$, $dof=13$) suggested a highly significant difference between the two distributions. (Since data for P11 was incomplete, it was omitted from the paired t test.) The standard t test (assuming non-paired data, and thus a more conservative test) yielded a result of $t=2.33$ ($p<0.025$, $dof=27$), also suggesting significant differences between the distributions. These results suggest that interviewees perceive a systematic filtering out of negative information by superiors in their reports up to the next level in the hierarchy.

It is of course conceivable that the responses for Q7c simply mean that on average about 81% of the things that happen in Staging are "good things" and only about 19% are "not so good things." In other words, it is conceivable that a 50:50 "good" to "not so good" null hypothesis is entirely unrealistic, and demonstrating that reporting to superiors is significantly different from a 50:50 split says nothing about whether positive filtering occurs. While this sort of interpretation still does not explain the perception of systematic filtering *by* superiors (i.e., that the results for Q7f are significantly different from Q7c), it is certainly worth examining for the level of interviewees reporting *to* their superiors. In other words, it is worth comparing these results with some independent indication of "how good things really are" within Staging. The "echo" responses from Q5 provide a fairly strong overall indication of how people perceived many aspects of their work situation and can be used here as a broad measure of "how good things really are."

To use the "echo" responses, the overall degree of "helpful" versus "not so helpful" interaction behaviours was estimated for each connection identified (from section 5.1 and the various other connections listed in Appendix C) and totaled across all internal and external connections are listed in Table 5.6. These estimates were calculated two ways: i) simple counts of the number of "helpful" versus "not so helpful" comments for each "echo" connection; and ii) "helpful" versus "not so helpful" comment counts weighted by the number of people making comments within each category. (The weighting used here is based on multiplying the number of people and the number of comments for each "echo" category, and summing these products across all categories for a connection. If "nothing" appeared as an "echo" category, these items were deducted from the comment counts for method 1, and from the weighted totals for method 2.) Since the "echo" questions asked for "helpful" and "not so helpful" behaviours from two perspectives on each connection

(i.e. by the "other" impacting upon the "self," and by the "self" impacting upon the "other"), both of these perspectives are included in Table 5.6.

Table 5.6
Some estimates of "how good things really are" in Staging, based on "echo" responses.

	% Helpful Comments	% Helpful Weighted Comments
External Connections		
a) Staging Perspective		
Project Managers	* 53%	* 46%
Customer Service	* 67%	* 66%
Spec Writers	* 49%	* 54%
Cdn Warehouse	76%	86%
Int'l Installation	* 6%	* 1%
US Mfg Mgmt	* 31%	* 17%
US Root Cause	* 50%	75%
All External Connections	* 48%	* 49%
b) Perceptions of Other Unit Perspective		
Project Managers	77%	78%
Customer Service	* 60%	* 66%
Spec Writers	* 48%	* 37%
Cdn Warehouse	* 59%	* 61%
Int'l Installation	* 73%	84%
US Mfg Mgmt	* 59%	* 55%
US Root Cause	75%	90%
All External Connections	* 62%	* 60%
Internal Connections		
a) Respondent Perspective		
Eng'g --> Eng'g	83%	91%
Eng'g --> Install.	* 40%	* 41%
Install. --> Eng'g	88%	93%
Install. --> Install.	* 69%	* 73%
Root Cause --> Eng'g	* 71%	85%
R.C. --> R.C.	83%	87%
Staging Manager	* 39%	* 47%
All Internal Connections	* 61%	* 66%

b) Perceptions of Other's Perspective		
Eng'g <-- Eng'g	--	122%
Eng'g <-- Install.	78%	94%
Install. <-- Eng.	* 43%	* 45%
Install. <-- Install.	* 63%	75%
Root Cause <-- Eng'g	* 62%	* 62%
R.C. <-- R.C.	* 69%	84%
Staging Manager	* 75%	90%
All Internal Connections	* 65%	75%
Overall Totals (both perspectives)		
External Connections	* 54%	* 53%
Internal Connections	* 62%	* 69%
All Connections	* 57%	* 59%

* Indicates connections where "helpful" versus "not helpful" percentages are significantly different from the estimate of 81% positive reporting provided in Q7c (based on the t test; $p<0.05$).

It is clear from the percentage data in Table 5.6, that things are not always "so good" in Staging as to warrant an average of 81% positive reporting. Based on the one-tailed t test, a sample percentage of 75.09 % positive reporting or less would be considered significantly different (at the 0.05 level) from the distribution of responses in Q7c. Thus, any percentage indicated in Table 5.6 (marked with an *) that is less than about 75 % could be considered as evidence that people systematically bias their reports to superiors in a positive direction. While a number of specific connections were perceived to be above 75% "helpful," most of the percentages indicated in Table 5.6 fall below 75%, and several were well below that level. Internal connections seemed to be viewed more positively than external ones and people seemed to feel they helped others more than others helped them. The percentages calculated across different connections all fell below 75%, with the exception of one (the "perceived other" perspective for internal connections, based on the weighted comment count method), including all of the overall totals given at the bottom of Table 5.6. The overall pattern seems to suggest that a good deal of "not so helpful" ongoings and events are not being reflected in formal reports up the ranks.

On the whole, these results provide strong support for both "within category bias" and "category selection bias." The fact that positive biasing seems to occur both at the level of individuals reporting on their own activities and at the level of superiors reporting about their subordinates' activities, suggests increasing homogeneity of reports within output demand categories at successively higher levels in the organizational hierarchy. This provides strong support for H5 (particularly as expressed in corollary H5b) that

information perceived to be inconsistent with output demand categories will tend to be filtered out at each successive level of the hierarchy. This also provides support for H9 (i.e., corollary H9a), which suggested that reports will convey impressions of a set structure with lower event heterogeneity than the reports actually represent. The fact that people perceive a good deal of "not so helpful" aspects of their work situations (as indicated in the "echo" results summarized in Table 5.6) but nonetheless systematically generate reports with a higher rate of positive contents also provides support for H2 (i.e., corollary H2a) which suggested that output information will not be perceived as fully representative of unit ongoings from the perspective of unit members.

5.3.3 Addendum

It is worth pointing out in connection with the preceding results that the perception of two stage filtering of 81.4 % and 91.7 % respectively does not necessarily imply that the "boss" is any more biased on average than the "subordinate." That is, the results do not mean that the "rate" of positive bias increases up the hierarchy. A simple thought experiment and calculation will illustrate the point.

Suppose level A reports to level B, and there are 100 events at level A that could be reported. Also suppose that 50% of these events are "good" and 50% are "not so good" (i.e., 50 "good" events and 50 "not so good" events). Now, suppose that A's reports are normally about 80% "good" and 20% "not so good" (using about the same ratio given by the people in Staging, rounded to the nearest 10). Also assume, for the sake of simplicity, that A has no reason not to report "good" things, so A reports 100% of the "good" events. This means that B will receive a report from A that includes 62.5 events: 50 "good" events and 12.5 "not so good" events. Since A's report only includes 12.5 "not so good" events, that means that A reports only 25% of "not so good" events.

Next, assume that B reports up to level C, and has A's report of 62.5 events available that could be reported. (For the sake of simplicity, ignore any other reports to B that could also be included in B's report to C.) Suppose B also reports only 25% of the "not so good" events available. This means that B reports:

25% of 12.5 = 3.125 "not so good" events.

If we assume B also reports 100% of the 50 "good" events, that means that C receives a report from B of 53.125 events. This implies a report that is 94% positive, which is even higher than the results presented in Table 5.5 for Staging. In other words,

the Staging results suggest that on average "bosses" may actually be less biased than their "subordinates."

5.4 "Good" and "Not so Good" to Report

5.4.1 Overview of Responses

A) Results

Question 7a and 7b asked for examples of things that interviewees considered to be "good" and "not so good" to report to their boss. Similarly, Questions 7d and 7e asked interviewees for examples of things that would be considered "good" or "not so good" for their boss to report to his boss at the next level up in the hierarchy. The next few sections will be devoted to the analysis of this data.

Since these results are highly dependent on the particular position or job class of the interviewees, the various analyses to follow will be presented and organized based on the reporting level (i.e., the job class that is the target or recipient of the reports). The job classes to be examined include Installers/ICs, Installation Manager (IM), Installation Director (ID), Installation Vice-President (IVP), Operations Engineers (OEs), Staging Manager (SM), US Director of Manufacturing Quality (D), and US Vice-President of Manufacturing (VP). Installers and ICs have been combined as a reporting level because of the small respondent sample size for these positions. Since the Helper position is at the lowest level in the Staging hierarchy, no one reports to this position and it has been excluded. The comments upon which the following results are based are drawn primarily from the transcripts for Question 7a-7f responses, but also from Question 6 when comments about reporting mechanisms were accompanied by comments about the report contents. (Note that comments made in response to Q7c and Q7f were included here as well, even though these questions asked about the relative percentage of "good" versus "not so good" reported up the ranks. Often, interviewees added content related comments while giving percentage estimates in response to these questions.)

The responses have been coded in the following manner. Using the NUDIST database software, text units were first categorized according to the target reporting level. That is, if a comment was made about reporting to the SM, it was coded in the category "reports to SM," and so on for all other reporting levels. For convenience, the analysis scheme ignored whether the reporting target was the interviewee's immediate "boss" (i.e., in response to Q7a, b, c) or their boss's boss (Q7d, e, f). Thus, the results combined data from people one or two levels below the reporting level. Occasionally in addition there

were instances where people would comment on reporting requirements for report levels other than their boss, or their boss's boss. For instance, sometimes people would mention things that would be "good" or "not so good" for lower levels to report to them, or things that were "good" or "not so good" to report to someone several levels above them in the hierarchy. These sorts of comments have also been included in the analysis. After coding by report level, text units were coded according to specific kinds of "good" and "not so good" reporting categories. The number and variety of categories varied considerably for different reporting levels. Because of the volume of this data, these results are presented in a series of Tables in Appendix D.

Finally, the reporting categories for each level have been grouped into "clusters" representing major classes, or macro-categories. Each cluster consists of a number of "good" and "not so good" reporting categories for various reporting levels. Four "content specific" clusters have been identified, as well as one "generic" cluster:

- Root Cause (RC)
- Staging Problems/Cost Avoidance (SPCA)
- Manpower (M)
- Miscellaneous Content Specific (MCS)
- Generic reporting (G)

The content specific clusters identify categories associated with three major reporting "themes" or "macro-categories" (RC, SPCA, M) as well as various miscellaneous content specific categories (MCS). The generic (G) cluster groups a wide variety of categories identified during the interviews that could be applied regardless of the particular activities being performed. For instance, people often mentioned that it was good to report "Highlights" and "Achievements," while it was not so good to report "Details, Trivia" or things that were "Not Important."

The clusters are not entirely mutually exclusive. Some reporting categories were put in 2 clusters, particularly at the lower levels of the Staging hierarchy. For instance, at the Installer/IC reporting level, the category "Errors that you catch yourself; in time" was mentioned as something that was "not so good" to report. While this category is generic in the sense that people could make all sorts of errors that they would rather not report, in this particular context, the errors referred to were errors associated with the activity of solving staging problems. Thus, the category falls in both the "Generic reporting" and "Staging problems; Cost Avoidance" clusters. Similarly, comments were often made about the

"Change in Staging Mandate; Focus," referring to the switch from a focus on solving staging problems/cost avoidance to a focus on Root Cause. This category was, therefore, put in both the SPCA and RC clusters. The Tables in Appendix D identify the clusters for each reporting category using the designations given above (i.e., RC, SPCA, M, MCS, G).

B) Analysis

A number of different kinds of analysis will be performed using this data on reporting categories and clusters. To begin with, an overall analysis of the report content data is given in Table 5.7. Using the interview transcripts and the reporting categories given in Appendix D, four types of ratios were calculated to provide an overall indication of how much the interviewees mentioned about reporting things that were "good" to report versus "not so good," for each reporting level and across all levels. The ratios in the first two columns of Table 5.7 are based on simple text unit counts and weighted text units (i.e., the number of text units within a category, multiplied by the number of people commenting within the category, and then totaled across all "good" and "not so good" categories for each level). The ratios in the last two columns are based on simple category counts and weighted categories (i.e., weighted by the number of people responding within a category, totaled across all "good" and "not so good" categories for each level).

The results indicate that, with a few exceptions depending on how the ratios were determined, respondents had more to say about "good" things to report than about "not so good" things to report both across all levels and within each level. The ID and D levels are the only ones that had any ratio values below 1, while the ratios for other levels range from 1 to a high of 32.4. Across all levels the ratios ranged from 1.3 to 3.1, depending on the method of calculation.

It is difficult to argue that these overall results provide more than indirect evidence in support of the idea of systematic positively biased reporting. The measure is simply too broad and abstract. However, it does raise the question of why people would be inclined to give more information about things that are "good" to report than about things that are "not so good." Various possible explanations may be considered, all of which seem to point in the direction of systematic reporting bias. Respondents may have felt uncomfortable speaking in an interview about aspects of their jobs that were not good to report to their boss. In other words, the interviewees could have been "holding back" information in the interviews that was considered "not so good" to report. If this is the case, however, it would essentially support the hypothesis that filtering occurs, and the

interview process itself could be regarded as an instance of positive biased reporting. Alternatively, interviewees may have had more detailed information about things that were "good" to report than about things that were "not so good," and were simply reporting honestly what they know, based on the information available to them. This explanation only seems to beg the question though. How is it that they would know more about what was "good" to report? One answer would be that they actually spent more time reporting "good" things than "not so good" things (or at least had more exposure to demands for "good" reporting than "not so good" reporting), and had, therefore, acquired a more elaborate and comprehensive model of the structure of the "good" category than the "not so good" category. Their model of what was "not so good" may have been less differentiated simply because they had less exposure to this category and used it less frequently. Again, this sort of an explanation would support the idea of positive filtering.

Table 5.7
Ratios of "Good" to "Not so Good" hierarchical reporting, by reporting level.

Reporting Level	Ratios of "Good" to "Not so Good" Reporting by # of Text Units	by Weighted Text Units	by # of Categories	by Weighted Cat.'s *
Installers/ICs	1.8	4.4	1.1	1.4
Installation Manager (IM)	2.2	3.3	1.8	2.1
Installation Director (ID)	1.3	1.2	1.3	0.89
Installation Vice-President (IVP)	8.7	8.7	1	1
Operations Engineers (OEs)	8.9	32.4	4	9
Staging Manager (SM)	2.6	8.5	1.8	3.4
US Director of Manufacturing Quality (D)	0.98	1.7	0.89	1.4
US Vice-President of Manufacturing (VP)	2.3	4.8	1.6	1.9
Across all Reporting Levels	1.7	3.1	1.3	2.0

*Categories are weighted by the number of people making comments within a category.

5.4.2 Analyses of the Reporting "Clusters" by Reporting Level

The next few sections will examine each of reporting category "clusters" in detail, to examine how their contents change from one reporting level to the next. In terms of the

theoretical framework, each cluster can be viewed as an "output demand category," having a particular set structure from the perspective of each reporting level. The categories within each cluster can be regarded as "features" of the events that are "good" or "not so good" to report within the cluster (or macro-category) at each reporting level. The specific reporting categories that make up the cluster, along with their relative positive or negative valences ("good" or "not so good" to report respectively), therefore, provide a strong indication of the cluster set structure at each reporting level.

The following series of analyses will attempt to do a number of things. First, an overall interpretation of the results will be given, in which the multi-level set structure of each cluster will be examined and discussed (sections A-E below). In addition to the overview provided for each cluster, a number of analysis techniques have been developed to examine the results for evidence of "category selection bias" and "within category bias" (section 5.4.3). These analyses will be conducted at two levels of abstraction in order to test for evidence of structural bias at the level of "clusters" and at the level of the individual categories within each cluster.

A) Overview of the RC Cluster Set Structure, by Reporting Level

Table 5.8 provides the reporting categories within the RC cluster for all reporting levels. Similar Tables for the SPCA, M, MCS, and G clusters are provided in Appendix E. The results presented in Table 5.8 are somewhat complicated and will be examined in stages, beginning with a simple interpretive examination of the reporting categories mentioned for each hierarchical level, as indicated in the left hand column of Table 5.8. A "relative category rank weighting" is also given for each category. These "rank weightings" are based on the weighted text units given in the transcripts and provide an indication of the relative importance of the category within the cluster. (The exact meaning of these "rank weightings," as well the information in the other three columns of Table 5.8, will be explained later in section 5.4.3.)

First, it is notable that there are no RC reporting categories below the level of SM, nor within the Installation hierarchy. This provides significant evidence in support of the idea that the RC cluster has been defined from the "top-down" within the Manufacturing hierarchy, rather than from the bottom up within Staging. This supports H2 (e.g., corollary H2b) that suggested output demand categories are more predictive of higher level informational constraints than of the actual events and ongoings within the unit.

Table 5.8
Reporting categories for the Root Cause (RC) cluster, by reporting level.

Reporting Category	Relative Category Rank Weighting (1-5) *	Given Cat. Valence (G = +; NG = -)	Implied Within Cat. Valence	Consistent Valences?
Installer/IC Level	n/a			
IM Level	n/a			
ID Level	n/a			
IVP Level	n/a			
OE Level	n/a			
SM Level				
Good				
Root Cause	5	+	0	n/a
D Level				
Good				
Root Cause	5	+	0	n/a
Change in Staging's Mandate; Focus	5	+	+	y
Root Cause problems solved	3	+	+	y
Root Cause analysis	2	+	0	n/a
Staging working itself out of a job	1	+	+	y
Not so Good				
Few Problems Solved at Root Cause	3	-	-	y
Root Cause Cost Avoidance	2	-	0	n/a
VP Level				
Good				
Root Cause	5	+	0	n/a
Change in Staging's Mandate; Focus	5	+	+	y
Root Cause Success	4	+	+	y
Not so Good				
Few Problems Solved at Root Cause	4	-	-	y

* See accompanying text (section 5.4.3 - A) for an explanation of the weighting scheme.

Second, at the SM level, the RC "cluster" amounts to a single category called "Root Cause," but becomes more differentiated (or more "structured") at the D and VP levels. The fact that the idea of Root Cause is undifferentiated at the SM level suggest that people

feel a demand to report anything related to Root Cause within this category. At the D and VP levels, the contents of the RC cluster become both more precisely defined and increasingly positive. Specifically, at the D level, in addition to the general "Root Cause" category, the RC cluster includes the features of "Root Cause analysis," "problems being solved" at their Root Cause, and "Staging working itself out of a job" that would be good to report. In addition, people frequently made comments describing the "change in Staging's formal mandate," simply pointing out the newness of management's expectations with respect to Root Cause, and the fact that management no longer wanted Staging to emphasize its original problem solving focus. RC reporting also had some negative features at the D level. It was considered "not so good" to report the fact that "few problems had actually been solved at Root Cause." One person also felt that it would not be good to report information about "Root Cause cost avoidance," demonstrating how much money could be saved by solving Root Cause problems.

This last point refers to the view that "cost avoidance" made manufacturing look bad within the Company, by highlighting the existence of manufacturing problems and the amount of money that could be saved if these problems were solved (see also the analysis of the SPCA cluster to follow). This respondent felt that although it would be nice to be able to report how much money could be saved by solving a problem at its Root Cause, upper management would not be interested in hearing about cost avoidance in this context for the same reasons they did not want to hear about it in the context of Staging problem solving. The features "change in Staging's mandate" and "Root Cause cost avoidance" are very interesting in the sense that they represent evidence of an attempt to define the Root Cause category as being "not" something else. That is, a key feature of Root Cause, is that it is not the same as solving "staging problems and cost avoidance (SPCA)," Staging's original mandate. If the old mandate of SPCA was "not good," and the Root Cause mandate that replaced it was "good," then according to the new management's definition, Root Cause could not be "not good." Therefore, from the perspective of people in Staging, one of the main features of Root Cause was that it was not "not good," where "not good" was defined as "SPCA."

At the VP level, the structure of the RC cluster changes somewhat again. Now the RC cluster includes the general "Root Cause" category, the idea of "change in Staging's mandate" and the feature of "Root Cause success" as being good to report, while it would still not be good to report "few problems had been solved at Root Cause." In other words, the category structure has become somewhat simpler, in terms of minor features dropping out that existed at the D level, while the new feature of "success" has been added. The VP

is interested in hearing about Root Cause being a success, but not about "few problems being solved" (i.e., that Root Cause has not been a "success").

Overall, the change in RC set structure from the SM to VP levels follows a fairly clear pattern and provides strong support for "within category bias," as expressed in Hypotheses 8 and 9, which suggested that the set structure of an output demand category will increase in homogeneity at higher levels of the hierarchy. At the SM level the RC cluster is very heterogeneous: anything related to "Root Cause" is considered good to report. At the D level, the cluster takes on more of an internal "valence" in the sense that certain kinds of information are good to report, particularly those that demonstrate "Root Cause problems solved" or "analysis" (which can be interpreted as "Root Cause problems being solved"), and not those that indicate "few problems have been solved." Finally, at the VP level, the structure of the RC cluster has become much more homogeneous. The particular contents are of less interest than an overall indication that Root Cause has been "successful," and evidence that indicates a lack of success is discouraged.

These results also provide support for Hypothesis 5, which suggested that events will be reported based on their degree of similarity with the perceived set structure of higher level authorities. In particular, the H5 corollary arguments that events most likely to be reported will be those with the highest degree of similarity (H5a), and that information perceived to be inconsistent with output requirements (or less similar to the perceived set structure of the higher level authorities) will tend to be omitted (H5b) are strongly supported by this evidence.

B) Staging Problems/Cost Avoidance (SPCA)

Table E.1 in Appendix E lists the reporting categories for the SPCA cluster, organized by reporting level. There are a number of interesting points worth noting in these results. First, consider the structure of the SPCA cluster within the Staging Installation hierarchy (i.e., Installer/IC --> IM --> ID --> IVP).

At the Installer/IC level, the most commonly mentioned "good" feature of SPCA was reporting "staging problems; logbook" and "big staging problems." If they were "having problems" they felt it was good to "escalate" these to their boss. It was also "good" to report on their "work status." On the other hand, they felt it was "not so good" to report "errors that they catch themselves," "things that they should handle" on their own, "errors or problems," "late or incomplete work" and "small details or trivial" events. They also felt it was not good to "by-pass the official chain of command." Almost all of these items relate very directly to the task at hand within Staging Installation. Installers and

Helpers were responsible for detecting and solving problems with customer orders and these reporting categories reflect that activity quite directly. In terms of the theoretical framework, they are high in representational transparency. It is relatively easy to understand from these reporting categories what is going on within Staging Installation.

At the IM level of the Installation hierarchy, no "good" categories were mentioned at all for the SPCA cluster. Instead "staging problems" is mentioned as something "not so good" to report, as is the topic of "Staging's impact on field installation activities; or Staging's future." At the ID level, it was considered "good" to report an "overview of ongoings within Staging" and to provide information that the ID could use to "promote International Installation" in the field. As an example, it was suggested that the ID would tell customers that Staging activities would improve Installation efficiency by making the Company's products easier and quicker to install in the field. On the other hand, it was "not good" to report about specific "Staging activities" or that "Staging was good for the Company." At the IVP level, it was also "not good" to report "Staging activities," but the IVP was interested to hear the IM's opinion as to whether or not "Staging was worth it" to International Installation, in terms of the amount of skilled Installation Manpower devoted to Staging, relative to the amount of problems they were finding.

These results for the Staging Installation hierarchy relate to a second significant "sub-plot" within the Staging story, that I have ignored up to this point because of its somewhat tangential relation to the main plot. Within International Installation, there was a certain amount of resentment at best, and hostility at worst, towards the Staging organization. The nature of this generally negative relationship was not examined in great detail during the study, but evidence of it shows up in the "echo" data (for the International Installation connection; see Appendix C) as well as here in the reporting content data. Two main theories as to the origin of the difficulties emerged from the study. First, some people felt there were bad feelings that resulted from the original move of Staging out of International Installation under the Canadian manufacturing organization. This "history-based" explanation is largely based on the speculation of Staging members, since very few were actually involved during the initial proposal and planning phase of the organization.

A simpler explanation seems to emerge from the "echo" and reporting content data (see also section C below, on the Manpower cluster) and is tied to a basic conflict between the formal structure of Staging and that of International Installation. This explanation is based on the fact that International Installation was obliged within the Company to provide and manage Installation "Manpower" within Staging Installation—skilled technicians who otherwise would be working in the field, installing customer orders at international

installation sites. While International Installation certainly benefited from the reduced number of problems that had to be solved during field installation, Staging was also viewed as a significant "drain" on their limited pool of skilled Installers. Furthermore, Staging had originally been officially proposed as a temporary facility that would "work itself out of a job," by first identifying problems with customer orders and then solving them at their Root Cause. As discussed earlier, it had not worked out that way, and Staging's original structure had not included resources nor an appropriate organizational structure for Root Cause problem solving. Moreover, it was clear from the number and variety of problems identified within Staging, that the original proposal had been extremely naive anyway, and Staging would not have been able to work itself out of a job under the proposed structure, anymore than it could later under the new US Management structure. Nonetheless, there was evidence of a certain amount of impatience on the part of Installation Management that skilled Installers were being kept in Staging to solve the same problems over and over, while Manufacturing was not addressing the Root Cause anyway.

The SPCA reporting categories within Installation seem to define a set structure for the cluster as follows. Staging problem solving behaviour is generally not relevant to International Installation (i.e., the IM, ID, and IVP levels), with two exceptions: first, and most importantly, in terms of its impact on the availability of Installation Manpower; and second, in terms of the impact of problem solving on the ease of field installation. These two features are very different in the sense that the relation between problem solving and Manpower was largely a negative relation: management within International Installation did not want to give up skilled Installers because this reduced their availability for the department's more central activity of installing customer orders in the field. The second feature, however, was only of relevance "internally" within the higher levels of Installation and was not a "public" feature of the cluster for Installation. They did not like to hear that "Staging was good for the Company" nor discuss "Staging's impact in the field" and "Staging's future," because these ideas were inconsistent with their more public image that Staging was a drain on their Manpower. On the other hand, the ID did want an "overview of Staging's" problem solving activities, so that he could use this information when making presentations to customers in order to "promote International Installation." Similarly, the IVP wanted to know if "Staging was worth the Manpower," to judge for himself whether his own department was getting enough benefits in terms of increased field installation efficiency, to warrant the loss of available Installation manpower.

In addition to the Manpower issue, which seems to be the most significant factor, there was another theory expressed by Staging Engineers (e.g., in the "echo" analysis)

about why International Installation management did not want to publicly acknowledge the benefits they received from Staging. This theory suggested that International Installation was not interested in publicizing the fact that Staging's activities made them more efficient in the field, because this would immediately raise the question of whether its departmental budget could be reduced. That is, in some sense Staging's relationship with International Installation had a similar structure to that of Staging's relationship with US Manufacturing. Evidence that Staging was doing "good" could be interpreted as being "bad" for International Installation, because it could mean money could be saved by reducing International Installation's budgets for field installations. This theory was not mentioned by people within Staging Installation in response to the questions about reporting contents, but seems fairly plausible.

In terms of the overall pattern of reporting up the Installation hierarchy, the results indicate a highly selective process, that ignores most information about the actual problem solving activities performed in Staging and primarily pays attention to those aspects of the situation that relate to the idea of Manpower. The only problem related information that was reported was in direct relation to Manpower (VP level), or for the purposes of using Staging's activities as a means of promoting International Installation (ID level).

Next, the set structure of the SPCA cluster above the Installer/IC level within the Staging/Manufacturing hierarchy, will be examined from two perspectives. Since the interviews took place shortly after the change in management structure, the data presented in Table E.1 includes categories that refer to the new structure under USM, but also a number of categories at the D and VP level that refer to what the situation was like under the old CMM management structure. These categories have been designated as "Old D" and "Old VP" respectively. Thus, the results provide some indication of the different reporting requirements under the old and new management structure and these will both be examined.

Installers and ICs report to the OE level and the SPCA cluster at this level has a fairly simple structure. It has no categories that are "not good" to report and four that are "good." It is good to report "staging problems and logbooks," the "status of staging orders," the "quality of work in staging," and for Installation staff to discuss the idea that "Staging is good for the Company." The reporting to OEs is clearly tied directly to the activities of Staging Installation. There seems to be very little "loss of transparency" in reporting to this level. OEs receive problem reports and a logbook for each customer order, that documents in detail the problems detected and the solutions implemented for the

problems. The OEs take this information and enter it into their "problem database," as noted earlier in the discussion on reporting mechanisms.

The OE results can be directly contrasted with the preceding results for SPCA reporting within Installation. While reporting on staging problems is "not good" for Installation, it is "good" for OEs, providing an interesting example of how the same basic organizational situation can be abstracted into two very different kinds of formal reports with virtually no overlap between them. In general, the OE results can be understood to reflect the original organization of Staging under Canadian Manufacturing. As pointed out earlier in the analysis of the RC cluster, there was no evidence that the RC initiative had "worked its way down" to the level of the OEs. These results are consistent with that perspective. For instance, there is no evidence at this level of conflicting valences on the idea of "staging problems," as one might expect there to be under the new USM structure.

At the SM level, the set structure of the SPCA cluster begins to reflect the presence of the new US Management structure, while at the same time maintaining most of the features of the situation prior to the change in structure. "Good" things to report to the SM included "cost avoidance," the "number of staging problems solved," and some specific "staging problems." It was also "good" for OEs to report that staging orders had been "completed on time" and that "problem summaries" had been sent out on time to external units such as Project Managers and on-site field Installers. Finally OEs reported a variety of summary statistics that summarized staging activities (designated in Table E.1 as "#. % Order/Units Staged"), including the number and percentage of all Company customer orders that were staged, broken down by Market Region, etc. All of these "good" to report categories seem consistent with Staging's original formal structure under CMM.

It was "not so good" to report to the SM "low numbers (#) and percentages (%) of orders staged," that orders were "incomplete or late," or that Staging activities for a month or a particular order had resulted in a "low cost avoidance." It was also mentioned that when "bad numbers" (such as low cost avoidance) occurred, they would be accompanied by some sort of explanation or "justification." Finally, it was considered "not so good" to report information about "late manufacturing delivery," because this "makes manufacturing look bad." These last two categories reflect the direct influence of USM on reporting by the OEs. It was mentioned that the new management had explicitly instructed them to "blank out" information about "late manufacturing delivery" of equipment to Staging from the formal Problem Summaries that the OEs produced, something they had included earlier.

At the D level, respondents made comments about both the new and "Old D" in relation to reporting about the SPCA cluster. It was "good" to report statistics about

"aggregate cost avoidance" and "aggregate #, % of orders/units staged," Staging's overall "costs versus savings," and the "number of staging problems solved" to the Old D. It was also "good" to report specific "staging problems" and "high cost avoidance." The two things mentioned as "not so good" to report to the Old D were "low #, % orders/units staged" and "low cost avoidance."

For the new D, the results are virtually the opposite. The only "good" things mentioned in the context of SPCA were related to the "change in Staging's mandate and focus," a desire on the part of the D to stop "100% staging" and just "sample stage" certain jobs occasionally, an interest in "reducing Staging's budget," and the suggestion by the D that there was a "reduced market need for Staging," because certain Market Regions like the UK would begin to stage their own orders locally.

On the negative side, a large number of things were considered "not so good" to report about SPCA (16 categories). These included such categories as "cost avoidance," information about "late manufacturing delivery," "detailed cost avoidance," "making the Company look bad to customers," information about "staging problems," discussion of the fact that Staging provided a "system level check of customer orders" (in contrast to the unit inspection activity done by US Staging), the idea that "Staging is good for the Company," attempts to estimate "Root Cause cost avoidance," information about "staging costs versus savings," statistics about the "aggregate #, % orders/units staged," information about the fact that the "market need for Staging was not reduced," and the "number of staging problems detected and solved per unit." It was felt that the D did not appreciate having to cover the "cost of staging" within Manufacturing's budget and regarded Staging as a "Band-aid" operation that "made manufacturing look bad" and "made other Company groups look bad" as well. The D level categories reflect a complete valence reversal within the SPCA cluster compared to the situation under the original CMM structure and Old D.

At the VP level, there were two "good" to report categories mentioned for the Old VP under the original management structure: "almost everything" and "cost avoidance." In other words, under the old structure, Staging as a whole was considered to be "good" and "almost everything" about Staging's activities were considered "good" to report. On the other hand, under the new USM structure "almost nothing" was considered "good" to report "formally" to the VP. The only "good" things mentioned for the SPCA cluster were related to the "change in Staging's mandate and focus" and the perceived desire of the VP to "reduce Staging's budget." It was considered "not so good" to report "cost avoidance," "staging problems" and the "number of staging problems" detected and solved. Like the D level, it was felt that the VP disliked paying for the "cost of Staging" from Manufacturing's

budget and regarded Staging as a "Band-aid" that "made Manufacturing look bad." Again, these results indicate a complete valence reversal between the old and new VPs with respect to the SPCA cluster.

Overall, the SPCA results provide strong support for the basic idea that hierarchical information is structurally dependent. All three of the structures considered (International Installation, Old D/VP, and USM) assigned their own unique set of valences onto different aspects of Staging's activities within the SPCA cluster. Installation was only interested in SPCA in terms of how it impacted their Manpower and in regard to using information to make itself look good to the customer. The Old D/VP structure under Canadian Manufacturing, was interested in all sorts of information ("almost everything") about Staging and SPCA. The new D/VP structure under US Manufacturing was interested in "almost nothing" and regarded everything about SPCA as being "not good" to report. It also added a number of its own categories that served to define the negative features of SPCA within this new structure: "Band-aid," "cost of Staging," "make manufacturing look bad," etc.

The results, therefore, provide strong evidence in support of the idea of "category selection bias" as represented by a number of hypotheses. By assigning valences to particular categories, formal authorities within each structure imposed their own biases on reporting categories, creating a situation where information reporting within these categories was either encouraged or discouraged for people at lower levels within the hierarchy (H1, H1a-c). Similarly, changes in the valence of existing categories (e.g., from Old D/VP to new D/VP), were associated with changes in reporting behaviours within these categories (H1d). By reversing the valence on SPCA categories, and adding some new ones ("reduce Staging's budget," "change in Staging's mandate; focus," "sample staging; not 100% staging," "reduced market need for Staging," "make manufacturing look bad," etc.), the new D and VP were able to redefine Staging's output demands in ways that could confirm higher level requirements with respect to Staging (H2)—that is, to reduce Staging costs from the US Manufacturing budget and to eliminate an information source that was making US Manufacturing look bad.

The results also provide strong evidence for "within category bias." For instance, the manner in which reporting differed between Installation and Staging, and the differences between the Old D/VP and the new D/VP structures, support the idea expressed in H5 that events will be abstracted, selected and labeled in accordance with the demands of higher level authorities. The transformation in both valence and category structure from the OE/SM levels to the D/VP levels for much of the SPCA contents, supports the idea that

information inconsistent with output categories will tend to be omitted at successively higher levels of the hierarchy (H5b).

There is also strong support here for H6, when combined with the results from the preceding analysis of the RC cluster. H6 suggested that as pressures from higher authorities increase with respect to reporting within a particular category, the criteria for selection and labeling of events as members of the category will be relaxed. There was clearly a high level of pressure being exerted from USM to eliminate both the "cost of staging" and the fact that Staging "made manufacturing look bad." Thus, a variety of theories which could accomplish this end were developed including: i) the idea of "Staging working itself out of a job" as a result of its "Root Cause success" (RC); and ii) the idea of a "reduced market need for Staging" (SPCA). Both of these ideas were explicitly contradicted in the data: i) "Few problems solved at Root Cause"; and ii) "Market need for Staging not reduced," respectively. Yet, these contradictory categories were "not so good" to report. They were simply given a negative valence and thereby eliminated, allowing the desired outcome to be achieved.

C) Manpower (M)

The Manpower (M) cluster of reporting categories is summarized in Table E.2 in Appendix E. Much of the background information about the relevance of Manpower availability within International Installation has already been discussed in relation to SPCA reporting and will not be dealt with here again. However, a few additional comments can be made about other aspects of the Manpower cluster.

First of all, the results indicate that the cluster really has no relevance at all outside of International Installation. It is simply a "non-issue." Information about "Installer skill levels and careers" was regarded as "not so good" to report at the OE level, as were "Helper related issues" at the SM level and any information at all about "Staging Installation Manpower" at the D level. At the VP level, the cluster is simply not mentioned. The only features of the M cluster that were considered "good" to report within the Staging/Manufacturing hierarchy were "OE/PE training"—information about Staging Engineering that had nothing to do with Installation Manpower—and information specifically related to capacity planning and scheduling: "Installation Manload" and "Staging Schedule Information; Market requests."

At the D/VP levels, the explanation for this set structure seems fairly straightforward. Since US Manufacturing management were not interested in hearing about Staging's activities at all, they certainly had no interest in hearing about the human

resources issues that may come up in the process of performing these activities. Within the OE and SM levels, however, the situation is not quite so clear. Since the OEs and SM depended on Installation skills to perform the basic task of problem solving within Staging, one would expect them to have some interest in hearing about the people doing this work. However, the general nature of the relationship between Staging Engineering (including the SM) and Staging Installation was fairly disconnected despite the task related interdependencies that existed between the two groups.

There were a number of factors present in the organizational situation that likely contributed to the division between these two groups, including the physical separation of their work (offices versus shop floor), educational differences (university versus technical training), the level of product skill and expertise (i.e., a high level of hands-on skill and knowledge in Installation; very little product knowledge among engineers), as well as various social or status differences (union versus non-union, blue collar versus white collar, salaried versus hourly pay, etc.). However, most fundamental to the division seemed to be the "hybrid" nature of Staging's organizational structure, whereby OEs reported through the SM to Manufacturing, while Staging Installation staff reported through the IM to International Installation. The two organizational units were combined through a formal "contract" between Manufacturing and International Installation, whereby Installation Manpower and the IM would be "contracted out" to Staging and paid for on a "fee for service" basis, through monthly cash transfers from Staging's budget to Installation's budget. Part of the contractual arrangement related to the management of Installation staff by the IM, who was formally supposed to handle all of the "manpower" issues.

Thus, the fact that there is virtually no content to the M cluster at the OE and SM levels, can be explained largely on the basis of Staging's formal structure. The structure was simply designed such that M cluster categories were supposed to be handled by the IM and this was indeed the case. These results provide further support for the idea of "category selection bias" (e.g., H2). The design of the formal structure provided a preselected set of categories which influenced information reporting. The M cluster was essentially an Installation phenomenon, while the SPCA and RC clusters were essentially Staging/Manufacturing phenomena, as discussed in the preceding section.

Now, considering the set structure of the M cluster within the Installation hierarchy, a couple of points are worth mentioning. The main features of the cluster seem to be related to the management and availability of "Manpower" as discussed earlier, employee behaviour and "discipline," and "skills; learning." With respect to the management and

availability of Manpower, information related to "Manpower scheduling" was both "good" and "not so good" to report to the Installers/ICs. The dual valence on this category amounts to the fact that the while ICs wanted and needed to know whether work was on schedule or running late, nonetheless they were not happy to hear about it if things were running late. This dual nature of the "Manpower" category continues up the ranks at the IM and ID level, where both wanted to know about the amount of people Staging needed, but were not pleased to be told that there was a "lack of manpower in Staging," because this meant that more people had to be assigned to Staging from an already limited pool of skilled Installers. At the IVP level the structure changes only slightly, again including "Manpower," but now more specifically in relation to the question of whether "Staging is worth the Manpower." Although mentioned as "good" to report, one could easily argue that this latter category really indicates a negative valence with respect to Staging's need for Installation Manpower. The existence of this category almost seems to suggest the IVP was becoming "fed up" with requests from Staging for "Manpower."

The two categories related to "skills and learning" (i.e., "good" to report "Installer skills; learning," and "not so good" to report "Helper training; careers" at the IM level) are also largely related to the idea of Manpower availability. According to the responses to the "echo" questions, Installation Management was interested in the training of Installers, because added skills acquired in Staging would help these people be more effective in actual field installations when they returned to International Installation. In fact, International Installation would often "cycle" field Installers through Staging for a few weeks at a time, as a way of exposing them to the wide variety of different customer order configurations and products sold by the Company—exposure that could take them several years to acquire in the field. In other words, "Installer skills and learning" was "good," because it improved the quality of "Manpower" available to Installation. On the other hand, while the Helpers were managed by the IM, they were not really International Installation employees, but a group of people hired specifically for the Staging operation who performed manual tasks requiring rather low skill levels. As such, they were of no "value" to International Installation from the point of view of their main field installation activities. Thus, it was largely irrelevant to the IM (or ID and IVP) whether or not Helpers picked up any new skills on the job.

The categories related to behaviour and "discipline" also seem to exhibit this dual valence property. It was "good" to report "discipline" issues to Installers/ICs and for Helpers to "look busy," but Installers/ICs were not pleased to hear about it if there was "stealing." At the IM level, "discipline" issues were both "good" and "not so good" to

report and people tended to keep "personal issues and conflicts" to themselves. "Discipline" information was good to report to the ID, but not if it included "Manpower issues related to the Helpers." Finally "discipline" was "not so good" to report to the IVP.

The set structure of the Manpower cluster within the Installation hierarchy supports a number of hypotheses. The dual valence of the "Manpower" and "discipline" categories illustrate "within category bias," because there is a clear preference on the part of upper management as to the more desired behaviour within the category (i.e., an "implied valence" to the category itself). "Manpower" tied up in Staging, and issues related to "discipline" are both "not good," but if they have to happen, they should be reported. (Later in section 5.4.3, the idea of a reporting category having an "implied valence" will be explained and examined in more detail.)

At higher levels, while the content of these categories remains fairly transparent, they become more precisely defined. Manpower evolves from a general issue related to the details of "scheduling" Installers to perform certain jobs, to a specific issue of the "whether Staging is worth it?," which essentially revolves strictly around one feature of the situation: the number of Installers allocated to Staging. These results generally support H5—the idea that events will be abstracted in accordance with the perceived set structure of output categories from the point of view of upper management.

D) Misc. Content Specific (MCS)

Table E.3 in Appendix E summarizes the categories within the MCS cluster. Since this is a kind of "catch-all" cluster, it is inherently based on reporting categories that were mentioned less frequently by interviewees. As a result the categories within this cluster tend to be inherently less homogenous and labeled using somewhat more abstract language than for the preceding clusters. Rather than looking too closely for hierarchical changes in set structure, therefore, I will simply comment on a few interesting aspects of the situation.

First, there are a number of reporting categories that virtually any organization (at least any manufacturing organization) would likely have, such as "finance" and "environment, health and safety." To a significant extent, these are legally mandated reporting categories. Governments regulate issues like accounting practices and worker health and safety, and these regulatory constraints impose a number of output demand categories on any organization. To some extent, simply the existence of these categories (the fact that the Company defines policies for worker safety, environmental emissions, etc.) is itself a response to the external "supposed to structure" imposed on the organization by its external environment. In addition, these imposed categories also have an internal set

structure, which seems to follow the same sort of basic pattern of adjustment that was observed in other clusters, from heterogeneous contents at the lower levels to more specific structurally constrained homogeneous contents at higher levels in the hierarchy. For instance, at the SM level it is "good" to report programs implemented in response to "environment, health and safety" regulations, but at the D level these things are "not good" to report. Only "environment, health or safety incidents" (i.e., policy violations, accidents causing injuries, etc.) are "good" to report to the D level, because presumably the D is formally responsible for these things. Similarly, "finance" in general is "good" at the SM level, while "Staging costs versus budget" (i.e., evidence of Staging not spending more money than its allotted budget) is "good" at the D level, and "reducing Staging budget" along with "aggregate finance information" is "good" at the VP level.

Of the remaining categories in the MCS cluster, two others are worth pointing out. One is "tours," which appears as "good" to report at the SM, D and VP ("high level tours") levels, but also as "not so good" ("low level tours") at the D level. This category is peculiar, since giving "tours" is not something many organizations do outside of the tourism or entertainment industries. Moreover, it was a category that existed before the change in management structure and remained in place after the change. A quote from the SM about reporting to the D and VP levels provides an interesting explanation:

> "Often information I think that clearly gets passed up the line <from D to VP> is information that's specific to 'customer satisfaction.' It is a major 'key thrust' for '95 and through '96. So a lot of our activities are around improving 'customer satisfaction.' Very high level tours, visiting customers, often impress the next level of management. We have a relatively high level tour for the beginning of March <1996>, in which <customer> delegates from China are coming over, going to <another Company site>, going to <US Manufacturing>, and they'll also be visiting this site, which we're very very proud to be involved in that loop. So that they can understand how Staging fits into the order process flow, and how it drives quality improvements. So that ultimately the customer is pleased with the product that they're paying for."

Earlier in the interview (Q3) the SM defined "key thrust" in the context of a discussion about his role in "interpreting" upper management objectives for his employees:

"On a day to day basis, <my role involves> interfacing with all my staff, to understand the activities that they're involved in, to support, critique and monitor, as well to a certain degree, to insure that the activities they're involved in are in line with the objectives that they're striving for. To make sure that the 'key thrusts' from executive management are being met as well. 'Key thrusts' being something like 'customer satisfaction', 'employee satisfaction', 'ensuring financial performance indicators are in line', all of which may or may not be part of the operating objectives, but are really 'key thrusts' that help you to focus attentions in right direction."

[So would a 'key thrust' be more of a general, higher level kind of goal, and this filters down into more concrete objectives?]

"It should, exactly. In other words, 'key thrust' may be 'customer satisfaction', right up to the level of the President and CEO of the company. And it's important that I and my staff understand how we can interpret what that means from a corporate view point, and support it."

These quotes show how the category "tour" has been set up as a concrete operationalization of a 'key thrust' (i.e., the Company's highest level "good" categories. "right up the level of the President"). Since this category existed above the VP level, the VP also considered it "good," and was willing to use information about "tours" within Staging as evidence of "customer satisfaction" within US Manufacturing, even though Staging's SPCA activities, which were actually demonstrated during "tours" and the reason for the "tour" in the first place, were considered "not good." In fact, noting the date given in the quote (a tour planned for March 1996), the VP was willing to schedule a high level customer tour through Staging to show the customer "how Staging fits into the order process flow, and how it drives quality improvements," less than two months before Staging closed down and was to be permanently removed from the "order process flow." The example provides a clear illustration of how higher management was able to use their authority to pick and choose information from ongoings within Staging to make US Manufacturing "look good" within the Company (and make the Company "look good" to customers), while at the same time suppressing information related to SPCA that made US Manufacturing "look bad."

This example provides strong support for the general idea of "category selection bias." The "tour" category was defined to operationalize a higher level category—the "key thrust" of "customer satisfaction"—and information within this category was encouraged

up the ranks (H1). The category certainly did not provide a representative view of ongoings within Staging (H2a), but reflected a higher level reporting constraint with respect to "customer satisfaction" (H2b). Nonetheless, US Management was able to use the category to project an image to the visiting customer of how "Staging fits into the order process flow, and how it drives quality improvements," as well as an image up the hierarchical ranks within the Company of contributing to "customer satisfaction" (H3, H3a). Finally, from the perspective of language, "customer satisfaction" and the other "key thrusts" mentioned by the SM retained a kind of "key word" valence throughout the Company, and "tour" was a lower level "key word" that was generally accepted as something that could be used as "good" evidence for "customer satisfaction" (H4, H4a, H4b). The "tour" category is illuminating in other ways as well and will be further examined for "within category bias" in section 5.5.1.

Finally, one other MCS category is worth briefly commenting on: the "Contract Research Project" upon which this study is based. The research contract had been arranged with management (at the VP level) within Canadian Manufacturing, well before the change in management structure. It was funded through another department of the Company, that dealt specifically with external research agencies, and consequently did not appear as a "line item" in Staging's own departmental budget. Under Staging's original structure, the research contract could be considered as having a positive valence: it was regarded as something "good" that could contribute to Staging's ability to interact effectively with other units of the Company and achieve success in terms of its SPCA mandate. When the management structure changed, however, so did the valence on the research project. Since Staging itself was no longer "good," obviously neither was a research project designed to improve Staging's operation. However, because of the way the project had been funded and approved, the new D and VP remained unaware of the research activity.

Although Staging personnel had no intention of "shutting down" the project, the SM was extremely concerned about the possibility of the research results reaching the new D or VP, especially towards the end of the project, when it was quite clear to all concerned that what was regarded as "politics" had led to the shut down of Staging. The last thing the SM wanted was for a research report to be produced by an external party that might label the shutdown as "political," or suggest that Staging was actually "good for the Company." Thus, the SM did his best to "hush up" the fact that a research project was being conducted and repeatedly expressed concerns about who within the Company might be included on the "distribution list" for the final report. This example illustrates that like any other organizational activities, research also takes place within the context of formal structures

that place constraints on their informational outputs. In this case the constraints on research reporting may have been more significant than in some others, but such constraints exist in all organized activities. Obviously, by "masking" the Company's name and products in this dissertation, I have participated in the very phenomenon I am trying to understand and write about.

E) Generic reporting (G)

Table E.4 in Appendix E identifies the reporting categories that make up the Generic (G) cluster. Like the preceding case, this cluster represents something of a catch-all list that includes many categories that could apply equally well to any number of other organizations. Here again, I will not attempt to examine all of these in detail, but will make a number of comments about the overall pattern of responses.

First it is worth noting that the categories tend to fall into two broad groups: "neutral" vs. either "good" or "bad." That is, while several categories are neutral, like "work status" or "Staging activities," most of them have an "implied valence." For instance, categories like "highlights," "achievements," and "big; significant; important," all have an implied positive valence. In the most generic terms, these sorts of categories could all be summed up by the following statement:

"It is good to report good."

On the other hand, categories like "problems & concerns," "bad; negative; dirty laundry," or "not achieving," have an implied negative valence and could be summed up by the statement:

"It is bad to report bad."

There are two ways of interpreting these results. One is a much more obvious interpretation, but is, I believe, incorrect. The other is not at all an obvious interpretation, but is I believe, the correct interpretation.

While normally stated by the people in Staging in the noun form, these categories really imply a set of positive or negative adjectives and adverbs that people might use to describe their activities. That is, one might be tempted to interpret these categories as simply a collection of descriptive modifiers, that were used by people in Staging to add a degree of emphasis to their formal reports. Referring to something as a "highlight" or an

"achievement" could be regarded as simply a rhetorical technique used to make the event sound better than it is, and thereby make the person or department that produced the report look good. To illustrate how this sort of an interpretation might work, suppose someone mentioned that "fast," or "high speed" were "good" in the context of running a race. One would immediately draw a connection between the ideas of "fast" and "high speed" and the idea of "running a race." The first two basically function as adverbs in relation to the verb "to run." In a race, it is good to "run fast" or to "run at high speed." Thus, the basic reporting category in this example relates to the activity of "running the race," and "fast" or "high speed" provide an indication of the level of performance within that category. This is the obvious interpretation of the fact that Staging people mentioned so many categories with an "implied valence." However, while I cannot prove that there were no instances where this interpretation actually does reflect what people meant, I think it is fundamentally the wrong interpretation.

I think the correct, but not so obvious, interpretation is that when the people in Staging used these categories as nouns, they really did mean to use them as nouns. In other words, it really was "good" to report "highlights" and "achievements." Period. It also really was "not so good" to report "problems" or "dirty laundry." Period. In terms of the "running" example, this would be equivalent to saying it was good to report "fast" by itself—not necessarily in the context of "running a race." A number of examples drawn from the interviews will shed some light on why this interpretation seems to be correct and to illustrate how the reporting system might work.

One interesting example that came up during the interviews was in relation to one of Staging's formal hierarchical reporting mechanisms—the "Weekly Activity Report" or "WAR." This was, in the words of the SM:

> ". . . simply a 3 - 4 liner . . . e-mailed to <the Director> . . . on a weekly basis."

As noted earlier, two people mentioned this reporting mechanism in response to Question 6: the SM and the OE who actually prepared the report on a weekly basis. The SM referred to "WAR" as standing for "Weekly Activity Report," while the OE referred to "WAR" as the "Weekly *Achievement* Report." I think this difference represents more than just a Freudian slip. For instance, according to the SM, the purpose of the WAR report was:

> " . . . to summarize from bottom up, weekly achievements and concerns and metrics, for the organization"

In other words: not neutral "activities." In the words of the OE who prepared it, the WAR consisted of:

> ". . . weekly achievements for the department, which involve a couple of key metrics for the group, as well as a couple of statements about the significant issues or significant achievements that we have done. Which is more or less a couple of sentences making us sound really neat, but making no commitments" <!>

Besides the WAR report, another example comes from the SM, who provided the following statements as part of a general description of information that moves up and down the hierarchy:

> "I guess formally, a lot of the information is provided in an upward direction on a monthly basis. There is a formal session within the organization that takes place at the end of every month, and that is what we call an Operational Review. I have an Operations Review with my staff, where we get together. You've been present I think at several of them. Generally speaking, the forum is to share information with the group, specifically outlining individual and group achievements, as they relate to the established objectives, or metrics that we track over the course of the year. And that same information is compiled, summarized, sanitized, and passed up to the next level of management, for a similar month-end review. And this basically goes right up the line, to executive management level. It gets filtered of course, and certain information is required and other information is not. But ultimately the objectives from top, filter from top down, and the results from those objectives filter from bottom up."

and:

> "I think generally speaking, any achievement—specifically however, an achievement that relates to an objective—is information that needs to be shared with all peoples within the organization, my staff, my boss, his boss, so on and so forth. . .."

[So it's generally achievements that are related to objectives?]

"Sure. And concerns as well. I mean a concern I guess is as equally important as achievements, because by definition, a concern may impede achieving that objective down the line. Basically concerns, highlights, achievements, cover off the majority of the information that gets shared between different levels of management."

Nowhere in these descriptions is there any mention of "activities" or "what's going on"—only "achievements," "objectives," "highlights," "concerns," "metrics," "sanitizing" and "filtering." In terms of the earlier analogy, the SM is talking about "fast," but not mentioning "running."

Finally, the following somewhat lengthy exchange between the researcher and one Process Engineer occurred during the PE's response to Question 7b:

[Could you give some specific examples of the kinds of things that would be not so good to report to your boss about your job situation?]

"Come on, what kind of a question is that? You know the answer before you ask it."

[What is the answer?]

"The answer would be you tell him the good news story. You tell him the good news story under all circumstances—the project that is going well. You tell him the bad news story, if it is going sufficiently badly that it's going to impact your ability to produce the results required in the specified amount of time. Like if you are just having difficulty accomplishing something, it's no big deal if you can still accomplish it by the time that you have been asked to accomplish it. Generally speaking, it's my perception as an individual, that your manager only wants to hear the good things, plus the things that he needs to be aware about that are going to impact. If he asked you to do something, he needs to be informed in advance that you may not be able to accomplish it because of these problems that you are experiencing. So that he or she can get involved with removing, either suggesting mechanisms that you can get around those road blocks, or actively intervening, or changing the expected date that the project will be completed . . .."

[It's interesting as you responded to this . . . Basically, your feeling is that everybody knows this, you always basically report 'good news'?]

"It is interesting, I had made that assumption. Umm. That's the way that I work. I have generally derived that from my own immediate experiences working at <the Company> over the past 8 years. I assume it's kind of self-evident. By asking the question and by responding the way you did, you introduced an element of uncertainty to it. I am not absolutely certain that everybody knows that, but it is my belief that that is the correct way of reporting information to your immediate level of management."

[And you also describe it as 'what your boss would like to hear']

"Let me try that again. Again my personal belief. My manager has a manager that he needs to report to. At the end of the year he is going to be measured against the objectives that are set and his own manager's perception of his ability to do the job he has given to him. Those jobs get passed down to us. So things that you are working on, that can make your boss look good, he wants to know about. So certainly he wants to have visibility on that."

[Does this kind of information, is it ever given explicitly, or is this an understanding that one develops. Like for example . . .]

"Is there a formal training program about this in <the Company>?!"

[Is there a formal training program, or does your boss come and say 'look you know, what I'd like you to do is give me the information that can make me look good'?]

"All I can speak about is only my own personal experience, and my own personal experience has been a combination of having various managers over the years that have communicated a part of this, or their own personal desires, and from my own observations, and I guess merging of the different perceptions that I have been given from the different managers."

[What would be an example of what a manager would communicate to you about this kind of an idea? What would be an example of that?]

". . . I might be in danger of merging a number of different situations into one here, because it is reasonable far back in time. . . . I think, going back to my first manager at <the Company>, which would be quite instrumental in forming my initial opinions. . . . This particular manager actually came out and would say, 'Tell me the good things. Tell me the projects that are working. Don't let me get caught by surprise. Don't come to me the day that something is due and tell me that you are not going to have it done, for these reasons . . .. Make sure you tell me far enough in advance so that you are not taking me by surprise, because I have got my

own commitments that I have to meet. Give me a chance to help you. But if you come to me the last day, I am going to beat you up!' He was a big guy, played football! So it was reasonable explicit. Other times, like <the Staging Manager> has never communicated this information directly. But indirectly, we are being tasked once a week for a 'good news story' -- for an achievement that could be reported further up the line <i.e., for the WAR report>. Sometimes you actually have to stretch the envelope to come up with something, but that is an example of 'Tell me the positive things.' And I also believe it is human nature, because it is in your own best interest to make yourself look good, to volunteer the information that is going to make you look good. . . . The good news stories. We had an individual back in the early days of my work at <the Company>, two guys, one guy a little bit older and grumpier, that had a habit of arguing with his manager. The two of them, on one particular occasion, . . . 'Mr. Sunshine' we called him, . . . he had gotten to the point where his boss had called him to ask him for something. His response was 'I don't have the time to do that right now, I gotta go.' Click, and hung up on him. His manager stormed down the aisle, there was a verbal tongue lashing and dressing down given, and then the manager left. The other individual on the other side of the wall, more happy-go-lucky, lackadaisical, said 'haven't you learned yet Jim . . . the seven magical words about dealing with your manager? You have got to *tell him what he wants to hear.*' And then from just around the corner we heard his manager saying 'I heard that', which we thought was hilarious! . . . I mean there is another individual who is saying you have got to tell them what they want to hear . . .."

The humour of the passage notwithstanding, this PE seems to have a pretty clear model that the implied positive valence categories "make the boss look good," "objectives," "good news stories," "tell them what they want to hear," "visibility," etc., and the negative valence category "bad news story," define significant parameters of the hierarchical reporting situation that he assumes are "self-evident," and believes represents ". . . the correct way of reporting information to your immediate level of management." He even manages to come up with three examples (including one from his job in Staging related to the WAR report) to bolster his intuitive theory.

Returning to the interpretation of these results, the categorization sequence seems to work something like this:

Events --> Good Events --> Implied Positive Valence Category

It is good to report "good" and it is bad to report "bad." While the formal structure provides an operational definition of "good," events that are considered to be especially good within the general categories are sought out and reported within more abstract implied valence categories ("highlights," "achievements," etc.). These categories are not adjectives, which modify other "content specific" categories, but simply function as "good" output demand categories in their own right.

These results provide strong support for H10 and H11. Implied positive valence categories provide an avenue for reporting as exemplars, events that are considered especially "good" in terms of their similarity to the perceived set structure of the existing content specific reporting categories (H10, H10a, H10b). Meanwhile, the content specific reporting categories are available to report in aggregate fashion the remaining reported events of the organization, including those that may be not quite as "good" (H11). The idea of "implied valence categories" will be further developed below in section 5.4.3 - B

5.4.3 Two Level Bias Analyses Across Clusters and Reporting Levels

To further explore the idea of positive reporting bias, three kinds of analysis have been conducted using the data that was presented in Table 5.8 for the RC cluster, as well as the data provided in Appendix E for the other clusters (SPCA, M, MCS, G). Results presented earlier in Table 5.7 suggested that as an overall pattern, interviewees tended to mention more things that were "good" to report than "not so good," based on a number of different kinds of ratio calculations. That analysis was performed across all reporting categories for each reporting level. The following uses slightly different methods to perform a similar kind of analysis, to examine the tendency for positive bias at the level of reporting clusters, and at the level of the reporting categories themselves. All together, these results provide an indication of the degree of positive biasing at three levels of abstraction. These analyses can be considered as tests of both the ideas of "category selection bias" and "within category bias." As pointed out earlier in the discussion of hypotheses, because of the nested structure of responsibility assignments within a hierarchical organizational structure, "category selection bias" at one level of the hierarchy can be considered as conceptually equivalent to "within category bias" at the next level up.

A) Rates of Positive Reporting Within and Across Clusters

Table 5.8 and the Tables in Appendix E provide a "relative category rank weighting" from 1-5, for each of the reporting categories within the each of the reporting clusters. These rank weightings have been determined in order to provide a method of comparing the relative importance or significance of reporting categories across different reporting levels and have been determined in the following manner. The weighted text unit counts given for each reporting category in Appendix D, have been calculated relative to each specific reporting level (i.e., SM, D, etc.). As such, some kind of normalization method was required to be able to compare the relative importance of categories across different reporting levels. The reporting categories were ranked within their appropriate reporting level, based on the number of weighted text units per category. Then, to standardize the ranking scheme across levels, categories that ranked in the top 20% within each reporting level were assigned the rank of 5. Categories in the next 20% were assigned the rank of 4, and so on for 3, 2, and 1. "Good" categories and "not so good" categories were ranked separately in the same way for each reporting level.

Table 5.9 gives ratios of "good" to "not so good" reporting within each cluster. Ratios were calculated in two ways: based on simple counts of the number of "good" versus "not so good" reporting categories per cluster, and by weighted "good" versus "not so good" categories, using the rank weighting assignments described above. The analysis has been performed across all reporting levels for each cluster. The analysis has not been performed within each level because the number of categories per cluster becomes very small for certain levels, making within-level ratios somewhat meaningless. Furthermore, the overall results across reporting levels presented earlier in Table 5.7, along with the estimates of "good" versus "not so good" reporting percentages given in Table 5.5, seem to give little indication of an increased rate of bias at higher levels, nor has the theoretical framework suggested that this should be the case.

The results in Table 5.9 show a very similar pattern regardless of the method used to calculate the ratios. Across all clusters, people mentioned about 1.3 times as many "good" things to report as "not so good" things, as measured by the number of categories and weighted categories. Within reporting clusters, the results are very interesting. The RC, M, MCS, and G clusters all have a ratio above 1 (ranging from 1.1 - 3.9, depending on the calculation method), indicating a tendency to mention more "good" things to report than "not so good" things. Within the SPCA cluster, both methods of calculation give ratios below 1 (i.e., 0.74 and 0.87), indicating that people mentioned more "not so good" things to report for this cluster than "good" things. This result is interesting because the

SPCA cluster represents Staging's original mandate, and the main thing US Manufacturing Management did not want to hear about, because reporting about problems and cost avoidance made them look bad.

This result can be interpreted based on a similar kind of logic to that discussed earlier in relation to the overall pattern of results presented in Table 5.7. People may receive more exposure to, and have more experience using, "good" categories than "not so good" ones, giving them a more detailed and differentiated model of their set structure. In the case of the SPCA cluster, Staging people had acquired a great deal of earlier experience with the cluster when it was considered "good" to report, but later also had exposure to a great deal of information from their new management (D and VP) as to why it was now "not so good" to report (see the results of the SPCA cluster analysis and the data in Appendix E).

The results across all clusters and within the RC, M, MCS, and G clusters are in line with that expected, and supportive of several hypotheses. If one buys the preceding interpretation of the SPCA result, it can also be viewed as being in line with what was expected, except that what was expected for this cluster happens to be the opposite of the other clusters, because of the valence reversal that was placed on the SPCA cluster by the new US management. That is, the other RC, M, MCS and G clusters can all be considered as having a "positive valence" within the Staging hierarchical structure and, therefore, one would expect evidence of a higher rate of positive reporting within these clusters. The results support this view, as measured by the ratios of category and weighted categories within these clusters. On the other hand, within the new Staging structure, the SPCA cluster has a negative valence. Thus, one would expect an opposite result from that of the positive valence clusters, and this is indeed the case.

To illustrate that this interpretation amounts to more than mere hand waving, there is significant evidence in support of this assessment within the SPCA results. Specifically, three ways of looking at the data can be used to provide an indication of the situation prior to the management change. First of all, the SPCA cluster includes ten categories that refer to eight "good" and two "not so good" things to report to the "Old D" and the "Old VP" (see Appendix E). The ratios calculated by categories and by weighted categories across only these categories are 4 and 3.3 respectively. Furthermore, if the SPCA categories at the D and VP levels are dropped from the totals (but leaving in the Old D and Old VP categories), the SPCA ratios become 1.2 and 1.4 respectively. Finally, if the SPCA categories at the D and VP levels are reversed in valence (i.e., "good" categories are considered "not so good" and vice versa to reflect the SPCA valence reversal that occurred

with the change in management structure; but leaving the Old D and Old VP categories at their current valence), then the SPCA ratios become 1.2 and 1.8 respectively. Thus, these three ways of trying to use the SPCA data to reflect the situation prior to the management change, all yield ratios in line with that expected: a higher rate of positive reporting on a "positive valence" output demand category.

Table 5.9
Ratios of "Good" and "Not so Good" hierarchical reporting, within "clusters" and across all "clusters."

Category Cluster	Ratios of "Good" to "Not so Good" Reporting by # of Categories	by Weighted Categories *
Root Cause (RC)	3	3.9
Staging Problems/Cost Avoidance (SPCA)	0.74	0.87
Manpower (M)	1.3	1.1
Misc. Content Specific (MCS)	2.2	2.1
Generic reporting (G)	1.5	1.3
Across all Clusters	1.3	1.3

*Categories are weighted using the category rank weightings given in Table 5.8 (for RC cluster) and in Appendix E for the remaining clusters. The rank values (1-5) for each category are summed across all "good" and all "not so good" categories within each cluster, and then across all clusters to determine the overall ratio.

B) Rates of Implied Category Valence Within and Across Reporting Categories

Table 5.10 provides similar kinds of ratios to those used in the preceding section, except that these are based on indicators of positive bias at the level of reporting categories rather than clusters. The methods that have been developed and used here are based on the data given in the three right hand columns of Table 5.8 (RC cluster) and the Tables in Appendix E (SPCA, M, MCS, and G clusters). The meaning of this data requires some explanation. The column labeled "Given Category Valence (G = +; NG = -)," simply provides an indication of whether the reporting category was mentioned as being "good" or "not so good" to report, for each reporting level, using '+' or '-' signs respectively. The column labeled "Implied Within Category Valence," provides an indication of whether or

not a reporting category had an "implied valence" in addition to its "given valence." A couple of examples will illustrate the difference.

In the RC cluster, the reporting category "Root Cause" was mentioned as something that was "good" to report at the levels of SM, D, and VP. Thus, for each of these levels, the category "Root Cause" has a given positive valence '+.' However, besides simply making the point that "Root Cause" is "good," there is little else that can be said about the contents of this reporting category. For instance, we can not answer the question "In what ways is Root Cause good?" based only on the category label. Within Table 5.8 and the Tables in Appendix E, such categories have been designated as '0', indicating that their contents are either neutral, fully defined by the given valence for the category, or simply ambiguous as to implied valence.

On the other hand, for some of the other reporting categories mentioned in the RC cluster this is not the case. For example, the category "Root Cause problems solved" has an implied valence "built in" to the very language used to define the category. It is not only true that it is "good" to report "Root Cause problems that have been solved." It is also true that it is "good" to "solve Root Cause problems." Similarly, the reporting category "Few problems solved at Root Cause" has an implied negative valence. Not only is it "not so good" to report that "few problems have been solved at Root Cause," but it is also "not so good" to "not solve problems at Root Cause." In each of these two examples, there is an implied "directionality" built in to the category itself, that manifests itself in the actual language of the label used by people in Staging to describe the category. In Tables 5.8 and the Tables in Appendix E, categories with an implied positive valence are designated '+', while those with an implied negative valence are designated '-.'

Finally, for each reporting category, an assessment was made as to whether the "given" and "implied" valences for category were "consistent." For instance, in both of the two preceding examples, the valences are consistent. The category "Root Cause problems solved" has a '+' given valence and a '+' implied valence. The category "few problems solved at Root Cause" has a '-' given valence and a '-' implied valence. Reporting categories with consistent valences are designated as 'y' (yes) in Table 5.8 and Appendix E. On the other hand, for certain categories valences were not consistent. For instance, for the Manpower (M) cluster, it was considered "good" to report worker "discipline" issues to the Installer/IC, IM, and ID levels (i.e., '+' given valence). However, the category itself has a negative '-' implied valence, since it was not good to have discipline problems. Reporting categories that have inconsistent valences are designated as 'n' (no) in Table 5.8

and Appendix E. Categories with a '0' designation for implied valence, are designated 'n/a' in Table 5.8 and Appendix E.

Clearly, there is significant room for subjectivity and interpretation in the assignment of these implied valences. A category label could "imply" a certain valence to the researcher, while someone else may feel it implies the opposite valence, or thinks the label is neutral or ambiguous. I have done my best to base my interpretations of the implied valences on my understanding of the perspective of the people within Staging, in the context of their positions and reporting levels. Moreover, I have tried to be "conservative," by assigning a '0' when there was any doubt about a particular valence and thereby dropping the category from subsequent analysis. However, undoubtedly the data can be viewed as subjective and error prone. To some extent this is an unavoidable consequence of doing research in real organizations, trying to represent messy and ambiguous situations in forms that yield to analysis. More significantly, in this case, it was simply difficult to come up with a more reliable and rigorous method for examining the idea of reporting categories that seemed themselves to be inherently structurally biased, or even to conceptualize exactly what that might mean. Many of the reporting categories mentioned seemed to presuppose a particular kind of response *within* the category, in addition to simply presupposing a response *to* the category. This method of analysis represents an initial attempt to understand the workings of this phenomenon. It certainly leaves plenty of room for improvement, but seems to provide at least a glimpse into the nature of the process.

Table 5.10 lists percentages of reporting categories that have been judged to have an implied valence "built in" to the definition of the category, calculated within each reporting level, within each cluster, across all reporting categories, and across all "good" and "not so good" reporting categories (column 1). The overall results indicate that about 68% of "good" categories, about 67% of "not so good" categories, and 68% of all categories have an implied valence, suggesting that "good" and "not so good" reporting categories are about equally likely to be defined with an implied valence. The 1.4 ratio of "good" to "not so good" categories with an implied valence is virtually identical to the overall ratio of "good" to "not so good" reporting categories (with or without implied valence) of 1.3 (see Table 5.9). Within reporting levels, the percentages range from a low of 25% of categories having an implied valence for the IVP level, to a high of 75% for the D level. There does not appear to be any clear trend in the reporting level results, suggesting for instance that the odds of having reporting categories with implied valence might increase or decrease with level. Within clusters, there may be some differences worth noting. The Generic

cluster had the highest percentage of categories with an implied valence (75%), followed by SPCA (69%). The other three (RC, MCS, M) were lower and within a fairly close range of one another (52%, 57% and 58%). This could be a general indication that generic reporting categories tend to be more likely than content specific categories to have a built in valence. The relatively higher percentage on SPCA compared to the other three content specific clusters could be the result of the overall "politically charged atmosphere" associated with the change in Staging's mandate.

These similarities and differences among the various results in Table 5.10 are not the main point here, however. Most significant in this data is the fact that all percentages are as high as they are. This is significant because of what it implies about hierarchical reporting in general. Earlier in this dissertation it was pointed out that much organizational research continues to be based on an implicit assumption of representative information, analogous to a negative feedback type system of hierarchical communication and control. These results provide very strong evidence to the contrary. The idea of negative feedback control is based on an assumption of neutral information, not information that is inherently of a positive or negative valence. Thus, the null hypothesis implicit in these sorts of assumptions would predict no use of reporting categories with an implied valence at all (i.e., 0%).

For instant, to use the example of "Root Cause" being a category representing something that is good to report, the general management control question raised for this category would be "How is Root Cause going?," or something along these lines. With no implied valence on this category, there is room for both positive and negative responses: "Root Cause is going well" or "Root Cause is not going so well." This makes sense within the context of a negative feedback sort of control approach. But suppose this category had an implied positive valence, and instead of "Root Cause," people had mentioned that it was good to report "Good Root Cause." Suddenly the negative feedback logic falls apart. It just makes no sense to ask "How is your Good Root Cause going?" It's fundamentally a nonsense question and the only possible response that comes close to making any sense out of the question at all would have to be "It's going well." In other words, categories with an implied positive valence are really only open to positive reporting, while those with an implied negative valence are really only open to negative reporting. The implied valence on the category essentially predetermines the contents of the category.

Table 5.10
Percentages of reporting categories with an implied valence, and rates of given versus implied category valence consistency.

Sub-Group	% Categories With an Implied Valence	% Categories With Consistent Given & Implied Valences
By Reporting Level		
Installer/IC	65	82
IM	65	64
ID	56	80
IVP	25	100
OE	40	100
SM	68	93
D (includes Old D)	75	92
VP (includes Old VP)	72	95
By Cluster		
RC	58	100
SPCA	69	98
M	52	79
MCS	57	85
G	75	85
Totals Across		
All "Good" Categories	68	84
All "Not so Good" Categories	67	97
All Categories	68	89
Ratio of "Good" to "Not so Good"	1.4	n/a
Ratio of Inconsistent "Good" to "Not so Good"	n/a	6.5

The fact that all the results in Table 5.10 fall a great distance from 0% provides strong evidence to reject the theory that formal hierarchical control systems in organizations function under a sort of negative feedback logic. The results also provide strong support for the general ideas of both "category selection bias" and "within category bias." For instance, in terms of "category selection bias," H2 suggests that higher level authorities will

define lower level output categories in ways that confirm their own output requirements. What better way to do this than through the use of implied valence categories that presuppose their own contents? As a result, output categories must not fully represent unit ongoings (H2a), but must be more predictive of the informational constraints on the unit than of events and ongoings within the unit (H2b). H4, which suggested that the words and language used to define reporting categories will acquire a positive or negative valence for unit members (H4a), and that language used in formal reports will tend to map on to the language used by formal authorities to define the reporting categories, is also strongly supported by these results. The question of "acquiring" a valence doesn't even come up when categories are defined in advance with an implied valence, and when faced with categories that virtually pre-define their own contents in advance, people are almost bound to adopt the language used to define the category.

In terms of "within category bias," the implied valence attached to reporting categories not only predefines the contents of the category itself, but also clearly serves to bias the contents of the reporting cluster, thus contributing to within category bias both at the category level and at the cluster level. For instance if "Root Cause Success" is a "good" category at the VP level for the RC cluster, this implies two things. First, it means that items within this category will be examples of "Root Cause success," since that is the definition of the implied valence category (i.e., a "lack of success" is not something that is being demanded here within this category). Second, it means that at the level of the RC cluster, the overall pattern of reporting will be influenced by the fact that "Root Cause success" is one of the main features defining the cluster at the VP level. Other implied features within the cluster (i.e., "few problems solved at Root Cause") will also contribute to defining the contents at the cluster level. In this case, the cumulative result leads to an event selection strategy that seeks out evidence of "Root Cause success," while avoiding the reporting of evidence of "few problems solved at Root Cause."

This evidence, therefore, provides strong support for H5, which suggested that events will be reported based on their degree of similarity with the perceived set structure of the output demand categories defined by higher level authorities. It also strongly supports the idea expressed in H9, that reports would tend to be structured such that they convey impressions of a unit set structure that is highly similar to the set structure of the category from the perspective of higher level authorities. This must be the case, because the categories are inherently constrained with respect to their potential contents by their implied valence. Similarly, output reports would convey an impression of a set structure that is both more positive and more homogeneous than the events they actually represent (H8,

H9a,b). Finally, it is clear that because of the reporting selection criteria implied in these results, H15—that the degree of representational transparency decreases up the ranks—must also be supported. If reports are generated that simply "mirror back" what upper management wants to hear, they can not accurately reflect what is going on within the unit. This must in turn reduce upper management's ability to detect what is actually going on, thereby decreasing representational transparency.

C) Rates of Given vs. Implied Category Valence Consistency

Column 2 of Table 5.10 lists the percentage of categories with consistent given and implied valences, calculated within each reporting level, within each cluster, across all categories, and across all "good" and "not so good" categories. These percentages have been calculated based on the information in the last column of Table 5.8 for the RC cluster, and the Tables in Appendix E for the other four clusters. The total number of categories judged to have consistent given and implied valences (based on the method described above in section B; indicated by 'y' in the Tables), were calculated as a simple percentage of the total number of categories with an implied valence (either a 'n' or a 'y' in the Tables) for each group of categories indicated in Table 5.10.

The results indicate that across the board, the rate of valence consistency is very high. Across all categories 89% had consistent valences. The lowest sub-group value was for the IM level (64%), while several sub-group values were 100% (OE, IVP, RC cluster). Perhaps most notable in the sub-group results is the fact that 97% of all "not so good" categories were consistent, while only 84% of "good" categories had consistent valences. To examine this relationship in more detail a ratio was calculated between the number of inconsistent "good" categories and the number of inconsistent "not so good" categories (bottom row of Table 5.10). The ratio of 6.5 means that people were considerably more likely to mention that it was "good" to report "negative valence" categories, than that is was "not so good" to report "positive valence" categories. In practical terms, this implies that people are much less likely to not report something positive, than they are to report something negative. Positive events almost always gets reported; negative events sometimes gets reported. Of course, both percentages are still very high, indicating that neither reporting behaviour is very likely.

These high percentages provide additional strong evidence against the idea of a negative feedback control logic operating in formal hierarchical communications, and in support of the ideas of "category selection bias" and "within category bias." The null hypothesis implicit in a negative feedback theory of management control would be a

valence consistency of 50%, assuming the existence of categories with an implied valence at all, as discussed above. In other words, the assumption is that information would just as likely be reported if it were negative as positive. The results clearly refute this idea. Only at the IM level does the result (64%) come close to 50% level.

In terms of "category selection bias," the results support H1, that information will be reported in categories defined and legitimated by higher level authorities. In particular, the results provide strong evidence in support of H1c, that unit members will feel pressure to report information consistent with unit output demand categories, while filtering (or screening) out inconsistent information. For instance, the addition of implied valence "features" within the main reporting clusters serves to reinforce upper management's definition of the cluster, putting pressure on unit members to report information consistent with the output demands, and to not report information inconsistent with these demands. More fundamentally, the fact that categories are defined at all with an implied valence means that the "pressure" is built in to the very definition of the category. They are the "only game in town" and anyone who wishes to participate in the game, must use these categories.

In terms of "within category bias," the results provide further support for H8 and H9, which deal with the issue of increasing homogeneity of reporting contents up the ranks, for similar reasons to those discussed above in section B. Highly consistent implied and given valences, give an indication that there is a systematic reduction in reporting content variety up the ranks. Everything seems to pull in the same direction, towards the gradual purification of report contents within a category.

5.5 Keyword/Concept Association Analysis by Reporting Level

The preceding analyses at the level of clusters and reporting categories provide strong support for many aspects of the theoretical framework. However, the methods used so far have largely focused on the analysis of categories independent of one another. While the interpretive analyses of reporting clusters discussed interactions among categories at different levels, the quantitative methods developed so far have ignored relationships among categories, either at the level of individual categories, clusters or reporting levels. For instance, what are the features of the category "tour" that make it "good" at different reporting levels? To what degree are generic categories like "highlights," "objectives" and "achievements" synonyms for one another that share the same contents? Under what conditions are "problems" "good" to report, and under what conditions are they "not so good"? The remaining analyses to be presented in the next two sections will attempt to

explore some of these sorts of questions. The content reporting data collected in relation to Question 7 provided a good deal of information about the internal structure of reporting categories, that also provides an indication of the interactions that exist among some of the reporting categories already discussed. In this section, a closer look is taken at the internal set structures of four reporting categories, using a kind of "word association" (or "concept association") method that will be explained below: "Tours," "Highlights," "Problems," and "Root Cause." Then section 5.6 takes a few steps back in order to consider the overall pattern of interaction among reporting categories. Specifically, a method has been developed that attempts to quantify the "degree of overlap" in word meaning across different categories, in order to examine the role of language ambiguity in hierarchical reporting.

5.5.1 Reporting "Tours"

A "word association" or "concept association" method has been developed as a means of examining the internal set structure of a number of reporting categories, as well as interactions among reporting categories. The "tour" category will be used to illustrate the mechanics of the method. In the transcripts for Question 7, the word "tour" was mentioned a total of 16 times by interview respondents (including grammatical variants, such as "tours," etc.). The word search capability of the NUDIST software was used to retrieve all instances of the word "tour" from the transcripts, as well as contextual information given in the surrounding transcript text. (For the "tour" case, context information was selected by the researcher since there were only 16 instances of the word. For the higher frequency cases to be discussed below—"highlights," "problems" and "Root Cause"—this process was performed automatically, by arbitrarily retrieving 5 text units before and after the text unit containing each instance of the search term.)

Then, for each instance of the word "tour," codes were assigned based on the related words/concepts that were mentioned by respondents as they discussed the idea of "tour." To illustrate, consider the following quote from the SM containing three instances of the word "tour":

> "I mean, we run that around staff, 'What's the achievement for last week?' Someone will say, 'Well, we gave a *tour** to somebody out of <the Canadian Manufacturing Plant>' Doesn't count. It's not good enough. Why does my boss care that we gave somebody a *tour*** from <the Canadian Manufacturing Plant>? 'What, did they have nothing to do, so they came out here?' Or: 'We gave a

*tour*** to the Director of Manufacturing from <the China Customer Operations>.' Interesting. How did that line up with our 'Customer Satisfaction' objective? It does. It gets reported."

These instances of "tour" were coded as follows:

tour*: Internal; Low Level; Not Staging Achievement.
tour**: Internal; Low Level; Not Staging Achievement.
tour***: External/Customer; Customer Satisfaction;
Significant/High Level; Staging Achievement.

Note that some of these codes refer to features of "tour," which in this case essentially amounted to the characteristics of the person or people who were given a tour of the Staging operation: Internal (i.e., people within the Company); Low Level (i.e., people who have "low level" positions within the Company hierarchy); External/Customer (i.e., a representative of an external customer); Significant/High Level (i.e., someone at a high level within the Company's or a customer's organizational hierarchies). Other codes refer to higher level (super-ordinate) reporting categories of which "tour" could be considered an exemplar: Staging Achievement; Not Staging Achievement; Customer Satisfaction. Each instance of "tour" was also coded according to the reporting level being discussed, and whether or not it was considered "good" to report at that level. In this example, the three instances of "tour" were coded as follows:

tour*: Good to Report to SM; Not so Good to Report to D.
tour**: Good to Report to SM; Not so Good to Report to D.
tour***: Good to Report to D.

Obviously, there are a number of weaknesses inherent in this coding scheme, such as the subjective interpretation involved in assigning the codes in the first place. This is a basic reality of any interpretive methodology which relies on data that can only be understood through a good understanding of the context from which it was drawn. In addition, it is evident in these examples that tour* and tour** are not really independent instances of the use of the word "tour." While the word happens to have been mentioned twice by the SM, both instances really refer to the same set of ideas. Clearly this is an inherent weakness of the method, because it results in a certain amount of "double

counting" of category features. However, while this may affect cases like "tour" that have a low "hit rate" of instances to begin with, it should present less of a difficulty for some of the later cases with higher "hit rates," where all reporting level sub-groups might be expected to have this problem occurring at roughly the same frequency. Furthermore, it is difficult to filter out all instances that may represent "double counting," without a lot of extra explanation and justification as to why certain instances were kept while others were eliminated. To keep things simpler, I have opted for the somewhat less accurate approach of using every instance as mentioned in the interview transcripts.

Using this set of codes, it is possible to construct a picture of the "tour" set structure for each reporting level, and Table 5.11 summarizes the results of this sort of analysis for all instances of "tour" (from Q7a-f). The Table shows the set-structure of "tour" for three reporting levels: SM, D, VP. ("Tours" that were "good" to report were mentioned for the SM, D and VP levels, while "not so good tours" were only mentioned for the D level.) The complete coding data and actual comments from which this summary information is drawn is given in Appendix F. In Table 5.11, features of "tours" have been identified as 'f', while super-ordinate categories for "tour" have been identified as 'sc.' Of course, as pointed out earlier in the discussion on the structural properties of categories, whether a category is considered to be a feature or a super-ordinate category is really arbitrary and depends on how one wishes to discuss these things. Thus, while "Staging Achievement" has been identified here as a super-ordinate reporting category at the SM and D levels, it could also be described as a feature of the "tours" that are reportable at these levels, while tours lacking this feature (i.e., those coded as "not Staging Achievement") are not reportable at the D level.

The results in Table 5.11 clearly illustrate a selective filtering of the kinds of "tours" that are reported at successively higher levels of the hierarchy. Paying attention first to those items identified as features (f), the set structure of "tour" could be denoted as follows:

Tour(SM) = {Significant/High Level, Internal, Low Level, Someone (unspecified), External/Customer}

Tour(D) = {External/Customer, Significant/High Level, Very High Level} and NOT {Low Level; Internal}

Tour(VP) = {External/Customer, Very High Level}

That is, to be considered "good" to report to the SM, the person being given a tour of Staging could be someone "internal" to the Company or an "external" customer, could

be from various levels ("High" or "Low"), or could have been simply "someone not specified" during the interview. In other words, almost any tour to anyone is "good" to report to the SM. On the other hand, at the D level, certain features of the person being "toured" are explicitly ruled out: "low level" and "internal"; and an additional feature is added: "very high level." At the VP level, no features are explicitly ruled out, but only "very high level" and "external/customer" are mentioned. In terms of super-ordinate reporting categories, the following denotes the categorization schemes implied in the "tour" results, expressed in a sort of "loosely Boolean" notation:

Tour(SM) --> Highlight and/or
Personal Achievement and/or
(Staging Achievement or Not Staging Achievement) and/or
SM's Objectives and/or
Engineering Objectives.

Tour(D) --> [Customer Satisfaction and/or
(Highlight or Significant Highlight) and/or
Staging Achievement and/or
SM's Objectives] and NOT
[Personal Achievement and/or
Not Staging Achievement].

Tour(VP) --> Customer Satisfaction

At this point, I have not attempted to work out all of the logical permutations implicit in the preceding statements, but clearly such an exercise could be performed. The result would be a kind of overall "algorithm" or "set of heuristics" that lays out the implicit model people have for reporting "tours" within the Staging organization, reliable to within some degree of accuracy based on the amount and quality of the data available. Such an exercise goes well beyond the present purpose, which is merely to demonstrate a method that can be used to explore such structural relationships among reporting categories and features. In terms of the results themselves (as opposed to their logical implications), "tours" are "good" to report at the SM level because they fit (or can be considered as exemplars of) a number of different reporting categories. At the D level, some of these categories are explicitly ruled out (e.g., Personal Achievement; Not Staging Achievement), another (Engineering Objective) is simply not mentioned, and a couple of new ones are added (i.e., Customer Satisfaction; Significant Highlight). Finally, at the VP level, only

tours that can be considered as members of the "Customer Satisfaction" category, are considered "good" to report.

The results as a whole, therefore, point to a systematic process of purification of the "tour" category through three levels of reporting (i.e., SM-->D-->VP). One overall indicator of this purification phenomenon is the measure given in Table 5.11: the "Average percentage of instances per feature," for "good" and "not so good" "tours" at each reporting level. This indicator uses the data in Table 5.11 (the number of features per instance of "tour," for each reporting level), averaged across all features within each reporting level, and divided by the number of instances for each level (for either "good" or "not so good" "tours"). The measure provides a rough indicator of the relative degree of homogeneity of the "good" or "not so good" reporting category at each reporting level. In this case, the percentage (for "good tours") across all reporting levels is 18.75%, which increases to 21.5% at the SM level, 40% at the D level, and 100% at the VP level, suggesting that at higher levels of the hierarchy the "tour" category becomes increasingly homogenous. "Not so good tours" at the D level have a percentage of 75%. Given the small sample size (16 instances of "tour"; less for each reporting level sub-group), the numbers themselves are less relevant than the general pattern in the results.

On the whole, the set structure of the "tour" category across the different reporting levels supports a number of hypotheses related to "within category bias," particularly H8 and H9, which deal with the idea of increasing homogeneity of contents up the hierarchy, and H5 which suggested that events will be reported based on their similarity with the perceived set structure of reporting the category. The results also support H10, which suggested that events most similar to the set structure of output categories will tend to be reported as exemplars. For instance, while "tour" as a category can be considered as an extremely good fit with the super-ordinate category "customer satisfaction," the category is precisely defined at the VP level, to only include those tours that fit the feature structure of "external/customer" and "very high level." Finally, the results clearly support the idea of reduced transparency at higher levels of the hierarchy (H15). From the perspective of the VP receiving a report on "tours," there would be no way of knowing that most tours within Staging are not given to "very high level" "external customers."

Table 5.11
Set structure of the "tour" reporting category, by reporting level.

Reporting Features (by Reporting Level)	Number of Instances per Feature	Average % Instances per Feature
Across All Levels (n=16 instances)		18.75 %
Good to Report to SM (n=11 instances)		21.5 %
Highlight (sc)	4	
Significant/High Level (f)	4	
Internal (f)	3	
Not Staging Achievement (sc)	3	
Low Level (f)	3	
Someone (unspecified) (f)	3	
External/Customer (f)	2	
Staging Achievement (sc)	1	
SM's Objectives (sc)	1	
Personal Achievement (sc)	1	
Engineering Objectives (sc)	1	
Good to Report to D (n=5 instances)		40 %
External/Customer (f)	4	
Customer Satisfaction (sc)	3	
Very High Level (f)	2	
Significant Highlight (sc)	1	
Highlight (sc)	1	
Significant/High Level (f)	1	
Staging Achievement (sc)	1	
SM's Objectives (sc)	1	
Not so Good to Report to D (n=3 instances)		75 %
Not Staging Achievement (sc)	3	
Low Level (f)	3	
Internal (f)	2	
Personal Achievement (sc)	1	
Good to Report to VP (n=2 instances)		100 %
External/Customer (f)	2	
Customer Satisfaction (sc)	2	
Very High Level (f)	2	

5.5.2 Reporting "Highlights"

Table F.2 in Appendix F summarizes the set structure for the "highlights" reporting category for the SM, D and VP reporting levels. The results provide further evidence of increasing homogeneity within a category at higher reporting levels (H8, H9). The average percentage instances per feature of "good highlights" increases from 8.2% across all levels ("good" and "not so good"), to 12.6% for the SM level, 15.8% for the D level, and 50% for the VP level. For "not so good highlights," the percentages are 66.7% at the SM level, and 29.7% at the D level. (At the VP level there was only one instance mentioned of a "not so good highlight," making the 100% result at this level rather meaningless. Also, note that low frequency features of "highlights" [i.e., less than 5% of instances within a reporting level] were not reported, although they were included in the average and percentage calculations shown in Table F.2.)

The fact that the "not so good" percentages do not increase from SM to D raises the question of whether "not so good" categories should also increase in homogeneity with hierarchical rank. The theoretical framework has really said nothing about this, but it is worth considering what that might mean. Increasing homogeneity in "not so good" to report categories would essentially amount to higher levels more precisely defining the kind of events they do not want to hear about in formal reports. In the Staging case, certainly some of the things that US Management did not want to hear about were precisely defined, including for example "cost avoidance." It is unclear whether this might hold up in general though, in situations lacking the kind of significant structural changes that affected Staging. In most organizational situations, what is "good" to report is fairly well defined, while what is "not so good" to report may be more or less implied rather than stated explicitly.

Looking at the contents of the "good" to report features of "highlights," a number of things can be noted. First, it is unclear whether many of these "features" are viewed by respondents as features, super-ordinate categories, or synonyms of "highlights." For instance, the frequent mention of "achievements," "objectives," "good, positive" and "big; significant; important," in connection with "highlights" suggests that these generic, positive valence categories may have a good deal of content overlap in the minds of the interviewees. To a large extent, these terms may be interchangeable within the Staging hierarchical reporting context. Cognitively, these categories may simply have a mutual association, without necessarily a dominant structural relationship or an implicit categorization sequence among them. On the whole, the categories associated with "highlights" tend to be fairly ambiguous, equivocal and inherently low in transparency.

From level to level the main point to be made is that content specific categories (such as "tour," "customer satisfaction" and "process improvements") tend to drop out at higher levels, leaving only the generic categories, suggesting a gradual decrease in reporting transparency (H15) up the ranks. On the "not so good" side, there is a similar pattern, with several categories at the SM and D levels, but only "highlight the negative" at the VP level.

5.5.3 Reporting "Problems"

Table F.3 in Appendix F summarizes the set structure of the "problem" reporting category for various reporting levels. In this case, the percentage data does not suggest a simple increase in homogeneity of the "problem" category at higher levels (i.e., average percentage instances of "problem" per feature). For example, within the Installation hierarchy, the "good" to report percentages are 41% at the Installer/IC level, 35% at the IM level, and 24.7% at the ID level. Within the Staging/Manufacturing hierarchy, the percentages are 42.5% at the OE level, 14% at the SM level, 20.8% at the D level, and 45.5% at the VP level. One basic factor that makes the "problem" category particularly interesting, but could also be confounding the results here is the multiple meanings of "problem" within Staging. In some cases "problem" refers to "Staging problems"—problems with customer orders that are detected and solved in Staging. In other cases, "problem" refers to "Root Cause problems"—known chronic problems with customer orders that are being solved or have already been solved at their "Root Cause." Finally, "problem" sometimes refers to something that is "going wrong" or is "not right," often also referred to as a "concern."

Despite the lack of a simple increase in homogeneity, the results in Table F.3 do suggest a very interesting structure to the "problem" category. However, to recognize this structure, requires a particular transformation of the data. Specifically, when one examines the meaning of each feature noted in the Table, many of them seem to fall neatly into two basic groups: Problem that are "solved" versus Problems that are "not solved." These categories have been designated as 's' and 'ns' respectively in Table F.3. In addition, there are a few Miscellaneous categories that do not fit neatly into these two groups, and these have been designated as 'm' in Table F.3. Note that some of the categories that have the same name appear at different reporting levels with different designations. For example, the "Staging problems" category is designated "solved" at the SM level, since from Staging's perspective these have been solved. However, since "Staging problems" signal an unsolved problem from US Manufacturing's perspective (i.e., one that Staging had to

first solve before the order could be shipped to the customer), the category is designated as "not solved" at the D and VP levels.

Table 5.12 summarizes the transformed "problem" reporting data for each level. The results show a remarkably simple set structure for the "problem" category, that is extremely consistent within and across reporting levels. Basically, it is "good" to report "problems" that are "solved," while it is "not so good" to report problems that are "not solved." This pattern shows up very strongly for all reporting levels, with the exception of the ID level where the pattern is not seen in the "good problem" results (chi square 0.59; $p<0.46$). For all other levels and across levels, the pattern is very clear, as indicated by the chi square results given in Table 5.12.

Based on this way of summarizing the "problem" set structure, the percentage of features consistent with the general pattern gives an indication of the degree of category homogeneity for each level (that is, the number of features by level, that are either "solved" and "good" or "not solved" and "not so good" to report, as a percentage of all features for the level). These percentages are: IC/Installer 76.5%; IM 50%; ID 90.9%; OE 78.4%; SM 88.2%; D 100%; VP 100%. Now it is clear that the contents of the "problem" category do generally increase in homogeneity at higher levels, again with the exception of the IM level. (The other exception is the VP level, which naturally cannot exceed the D level value of 100%.) The results, therefore, provide general support for H9 and H10.

More significantly, however, the results suggest a kind of "deep structure" to the "problem" reporting category for Staging. Regardless of the particular contextual meaning of "problem" (i.e., Staging problem, Root Cause problem, something wrong, etc.), and regardless of the reporting level, there seems to be a "deep structure" that says: "solved problems" are "good" to report; problems that are "not solved" are "not so good" to report. Until now, the essential argument of the dissertation has centered around the idea that "good" things are "good" to report; "bad" things are "bad" to report, where "good" and "bad" are operationally defined by the organization's formal structure for each unique context within the structure. In other words, "good" is "good" and "bad" is "bad" could be regarded as the "deepest structure" for reporting categories. Here, with the "problem" category, there seems to be a "not quite so deep structure" (or "middle structure"), that nonetheless applies across different reporting levels (i.e., different contexts) and for different operational definitions of "problem."

Table 5.12
Set structure of the "problem" reporting category, by reporting level.

Reporting Features (by Reporting Level)	Number of Features* "Solved"	"Not Solved"	Chi Square**	p <
Installer/IC				
Good to Report (n=15 features)	11	4	3.3	0.1
Not so Good to Report (n=2 features)	0	2	n/a***	
IM				
Good to Report (n=13 features)	8	13	0.59	0.46
Not so Good to Report (n=7 features)	1	6	n/a***	
ID				
Good to Report (n=15 features)	13	2	8.1	0.01
Not so Good to Report (n=5 features)	0	7	n/a***	
OE				
Good to Report (n=37 features)	29	8	11.9	0.001
SM				
Good to Report (n=126 features)	107	19	61.5	0.001
Not so Good to Report (n=35 features)	0	35	35	0.001
D				
Good to Report (n=84 features)	84	0	84	0.001
Not so Good to Report (n=181 features)	0	181	181	0.001
VP				
Good to Report (n=20 features)	20	0	20	0.001
Not so Good to Report (n=76 features)	0	76	76	0.001
Across All Levels (n=618 features*)				
Good to Report (n=310 features)				
Combined Levels (dof=1)	272	46	160.6	0.001
Separate Levels (dof=13)			189.4	0.001
Not so Good to Report (n=308 features)				
Combined Levels (dof=1)	1	307	304	0.001
Separate Levels (SM,D,VP***; dof=5)			292	0.001

*Misc. features (n=20) from Table F.3 have been ignored in the above. "Feature" counts are based on the sum of "solved" or "not solved," "good" or "not so good" features, for each reporting level. While not as precise a measure as "instances" of "problem" reporting, it should be highly correlated with "instances," and was a simpler measure to take, given the way the data was already organized.

** Chi Square degrees of freedom is 1, unless stated otherwise.

*** Chi Square not calculated for levels with less than an expected value of 5, following Siegel (1956).

5.5.4 Reporting "Root Cause"

Table F.4 in Appendix F summarizes the multi-level set structure of the Root Cause reporting category, based on the word association method. As noted earlier in the examination of the RC cluster, this category does not appear below the SM reporting level, suggesting a "top down" imposition of the category as opposed to a "bottom up" abstraction of events taking place within Staging, consistent with the idea of "category selection bias" (e.g., H1, H2, H4). Like the example of "tour," the structure of the Root Cause category has both defining features of "good" and "not so good" Root Cause, as well as super-ordinate categories.

"Good" features include: "processes and procedures" for the "analysis" of Root Cause problems, "solved" problems, "success" and "chronic problems to solve" at the SM level. Interestingly, at the SM level, it is also mentioned that it was "hard to define and quantify success," within the "Root Cause" category, consistent with the interpretation mentioned in earlier discussions that "almost anything" was good to report within the "Root Cause" category at the SM level. At the D and VP levels, "processes and procedures" were no longer of interest, but a few new features were added: "work self out of a job," "sample not 100% Stage."

In terms of super-ordinate categories, the idea of Root Cause being an official "objective" is mentioned at the SM, D and VP levels. That is, from Staging's perspective, "Root Cause" is formally "good" because it is the "objective," period. Of course, in the Company's terminology, because the formal system of employee and departmental evaluation is based on the idea of "management by objectives," this amounts to saying that "Root Cause is good, because it has been defined as good." In addition, as noted in the earlier RC cluster analysis, the category "Root Cause" itself appears at each reporting level. It is worth noting, that in this case, "Root Cause" and "objective" can really be treated as synonyms, in the sense that as far as Staging is concerned, its only formal objective under US Management, is to do "Root Cause." Thus, "Root Cause" at each level can be considered as the content of the super-ordinate category "Root Cause" at the next level up the hierarchy. The words "Root Cause" have themselves acquired a positive valence at the VP level (and potentially higher up as well, though this information was not accessible to the study) and passed down the ranks "as is" (H4). Finally, the idea of "making the D and VP look good" is also an essential super-ordinate category for "Root Cause." Evidence of "Root Cause" (and "successful," "solved" Root Cause problems in particular) was seen as key to the D and VP being able to look good within the Company.

"Not so good" features of "Root Cause" were nonexistent at the SM level, again supporting the notion that anything related to "Root Cause" was "good" to report at this level. At the D and VP levels, the results indicate a mix of categories (features and super-ordinates) that earlier appeared as part of both the RC and SPCA reporting clusters. This overlapping content between the two clusters provides a further indication of an earlier point: that Root Cause was largely a category defined in contrast or opposition to SPCA. That is, a primary reason for Root Cause being "good" was that it was not "SPCA," which was formally defined as "not good" under USM. Thus, categories within the SPCA cluster, such as "cost avoidance," the "cost of Staging," "staging problems," "band-aid Staging," "RC cost avoidance" and "manufacturing late delivery" largely define the feature structure of the "not so good Root Cause" category. In terms of RC cluster items, the idea of "few Root Cause have been solved" again shows up as something "not good" to report. The main super-ordinate category—"make manufacturing look bad"—is the direct opposite of (and, therefore, consistent with) the super-ordinate "make D and VP look good" for "good Root Cause" reporting.

Looking at the percentage (instances per feature) data in Table F.4, the results indicate a level by level increase in content homogeneity within the "good Root Cause" category from the SM (13.2%) to the D (15.5%) and VP levels (20.5%), supporting H8 and H9. In this case, the pattern also seems to hold true for the "not so good" reporting, with an increase from 25.2% at the D level to 35.8% at the VP level.

5.5.5 Summary of Keyword/Concept Association Analyses

The preceding analyses of the "tour," "highlight," "problem" and "Root Cause" reporting provide a more detailed look at the internal level by level set structure of four reporting categories than that provided by prior analyses. In general, the results are consistent with the more "macro" analysis of "clusters" presented earlier. From both perspectives, it is apparent that the contents of reporting categories seem to become more homogenous and more positive as they move up the hierarchical ranks. The closer analysis also points out some new aspects of the phenomena, that were not noted earlier, such the "deep structure" of "problem" reporting, whereby "solved" problems are always good to report, while those that are "not solved" are not good to report, regardless of context or the particular operational definition of "problem." This example suggests that the precise mechanisms by which increased category homogenization occurs will not be the same for all reporting schemes, and points to the need for further exploration of the variety of mechanisms that may be used.

The "Root Cause" and "highlights" results raise the question of interrelationships among categories. "Root Cause" seems to have been defined largely in opposition to SPCA-type categories. In the "highlights" example, it is unclear whether Generic categories like "highlights" or "achievements" are related to one another via some form of hierarchical relationship (i.e., feature --> reporting category --> super-ordinate category) or are simply synonyms of one another, capable of being used interchangeably in different reporting situations. The general tendency for the increased use of generic reporting mechanisms rather than content specific ones, at higher reporting levels (as noted in the earlier analysis of Q6 responses as well), also raises the question of increased content ambiguity at higher levels. The following section will examine these two ideas.

5.6 Increasing Uncertainty Up the Hierarchy

This section will explore the relationships among reporting categories from a particular perspective, using a broad quantitative indicator to examine the degree of content overlap in reporting categories at different reporting levels. March and Simon (1958) suggested that organizations "absorb uncertainty" through successive reporting up the hierarchical ranks. However, as the case results have suggested, this "uncertainty absorption" is with respect to very particular category features. Information about the range and content of reporting categories is reduced, as reports are constructed that reflect the desired outputs of higher authorities. "Uncertainty absorption," therefore, is not the same as "uncertainty reduction." Given the structure of higher level reports, reconstructing the events upon which the reports were ostensibly based would be a difficult, if not impossible, task. In that sense, uncertainty can be said to increase up the hierarchical ranks, not decrease.

One way of assessing the degree of uncertainty in reporting is to examine the degree of content overlap among reporting categories at the various hierarchical levels. Such an examination is possible in this case because of how the reporting content data has been coded using the NUDIST database software. Chunks of transcript text were coded as belonging to one or more content categories, depending on the meaning of the text. In many cases, the same text could be coded as being related to more than one reporting category. For instance, in the last section some of the text coded as "Root Cause" would also have been coded in various SPCA categories, such as "cost avoidance," etc. In addition, given the fact that NUDIST processes text at the level of "text units," which in this case corresponded with lines of typewritten text, it would often be the case that the same text unit would include the "tail end" of a comment related to one reporting category,

along with the beginning of a comment related to another. In such cases, the text unit would end up being coded in both categories. For instance, respondents often made comments of the general form: "It is good to report X, but it is not so good to report Y." While there certainly were cases where X and Y were unrelated concepts altogether, very often they were related (e.g., X being "Root Cause" and Y being "cost avoidance"). Besides opposites, the fact that two ideas were mentioned in sequence often implied some other sort of relationship between the concepts, including similar categories (e.g., "highlights" and "achievements"), or different examples within the same super-ordinate category (e.g., "tours," "presentations," "meetings," etc., mentioned as various exemplars of "highlights").

To measure the degree of content overlap among reporting categories, the Boolean "intersect" function within NUDIST was used to construct a matrix showing the number of text units "cross referenced" for all intersecting pairs of "good" reporting categories at each reporting level. In addition, searches were conducted to construct "two by two" matrices of the intersection between "good" and "not so good" reporting. To illustrate, consider the Installer/IC reporting level in which there were a total of nine "good" reporting categories (from Table D.1 in Appendix D):

1) Staging Problems; Logbook (86 text units)
2) Big Staging Problems (13 text units)
3) No job evaluation; do the job right (6 text units)
4) Discipline (5 text units)
5) Escalation if Having Problems (10 text units)
6) Look Busy (9 text units)
7) Work Status (8 text units)
8) Manpower Scheduling (3 text units)
9) Things that must be reported (2 text units)

The 9 by 9 "intersection matrix" that resulted from the Boolean search in this case identified six pairs of reporting categories that had some overlapping contents:

1 & 2 (13 intersecting text units)
1 & 5 (10 intersecting text units)
1 & 6 (1 intersecting text unit)
1 & 7 (8 intersecting text units)

4 & 5 (4 intersecting text units)
6 & 7 (1 intersecting text unit)

From these search results, various sorts of statistics can be tabulated to give an indication of the degree of content overlap among reporting categories. For example, although the interview transcripts contained a total of only 116 unique text units describing "good" reporting to the Installer/IC level, the total number of text units indicated above amounts to 142, because of the "double counting" that results from content overlap between categories. Thus, one indicator of the degree of overlap is the ratio of these two values: 142/116 = 1.22. Because of the overlap among categories, each text unit gets "counted" on average 1.22 times. Another indicator is the percentage of category pairs that overlap with one another. For a 9 by 9 matrix, there is the possibility of 36 unique "intersections" between pairs of categories (excluding the matrix "diagonal" which indicates overlap between a category and itself). For the Installer/IC level, therefore, 16.7% of all possible category pairs had some overlapping contents (i.e., 6 intersecting pairs of categories, out of a possible 36). In general, the number of unique pairs for an "n by n" matrix (excluding the matrix diagonal) is given by the formula $[(n^2 - n)/2]$.

Table 5.13 presents the results of these two kinds of analysis, for each of the reporting levels mentioned by interviewees. The results provide very little indication of any discernible trend within the Installation hierarchy, but suggest a rather pronounced trend for the Staging/Manufacturing hierarchy. In the Staging/Manufacturing hierarchy, the results suggest a general increase in category content overlap with reporting levels for both of the overlap measures. Spearman rank correlations of 0.9 and 0.975 for the two measures (text unit overlap ratio, and percentage of intersecting category pairs respectively) are both significant at the 0.05 level. Since the Spearman test becomes extremely conservative for such small sample sizes (n=5 reporting levels for the Staging/Manufacturing hierarchy), this result can be regarded as quite a strong indication of a trend in the data. As the results in Table 5.13 indicate, of the 5 reporting levels, only the Installer/IC level and the OE levels had measurement rank values inconsistent with their respective hierarchical ranks. (For the ratio measure, the value for the Installer/IC level was higher than that of the OE level, while the percentage measure values were equal for these two levels.)

The Sign test was also applied to the results, using the same sort of method as that described in section 5.2.2. For both measures of category overlap the results were compared between each valid hierarchical pair of reporting levels, to see if the values for the higher levels were systematically higher than those of the lower levels. (The reporting

level pairs used in this analysis are indicated in the note below Table 5.13.) As discussed in section 5.2.2, the Sign Test can not be viewed as providing a valid statistical test here, because the sample reporting pairs are not all independent of one another. Thus, the Sign Test results ($p < 0.011$; $p < 0.002$ for the two overlap measures respectively, for the Staging/Manufacturing hierarchy), simply provide a general indication of the trend in the data, and support the Spearman rank correlation results. Within the Installation hierarchy, the results seem to be generally inconclusive. Neither the Spearman test nor the Sign test point to any significant trend in the data that might suggest an increase in uncertainty (or decrease in transparency) at higher reporting levels.

Table 5.14, presents the same sort of data as Table 5.13, but the ratio measurement has been applied to the overlap between all "good" and all "not so good" reporting categories. (The analysis has not been performed on the "not so good" categories themselves.) To perform the analysis, all "good" reporting categories were collapsed into a single "good" category and all "not so good" categories were collapsed into a single "not so good" category, to form a two by two intersection matrix for each reporting level. These two "macro" categories were then checked for overlap using the ratio measurement. (The percentage measurement is meaningless here since all levels had some "good"—"not so good" content overlap, resulting in 100% overlap for all levels on the two by two matrix.) Overall, the results are very similar to the preceding analysis of "good" category overlap. Again, there seems to be no discernible pattern in the Installation hierarchy results (Spearman Rs = -0.8, n.s.; Sign test p, n.s.), and a general (though less pronounced) increase in content overlap at higher reporting levels within the Staging/Manufacturing hierarchy (Rs=0.7, n.s.; Sign test $p < 0.055$). (The conservative nature of the Spearman test for small samples is quite evident here, with a correlation coefficient Rs=0.7 being statistically insignificant.)

A number of reasons may be hypothesized for the inconsistency in these results between the Installation and Staging/Manufacturing hierarchies. First, there was generally much less data with which to perform the analysis within the Installation hierarchy. For instance, within the data on "good" reporting, there was an average of 114 text units per reporting level in the Installation hierarchy, compared to an average of 500 text units per level in the Staging/Manufacturing hierarchy. Also, fewer people commented on each reporting level within Installation: an average of 2.75 people per level in Installation (and only one person at the IVP level), compared to an average of 6 people per level in Staging/Manufacturing. This type of explanation would suggest that with more data, the

Installation hierarchy might exhibit a trend similar to that observed within Staging/Manufacturing.

Table 5.13
Indicators of overlap in the content of "good" reporting categories, by reporting level.

Reporting Level	Text Unit Overlap Ratio *	% Intersecting Category Pairs **
Installation Hierarchy		
Installer/IC	1.22	16.7
IM	1.23	20
ID	1.19	40
IVP	1	0
Spearman Rank Correlation Rs (n=4)	- 0.8	- 0.2
p <	n.s.	n.s.
Sign Test *** p<	n.s.	n.s.
Staging/Manufacturing Hierarchy		
Installer/IC	1.22	16.7
OE	1.11	16.7
SM	1.81	24.2
D	1.89	25.2
VP	2.53	38.6
Spearman Rank Correlation Rs (n=5)	.9	.975
p <	.05	.05
Sign Test *** p <	.011	.002
Across all Reporting Levels		
Sign Test *** p <	.23	.018

* Ratio of the number of text units totaled across reporting categories (including overlap) to the actual number of unique text units for each reporting level.
** The actual number of intersecting category pairs for a reporting level is given here as a percentage of the theoretically possible number of intersecting pairs.
*** The Sign Test has been applied for all valid hierarchical reporting level pairs. For the Installation hierarchy these are: I/IC-IM, I/IC-ID, I/IC-IVP, IM-ID, IM-IVP, and ID-IVP. For the Staging/Manufacturing hierarchy these are: I/IC-OE, I/IC-SM, I/IC-D, I/IC-VP, OE-SM, OE-D, OE-VP, SM-D, SM-VP, D-VP. As discussed earlier in section 5.2.2, where the Sign Test was used in a similar manner, the test can not be considered as statistically valid, but only as providing a general indicator of a pattern in the data, since sample pairs are not independent.

However, while it is certainly the case that the Installation data is inherently weaker than the Staging/Manufacturing data, there are a number of reasons to suggest that more data might not necessarily change the pattern of results. As discussed earlier in the reporting cluster analysis, the principle issue of concern to upper management within the Installation hierarchy was "Manpower," and specifically the number of skilled Installers allocated to Staging. The other reporting categories that were mentioned were of far less importance. Installation management really had no interest in "what was going on" within Staging, except in the very limited sense of how these ongoings might impact upon the availability of their Manpower. As such, it is unclear to what extent the Installation hierarchy within Staging can really be regarded as a "true" hierarchical reporting situation, in the sense of an upper management having general concern and responsibility for all of the ongoings within their subordinate units. Moreover, since "Manpower" was the only reporting category of concern, the Installation hierarchy was inherently far more "transparent" from upper management's perspective than the Staging/Manufacturing hierarchy. That is, if one is only paying attention to "counting people," there is very little internal ambiguity or room for maneuvering within this measure. It is essentially a perfectly transparent reporting category from the vantage point of Installation management (or at the very least, far more transparent than Staging's SPCA and RC type output categories). As such it is not clear whether one really ought to expect much overlap among higher level Installation reporting categories, even if there had been an abundance of data.

To sidetrack for just a moment, there are a couple of interesting points worth noting here related to the "echo" responses made by people in Staging about their relationship with the International Installation Department. Although, the "Manpower" category is highly transparent from the point of view of upper management within Installation, there was nonetheless enough ambiguity within this category to create a certain amount of tension and strife between Staging and International Installation. Specifically, two variables were the subject of continual debate and negotiation between the two departments: the skill level of the particular Installers assigned to Staging, and the amount of money that International Installation charged Staging for the services of its Installers. As one might predict, management within International Installation were interested in keeping the "best" Installers (i.e., those with the highest level of skill and training) in the field, and charging as much money as possible for the Manpower assigned to Staging. On the other hand, the Staging Manager, who was being rated on his ability to operate within budget, was interested in paying as little as possible for Installation Manpower, while keeping the "best" Installers in Staging.

Table 5.14
Indicators of overlap in the content between all combined "good" and "not so good" reporting categories, by reporting level.

Reporting Level	Text Unit Overlap Ratio *
Installation Hierarchy	
Installer/IC	1.19
IM	1.06
ID	1.08
IVP	1.02
Spearman Rank Correlation Rs (n=4)	- 0.8
p <	n.s.
Sign Test *** p<	n.s.
Staging/Manufacturing Hierarchy	
Installer/IC	1.19
OE	1.05
SM	1.07
D	1.24
VP	1.36
Spearman Rank Correlation Rs (n=5)	0.7
p <	n.s.
Sign Test *** p <	0.055

* See note to Table 5.13.
*** See note to Table 5.13.

Consequently, each month a good deal of effort on the part of the Staging Manager and one Process Engineer, was devoted to "auditing" the invoices received from Installation, to ensure that they accurately reflected the number of hours Installers had actually worked, and whenever adjustments needed to be made to the number of Installers within Staging, there were arguments about which of the Installers would be staying or going. The SM also complained that Installation management was unfairly "padding" their invoices by including a fixed "overhead" charge, normally billed by Installation to the international marketing departments for field Installation services. This overhead charge was supposed to cover the Installers' extra living expenses associated with working on a foreign assignment, but was being charged to Staging even though Installers were able to

live in their own homes and were not being paid this cost of living allowance while working in Staging. As this example illustrates, a category that is quite transparent from the hierarchical vantage point of upper management, can nonetheless be low in transparency from the perspective of lateral communications links.

Now returning to the matter at hand, having considered a couple of potential explanations for the results of the Installation analysis, what do the collective results in Tables 5.13 and 5.14 say about reporting within the Staging/Manufacturing hierarchy? The two analyses suggest that there is a tendency for increasing category content overlap at higher reporting levels. This overlap not only occurs among "good" reporting categories, but also between "good" and "not so good" categories. In practical terms, this means that at higher levels of the hierarchy, events can be reported within more and more "good" reporting categories. As one moves up the hierarchy, there are gradually more and more ways of interpreting and describing the same "good" event. In addition, the Table 5.14 results suggest that at higher levels, it becomes increasingly possible to interpret events as either "good" or "not so good." In fact, the results seem to imply that at the VP level, up to 36% of events could potentially "go either way" (based on the overlap ratio of 1.36 "good" to "not so good" text units).

If these results are valid, they have some rather fascinating implications. While they certainly imply a gradual reduction in representational transparency at higher reporting levels (H15), the results also seem to suggest a gradual increase in reporting flexibility with hierarchical position. At the lower ranks, there may be rather rigid constraints on how one might be able to report a particular event, while at higher ranks, the same event may be reportable in a much wider variety of ways. If the same event can be reported in an ever-widening variety of ways, "uncertainty absorption" amounts to a kind of "tuning" process, to borrow a term used by one of the Staging Engineers:

> "I think that where <the Staging Manager> is now, almost 100% of what he's reporting is appropriate, because it's been tuned, right . . . I mean, I think <the Staging Manager> knows what is appropriate to report within the new organization."

Information is not simply filtered such that the negative bits are gradually removed, but actively transformed into the positive valence categories that happen to be available at each reporting level. If up to 36% of events reported to the VP level could go either way, putting the right spin on events should be able to convert many events from "not so good"

to "good." Rather than reducing uncertainty through hierarchical reporting, this suggests there is a gradual amplification of uncertainty up the ranks.

5.7 Remaining Case Data

A great deal of the data collected during the case study has not yet been analyzed at this point. For instance, within the formal interview data there were many comments associated with Questions 1-4 that have relevance to the process of hierarchical reporting, even though these questions were not asked in those terms. Question 8a-d consisted of a set of "echo" style questions about the idea of formal reporting mechanisms themselves. People were asked for examples of how Staging's formal reporting mechanisms were "helpful" and "not so helpful" from their own job perspective (Q8a,b) and from the perspective of Staging as a whole (Q8c,d). Here too, there were many interesting comments about the nature of hierarchical reporting within Staging specifically, and the Company in general. The informal participant observation data also included the documentation of many situations and examples of hierarchical reporting that have not been examined yet in detail. Finally, the documentary data, while incomplete and highly fragmented, provided a variety of examples of hierarchical reporting, including some overhead charts used by the SM and one OE during OPS meetings, the charts presented during Staging's "Excellence Day" presentation, and the Root Cause Newsletter that was issued in December of 1995.

A cursory inspection of these remaining data sources suggests that they would most likely provide further support (if not even stronger support) for the ideas of positive reporting, "category selection bias," and "within category bias" within Staging. However, boundaries must be drawn around all research projects and this is the point at which the boundaries are being drawn around this one. The remaining data will have to wait for another opportunity to revisit the study in the future.

Chapter 6

6. Discussions and Conclusions

This dissertation has presented the results of two major pieces of work. A general theory has been proposed to explain the phenomenon of positive reporting in formal hierarchical communication in organizations. In addition, an in-depth case study had been conducted to empirically examine aspects of the proposed theory in one organizational situation. This chapter will briefly restate the main points of the theory and provide an overview of the case results as they relate to the theory. A discussion will then be presented on the limitations of the research methodology, the degree to which various alternative theories could account for the case findings, and the generalizability of the results.

6.1 Overview of the Theoretical Framework

Earlier work on the problem of positive reporting in hierarchical communication, has emphasized explanations in terms of the motives and characteristics of individual agents by focusing on variables such as "trust," "career mobility aspirations" and "self interest." By contrast, it has been argued in this dissertation that the phenomenon must be understood in terms of: i) the communication constraints imposed on individuals and units by an organization's formal structure on the one hand; and ii) flexibilities available in the relationship between language and events on the other.

The formal structure amounts to a system of statements in language that communicates an image of the organization to its external and internal publics: a simple model with an inherently positive valence that defines what is supposed to be going on. From an insider's perspective, the formal structure, therefore, provides an operationalization of the concept of "good" for the organization. For each unit and individual role, "good" is contextually defined in terms of the local output demands of the unit's formal structure. Through the assignment of unit roles and responsibilities, the formal structure sets out an elaborate hypothesis that must be confirmed by the people involved, if they are to be seen as living up to their formal responsibilities—doing "good" as they are supposed to within the structure.

However, since organizational actions take place within physically and psychologically separate units, they are not always directly observable by unit outsiders. Thus, formal structures are confirmed through the generation of formal information which demonstrates that "good" is happening as it is supposed to. "Doing good," therefore, really amounts to "saying good" through the organization's formally established communication channels. Rather than directly placing constraints on organizational actions, therefore, the formal structure creates an elaborate system of constraints on formal communication and language use in organizations.

Because of the importance of formal information, language plays a central role in the phenomenon. Specifically, since language is categorical in structure and events are complex (multi-dimensional or multi-featured), the same word can often be used to represent a wide variety of different events, while the same event can often be legitimately labeled by a variety of different words. This gives organizational members a considerable degree of flexibility in terms of how they confirm the hypothesis of the formal structure. The formal structure, therefore, consists of a system of "output demand categories"—formal reporting expectations or demands stated in language. Confirmation of the structure, therefore, amounts to a categorization process, whereby events are abstracted from the general flow of organizational ongoings and "mapped" onto the reporting categories of the formal structure in language. The categorical structure of language provides flexibility both in terms of the selective operationalization of formal structure down the hierarchical ranks, and the selective reporting of events up the ranks.

Overall, it has been suggested that the phenomenon works like a pseudo-scientific process. Officially mandated formal structures act as biased hypotheses that are operationalized in language and actions by organizational members within the context of their local units. These structural hypotheses are then selectively measured and reported on through a measurement system that is systematically biased in the positive direction, always tending towards hypothesis confirmation. Drawing on the inherent flexibility that is available in the "many to many" relationship between words and events, organizational members are able to generate information that tends to confirm they are doing "good" as they are supposed to.

6.2 Overview of Case Study in Relation to the Theoretical Framework

The Staging case study data has provided support for the theoretical framework in a variety of ways. In section 5.1, the "echo" responses for the connections with the SM and USM provided some general evidence of category selection bias, by highlighting two

issues in particular: i) the role of "objectives" within the Company, which formally define the output categories that must be responded to if individuals and units are to be judged as "good"; and ii) the imposition of the "Root Cause" objective by USM, which was perceived as a "political agenda" to shut down Staging. The "echo" results also provided evidence of "within category bias," particularly in terms of information about Staging's "political response to Root Cause," which involved the systematic selection and reporting of events that could provide USM with evidence of "quick success." The "echo" data also contained a good deal of information about communication and language behaviours within the Company, referred to under the label of "politics." An exploration of these comments suggested that the idea of "politics" seems to be very closely related to the idea of "within category bias," in the sense that people used political information to learn about the internal set structure of reporting categories, and behaved "politically" when they operationalized categories in ways that would allow them to achieve outputs in line with the formal constraints on them. While people clearly had different attitudes towards "politics," in the sense that they were more or less willing to play the "within category bias game," all participated in the "category selection bias game," whether they claimed to like it or not. Finally, a brief look at the "echo" responses for some of Staging's lateral connections suggested that the degree of consistency between the formal structures of interdependent units and the inherent task structure of their interdependent tasks, has a significant influence on the level of coordination between them.

In section 5.2, it was shown that there was a direct correspondence between Staging's "content specific" reporting mechanisms (and the language used to label and describe them) and its major output demand categories (i.e., "problem solving/cost avoidance" under the original management structure, and "Root Cause" under USM), supporting the idea of category selection bias. By examining the multi-level sequential use of reporting mechanisms, it was also shown that representational transparency decreases through successive hierarchical levels. Finally, an analysis of the use of "content specific" versus "generic" reporting mechanisms showed a general increase in the rate of "generic" report use at higher levels, again supporting the notion of decreasing transparency with hierarchical level.

The contents of "good" versus "not so good" reporting categories were examined from a number of perspectives in sections 5.3 through 5.6. As an overall indicator of "positive reporting," an analysis in section 5.3 showed that Staging people claimed to report to their bosses an average of about 81% "good" things, and estimated that their bosses in turn reported an average of about 92% "good" to their bosses. These results

were compared to a couple of overall measures of respondent's perceptions of "how good things really are," derived from the "echo" results, to show a systematic reduction in negative reporting through two hierarchical levels: at the respondent level, relative to how they perceived the actual situation, and again at the "boss" level, relative to the respondent level. It was also shown, through a simple mathematical analogy, that these results do not imply that "bosses" are necessarily more biased on average than "subordinates," but rather reflect the fact that filtering at the "boss" level uses information that has already gone through one layer of filtering at the subordinate level.

In section 5.4, the reporting contents themselves were analyzed in a variety of ways. First, it was shown in section 5.4.1 that people generally tended to mention more things that were "good" to report than "not so good." Then, in sections 5.4.2 A-E, a discussion and interpretive analysis was presented of the contents of five reporting "clusters": Root Cause (RC), Staging Problems/Cost Avoidance (SPCA), Manpower (M), Miscellaneous Content Specific (MCS), and Generic (G). The results seem to paint a fairly consistent picture of the influence of the formal organizational structure on the set structure of reporting categories. Each of the three organizational hierarchies associated with Staging (i.e., Installation, "Old" Staging/Manufacturing and "New" Staging/Manufacturing), were associated with a unique set of reporting constraints, reporting categories, and category set structures. That is, different ways of abstracting from the Staging situation were required for each of its three hierarchical structures and in turn, provided by the people in Staging. Installation reporting revolved around the idea of "manpower," "Old" Staging/ Manufacturing focused on "SPCA" reporting, and "New" Staging/Manufacturing emphasized "Root Cause." Within each of the four content specific reporting clusters (RC, SPCA, M, MCS), there was a consistent tendency towards increasing content "homogenization" in the "positive" direction at higher hierarchical ranks, although the particular mechanisms by which this occurred varied quite considerably across the different clusters.

An examination of the "Generic" cluster suggested that a significant proportion of Staging's reporting categories have an "implied valence," "built in" as it were to their very definition. Rather than being "adjectives" that simply amplify the "positiveness" of the events being reported, I argued—and tried to demonstrate—that these categories ("highlights," "achievements," etc.) really function as nouns: output demand categories in their own right. In other words, in the most general terms these categories do not amount to statements of the form: "It is good to report good X" and "It is bad to report bad X," where X represents some content specific output demand category. Rather, they seem to

have the following general form: "It is good to report good" and "It is bad to report bad," where "good" and "bad" are output categories in their own right.

Section 5.4.3 provided a further examination of the set structure of Staging's reporting categories, by testing for "positive" versus "negative" reporting at three different levels of analysis. First, in section 5.4.3 A, ratios of "good" versus "not so good" reporting within each of the five clusters (measured by category counts and "weighted" category counts) showed that within all but the SPCA cluster, there was a tendency towards more "good" categories than "not so good." When the results for the SPCA cluster were "corrected" for the fact that they included both "old" and "new" structural categories (using three possible ways of transforming the data), this cluster was also shown to have a consistent pattern of response. For all clusters, there were more categories associated with outputs defined as "good" than with outputs defined as "bad" within a particular hierarchical structure.

In sections 5.4.3 B and C, the idea of an output category having an "implied valence" was explored in further detail. Section B demonstrated that about two-thirds of all reporting categories mentioned had an implied valence, and that this rate was fairly consistent across reporting levels and clusters, and for both "good" and "not so good" reporting. Section C demonstrated that roughly 90% of these "implied valences" were consistent in "sign," with the respective "given valences" for the reporting categories. Together, these results pose a fairly serious challenge to any simplistic notions of hierarchical structures operating under a negative feedback control logic. An implied valence acts as a kind of internal "force" that prestructures the contents of reporting categories. The fact that implied valences for categories were highly consistent with their respective given valences, suggests that this "force" also operates at the level of reporting clusters to prestructure their contents. Thus, everything seems to "pull in the same direction," towards the gradual homogenization of reporting contents up the hierarchical ranks.

In section 5.5, four "keyword" (or "key concept") analyses were performed to examine the internal set structures of the reporting categories "tour," "highlights," "problems" and "Root Cause." By examining the "average percentage of features per instance" at different hierarchical levels for these four reporting categories, the results provided further evidence that category contents generally increased in homogeneity up the ranks. The results also illustrated a variety of mechanisms by which this might occur in particular cases. For instance, while the "tour" example seemed to be based largely on the selection of tours with higher valence features (i.e., the "best tours") for reporting to the

highest levels, the "problem" example was shown to have a rather intriguing "deeper structure," that could be described by the simple rule: "solved problems are good to report, but unsolved problems are bad to report." Similarly, while structural relations among "features," "categories" and "super-ordinate" categories were relatively obvious in the "tour" example, they were highly ambiguous in the "highlights" example, raising the question of the degree of overlap in content that may exist among different reporting categories.

This issue was examined explicitly in section 5.6, using a numerical measure of category content overlap among all "good" categories, and also across combined "good" and "not so good" reporting categories, for each reporting level. This analysis provided mixed results, which showed no particular pattern for the Installation hierarchy, but a fairly pronounced pattern within the Staging/Manufacturing hierarchy. A number of potential explanations were examined to explain the Installation results and these will not be repeated here. The Staging/Manufacturing results, however, seem to suggest a gradual increase with hierarchical level in the degree of reporting category content overlap, in which up to 36% of events at the VP level could potentially be reported as either "good" or "not so good." That is, at higher levels of the hierarchy, categories have a greater tendency to function as "synonyms" in relation to one another than at lower levels. If this result is valid, it suggests a gradual increase in "uncertainty" at higher levels of the organization, with respect to the nature of the events going on at lower levels. It also suggests that reporting up the ranks is not simply a filtering process, whereby "bad" events are gradually eliminated from reports. Rather, it implies a more active process of event "transformation" through language—events are "constructed" based on the positive valence categories that happen to be available at each reporting level.

All together, the case study provides a great deal of evidence, drawn from one organizational setting, of both the process of adjusting to the output informational demands of formal structures, and the perceptions of organizational members about this adjustment process. The results have provided evidence of structural constraints on formal information processing and language use at several different levels of analysis: reporting mechanisms, clusters (or "macro" categories), categories, and—through the assignment of implied valences—within categories. The results suggest a rather fascinating system in which communication and language constraints are imbedded in all aspects of the formal structure. Different sorts of constraints were operating at different levels of analysis, but at all of these levels the various constraints seemed to "pull in the same direction," towards the confirmation of the hypothesis of the formal structure. While some of the more

obvious constraints within the Staging structure were labeled as "political"—particularly those related to the Root Cause cluster—many of the constraints described in the analysis were not labeled or discussed that way at all. These seem to have been just taken for granted, and merely operated in the background, constraining certain aspects of communication in rather subtle ways, without being recognized as such by the people involved.

The case on the whole provides an interesting example of how a change in formal structure can lead to a redefinition of "good" within an organizational unit, as when the definition of "good" changed for Staging from "cost avoidance" and "problems solved" to "Root Cause problem solving." The case also demonstrates how the operational definitions of "good" are contextually relative and can produce paradoxical, and even rather ironic results when the curtain is pulled aside to reveal the backstage context. For instance, Staging was originally proposed and justified based on an argument that it would lead to two key "goods" for the Company: reduced field installation costs and an improved image with respect to international customers. However, within the context of the US Manufacturing Division, essentially the same two "goods" now became "bads" from the perspective of USM and apparently led to the shut down of the Staging operation. Staging was viewed as costly to US Manufacturing and damaging to US Manufacturing's image within the Company.

Finally, the case provides a good deal of evidence about how minimal, selectively reported formal information may be used to convey certain images within an organization. For instance, US Management's short-term attempt to establish a "Root Cause Team" within Staging, and to categorize problem information by international Market Region, was used as evidence that Staging was "working itself out of a job" by solving the major problems affecting the Market Regions, despite the fact that thousands of problems had been identified and only a handful had been actually solved.

6.3 Limitations of the Study and Possible Alternative Explanations

6.3.1 Limitations of the Methodology

In terms of the practice of field work, a very serious attempt has been made in the case study to apply a phenomenological approach—to approach the research site with a degree of deliberate, self-imposed naïveté (e.g., MacLeod, 1947) and to allow the "structure of the phenomenon" to emerge from the situation. Naturally, there are limits to how thoroughly and effectively this can be accomplished in any given case. To help in this

effort, though, interview methods were deliberately developed to provide as much room as possible for the interviewees to provide their own structure and language in their responses, rather than imposing a particular structure and language on them through the use of closed form questions. In the data analysis techniques that have been developed, I have attempted for the most part, to stay as close as possible to the "raw data" (i.e., interview transcripts, etc.), preferring to devote more time and space to presenting the results in the language of Staging, than to work at several levels of abstraction away from the situation being studied. Finally, in an attempt to make the research process as transparent as possible, much of the data has been included in Appendices, to allow opportunities for the reader to examine my methods of abstraction and interpretation.

Despite these efforts and attempts, the case study had various methodological limitations that are worth discussing. The categorization of comments (either from notes or from transcripts) is a highly subjective process, and given the large volume of data, one that is subject to inconsistency and error. The designation of "implied valences" to reporting categories is also a subjective process, that relies on an attempt to interpret the meaning of each category from the respondent's perspective. The "matrix" method, used to examine content overlap among reporting categories, relies on an abstract measurement approach that was subject to a certain amount of "noise": at times, comments may have been coded in the same categories simply because they were mentioned sequentially during the interviews, rather than because they were somehow related to one another. The number of respondents on the whole was rather low, but in particular, the study was not able to involve a large group of employees from Staging Installation, nor was it possible to formally interview some of the key "players" outside of Staging, such as the D and VP in USM, the "old" D and VP, or the ID and IVP.

Beyond these methodological weaknesses, the idea of "hypothesis testing" in the context of a case study is also worth commenting on. Clearly, a single case can not be regarded as a test of a theory. Rather, I have tried to show in various ways that certain findings drawn from the case seem to be consistent with the hypotheses derived from the theory, and these have been described as supportive. Instead of a test, the results can best be regarded as an attempt to map evidence from the case onto the theoretical framework—to look at the case through the interpretive lens of the theory. As such, I have not looked at the Staging situation from all possible points of view, but have focused on those aspects of the case that I think shed light on the phenomenon I have been trying to understand.

6.3.2 Alternative Theories of Explanation

Given this approach, it is worth examining the extent to which other theories or interpretations might provide a better explanation of the case results. For instance, I might have explored the "national" angle, by examining the historic relationship between the Company's Canadian and US operations. As it happens, there was a history of somewhat poor relations between the two manufacturing divisions. Perhaps the entire issue of closing the Staging operation could be attributed to a kind of animosity towards the Canadian arm of the Company on the part of managers in the US operation. Although I can not absolutely prove that this was not a contributing factor, the fact that this alternative theory never came up during the interview process suggests it was not particularly relevant. Moreover, even if such a theory would explain why Staging was closed down, it still would not explain any of the case results which demonstrated in various ways how Staging's formal reporting seemed to be systematically related to its output demands from formal authorities. In other words, while many alternative theories could be entertained in relation to certain parts of the case findings, a serious challenge to the theory presented here would require that an alternative theory be capable of either directly refuting the given interpretation, or providing an equally comprehensive explanation of the results that have been presented.

The leading candidates for alternative theories would be derivatives of those discussed earlier in the literature review. For instance, most of the earlier work on distortion in hierarchical communication attributes the behaviour to the motives of individual self-interested agents, who may either have high career mobility aspirations, or a lack of trust in their superiors. Although these variables were not measured during the study, the case provides sufficient evidence to refute these sorts of arguments. In terms of mobility aspirations, this issue was examined earlier in the context of the discussion on "politics." Essentially the argument given then was that there was strong evidence to suggest that the people who seemed most willing to distort information to make themselves and Staging look good (the SM for instance), also occupied roles that were under the most pressure to provide positive information. A simple theory of individual career aspirations, therefore, fails to capture the significant social pressures acting on individuals. Secondly, while it was likely quite true that people in Staging by and large did not have a great deal of trust in USM, the information distortion they engaged in was not in relation to USM, but rather in cooperation with them. Moreover, the case evidence suggested that the same sorts of distortion was taking place with respect to reporting to the old Canadian management and within the Installation hierarchy, where there was no evidence of a lack of trust in these

superiors. Interestingly, there was actually some evidence that trust may have had the opposite affect predicted by earlier literature. For instance, on a couple of occasions, the SM commented about how he simply had to trust that his boss knew what he was doing, in relation to the D's plan of closing down the Staging operation. That is, although the SM did not understand himself why Staging "had to close," he was willing to trust that higher management had thought things through rationally, and that the decision made sense "at their level" because they had "a bigger picture" perspective on the situation than he did. Consequently he was unwilling to oppose their plan and cooperated with them by helping generate the information they needed.

In terms of theories of individual self-interest in general, while everyone in Staging participated in constructing information in accordance with their formal output demands, there is no reason to believe they did so strictly out of self-interest. Instead, all of the evidence points in the other direction—that they did so because they were supposed to within the constraints of the formal structure. For instance, what is the meaning of an "implied valence category" in the context of any of these individual level explanations? If people are supposed to report "Root Cause success," and then do so, in what way do self-interest, trust or career mobility aspirations play any role in the reporting behaviour? They are simply responding to the demands of their situation and nothing more. Individual variables such as these may account for variance in behaviour between different individuals, but they do not account for collective behaviour on the part of all individuals. Saying that people in Staging reported "Root Cause success" out of self interest would be like saying carpenters build houses out of self interest and teachers teach out of self interest. It is only true in the most trivial sense. They really do it because it is their job.

Another alternative explanation might be called a theory of organizational identification. That is, perhaps people in Staging reported information the way they did because they identified strongly with the Company and internalized its objectives, as operationalized through the formal structure. This sort of a theory runs into severe problems when one considers the abrupt change from SPCA reporting to Root Cause. Quite a bit of evidence could be gathered from the case to support the idea that many of the people in Staging identified quite strongly with Staging's initial objectives. Staging Engineers and Installers alike frequently commented on the importance of Staging's activities to the Company, its customers, and to improving the efficiency of field installations. However, these perspectives did not suddenly change when Staging began to report to USM. Instead, by all outward appearances, people continued to identify with Staging's original mandate, even while cooperating with USM to generate Root Cause

information that would be used to close down the operation. Instead of identifying with the new structure, it was obvious that there was considerable bitterness and frustration about the entire affair on the part of pretty well everyone in Staging.

6.4.3 Generalizability to Other Organizational Domains

It is also worth considering the degree to which the analysis and interpretation given here for Staging provides any basis on which to generalize the theory to other organizational domains. Why might the theory not be generalizable beyond Staging? One potential argument is that the Staging case could be viewed as an anomaly or an outlier rather than a representative example of hierarchical reporting. That is, the change from "solving problems/Cost Avoidance" to "Root Cause" that happened in Staging, and the corresponding constraints on language and communication, may not typify "normal" organizational behaviour either within the Company or within other organizations. Thus, it could be argued that I am using an anomalous situation to support a theory I claim describes a more general phenomenon. There are a number of potential responses to this argument. To begin with, one must examine the basis on which the Staging case might be classified as an anomaly or outlier in the first place. Do we know enough about behaviour in and by organizations to be able to discriminate reliably between "normal" and "outlier" situations? I am not convinced that we do. Recent debates in the management literature about different approaches to organizational research (e.g., Pfeffer [1995] versus Van Maanen [1995c and 1995d]) suggest considerable divergence among scholars about how to define and study organizational phenomena at all, let alone on how to evaluate the "normality" of different situations.

Moreover, even if it was agreed that Staging was an anomaly, to some extent this simply begs the question. How do we explain this case? Calling it "different" is not really good enough. Do we have a theory to explain situations like Staging? Do we have a different theory to explain "normal" practices of formal hierarchical communication in situations that are "not like" Staging? Earlier, in the literature review I argued that although it has been widely recognized that positive reporting and distortion takes place in hierarchical communication, there really is no comprehensive theory to explain the phenomenon be which organizational events are represented in language in formal hierarchical communication. An argument that Staging is "different" needs to be accompanied by a reasonable interpretation of the facts of the case in terms of some alternative explanation.

I think a good argument could be made that the Staging case was not a particularly unusual situation at all within the Company, which has had such a consistent tradition of frequently changing its internal structures, that some of its employees have come to refer to words like "Root Cause" as "buzzwords" or "the flavour of the month." If anything, perhaps the Staging case could be viewed as quantitatively different from "normal" situations, in terms of the scale of the structural change, rather than qualitatively different. Staging's change was perhaps more of a 180 degree about-face, than a slight shift in direction. However, if one could somehow "normalize" for "scale," I think the Staging case would be considered as quite typical both within the context of the Company and in relation to other organizations.

But suppose it is agreed that Staging at least represents a rather extreme case of the phenomenon being studied (if not a qualitatively different species altogether). What would this say about the meaning or value of the results? First of all, it must be recognized that while the extreme change from "problem solving" to "Root Cause" that led to the shut down of the operation may represent the dominant story of the Staging case, it was not the only story. In fact, this overall story was quite irrelevant to much of the data analysis that has been presented. The analysis at the level of clusters included "Root Cause" as only one of five clusters, and the structures of all five were shown to be fairly consistent with one another. The various analyses performed at the level of categories also had very little to do with the overall "shut down" story, and again the structure of categories related to "Root Cause" were shown to be consistent with others (e.g., "Tours" for instance) that had nothing to do with this overall Staging story. The "implied valence" analysis was almost completely unrelated to this overall story, except in the sense that the assignment of valences to certain categories may have required some knowledge of the overall context. Meanwhile, the "matrix" method of examining category content overlap was an abstract measure that could be applied in any case and had nothing to do with the particulars of Staging's "political" situation. In other words, most of the results would still have been the same if the sequence of events leading to the shut down of Staging had not even taken place.

Second, if Staging is assumed to be an extreme case, an equally valid argument could be made that its extremity was actually quite important, and perhaps even necessary, to understanding the dynamics of an everyday phenomenon that otherwise might have been much more difficult to study at all. In his analysis of the sociological work of Emile Durkhiem, Collins (1985) has pointed out that Durkhiem deliberately chose to study the extreme case of "suicide," because it represented a situation in which the normal bonds

holding society together had broken down. Since these bonds are "taken for granted when things are going normally" (p. 122) , they are often largely invisible to researchers. Thus, extreme cases where these "bonds" are shaken up and disrupted provide opportunities for researchers to see what might not otherwise be so easy to see at all. If the extremity of the Staging situation has resulted in the phenomenon being rendered somewhat more visible than might otherwise have been the case, this may have been a bit of good luck, but does not imply that the results can not be interpreted more generally.

Moreover, having completed this study in a setting that may have offered some inherent advantages over other research sites, I am quite convinced that other settings would now become more amenable to similar kinds of research. That is, to some extent the Staging case provided a good learning environment in which to develop methods appropriate to studying the communication phenomenon I am trying to understand. In a sense the somewhat extreme nature of the situation made the overall pattern of results fairly obvious: people in Staging often stated quite plainly what they felt was going on in terms of what they called the "politics" of the situation. Consequently, to some extent the research task was one of finding ways of demonstrating a pattern that quite plainly existed in the data. Having had the chance to develop these methods in a case where the pattern was fairly obvious, I think it would now be much easier to examine less obvious situations for similar patterns.

Chapter 7

7. Contributions, Implications and Future Directions

In this final chapter of the dissertation I will attempt to take a few steps back from the details of the case and theory development to position the work within the broader domain of organizational theory and practice. In particular, I wish to discuss three main topics: i) the theoretical and empirical contributions of the research; ii) the theoretical, methodological, and practical implications; and iii) areas of possible future work—theoretical, empirical and practical—that may be done as a follow-up to this dissertation.

7.1 Theoretical and Empirical Contributions

7.1.1 Theory of Positive Reporting in Formal Hierarchical Communication

This work has made a variety of contributions to organizational theory. Most directly, a systematic theory has been developed to explain the commonly observed phenomenon of positive reporting in formal hierarchical communication in organizations. While previous work on this topic has largely ignored the structural context in favour of explanations in terms of the motives and characteristics of individual agents, the theory proposed here explicitly considers the phenomenon in terms of contextual constraints on language and communication associated with an organization's formal structure.

While not denying the relative independence or freedom of individual agents, the perspective developed here sees members of organizations, as occupants of formal roles within a structural context. Since this structure is based in language, it is not a "rigid" structure, but a flexible and adaptive structure, that defines its outputs categorically. This provides agents with opportunities to operationalize output demand categories in ways that may be locally beneficial, but also serve simultaneously to sustain the larger formal structure. Thus, rather than building on a somewhat tenuous theory of agent self interest, the proposed theory makes almost no assumptions about the motives or characteristics of individuals. Instead, the theory relies only on the very basic assumption that people generally prefer to be seen as "good" rather than "bad" (i.e., "good" is better than "bad") and will, therefore, tend to act in ways that allows them to demonstrate they are doing "good" as they are supposed to—as "good" has been contextually defined within the formal

structure. People simply react in reasonable ways to the system of formal constraints that define their roles and responsibilities, and the collective result is a social phenomenon of organizational image construction and maintenance.

7.1.2 Theoretical Integration

The theory has drawn on a wide range of ideas from a variety of conceptual domains, in an attempt to develop an integrated and comprehensive understanding of a deceptively simple phenomenon. The theory includes both "macro" and "micro" elements of organizational theory. It also applies cognitive processes of categorization and relates these to images, language and communication within a social context. While an inter-disciplinary approach was necessary in this case, since no single theoretical domain seemed to offer all of the conceptual tools necessary to accomplish the task at hand, I think that this theoretical integration itself is a major contribution of the work.

The theory connects characteristics of an organization's formal structure to individual and unit behaviour in organizations through the process of formal communication. Although it has long been acknowledged that the formal structure often provides a poor representation of organizational events and actions, the organizational literature has to some extent neglected to examine the role that it actually does play. It has been argued here that this role essentially amounts to a system of constraints on communication and language use by individuals and organizational units. Rather than representing the actions and events that take place within an organization itself, the formal structure defines and predetermines how organizational actions and events will be represented. Through the somewhat paradoxical roles of responsibility and authority within formal structures (see also below), pressures are exerted on units and individuals to confirm the "hypothesis" of the formal structure in their formal communications.

The work draws on and extends Goffman's approach to understanding social frames (1974) and impression management (1959) in two directions: i) in a more "macro" direction, by considering an organization's formal structure as a system of imbedded, overlapping and interlocked interaction frames, subject to impression management behaviour: and ii) in a much more "micro" direction, by examining cognitive processes of event categorization in language (i.e., "naming," "labeling") as taking place within an interaction frame subject to impression management. Moreover, the work provides a structural theory or explanation for certain kinds of impression management behaviour in organizations, that essentially places a unit's external publics in the role of both "audience" and "director" in relation to a unit's performance. That is, the formal structure provides a

"script" that pre-structures unit performances through constraints on communication and language.

The work applies Boulding's (1956) ideas of images within an organizational domain in a number of new ways. First, the theory argues that an organization's formal structure plays a central role in the ongoing construction and maintenance of organizational images, by casting structure as a system of statements in language whose purpose is to communicate "image information." Second, the theory develops Boulding's use of Lewin's (1935) concept of "valence," to show how positive valence organizational images (and positive valence language categories more specifically) act as a force on organizational units (individuals, departments, etc.), thereby placing constraints on their communicative behaviour. Third, the idea of image is tied to communication processes via the mechanism of event categorization in language. Organizational images provide a set of positive valence categories that prestructure how organizational events will be represented in language for communication purposes.

The work also integrates a number of ideas from research on language within an organizational context. First, drawing primarily on Rapaport's (1950; 1965) work in semantics, the categorical property of words is used to show that an organization's formal structure amounts to a system of output demand categories. Then, by drawing attention to the idea of event complexity, formal communication in organizations is cast as a categorization process whereby organizational events are "mapped" onto the language categories of the formal structure. By emphasizing the idea of language as categories, extensive work on categorization theory (e.g., Rosch [1978], etc.) can be productively used to examine and understand communication behaviour in organizations. Finally, by casting communication and language use directly in terms of an organization's formal structure, formal hierarchical communication can be understood as an interlocked system of structured language games (in Wittgenstein's [1968] sense), where the formal structure defines the rules of the game and the legitimate moves that can be made within the game.

7.1.3 Representational Transparency

The dissertation has proposed a couple of new concepts as well. For instance, the idea of "representational transparency" has been defined as the degree to which one might reliably be able to predict the events referred to by some symbolic representation, based only the representation itself. As such it is a term that attempts to describe the degree of coupling between events and the linguistic (or symbolic) representation of these events. The concept attempts to combine two separate ideas into one: the inherent ambiguity of

words independent of their context of use, and the degree to which the actual use of a word within a particular context may be more or less accessible to the perception of others. The first part of the term essentially amounts to the inherent variety in meanings that may be associated with the simple dictionary meaning of a word. Some words inherently have a wide range of common uses, while others have a very narrow range. The second part of the definition refers to the fact that the degree of ambiguity in the meaning of any word is always tied to how it is actually being used within a particular context. If that context is accessible to the perceptions of others, there will be more transparency associated with the use of the word: outsiders will be able to see how the word is being used. If the context is blocked to outsider perceptions, there will be less transparency and a wider range of possible uses of the word. Thus, the idea of representational transparency is an attempt to combine in one concept the idea of word ambiguity and information about the structure of interaction situations in which communication takes place.

By using this term, I am trying to draw attention to two things. First, no real distinction can be made between "action" and "communication." Rather, as Burke (e.g., 1989) has argued, there is just "symbolic action," in which there may be more or less transparency between some events and their representation in language or symbols. Second, behaviour in organizations may be more or less transparent from various points of view. The degree of transparency has a direct impact on the practical mechanisms of event categorization in language that may take place in different situations, and the degree of hierarchical reporting flexibility available within different formal structures. In practical terms this means that different interaction situations may be more or less rhetorical on one hand, and more or less subject to outright misrepresentation on the other.

7.1.4 "Supposed to Structure"

Another concept that has been developed here (and admittedly given an rather awkward label) is the idea of a "supposed to structure," which refers to the intersection between the task structure and the organization's formal structure in some particular situation. To varying degrees people in organizations must respond to the output demands of the formal structure. In addition, they must often respond to more or less concrete demands associated with their tasks. These task demands may come from lateral task interdependencies and exchange relations, or from the physical nature of an activity. In practice, people in organizations need to resolve potential conflicts between task and formal structures in order to get the job done and meet their formal output requirements simultaneously. Depending on the degree of representational transparency and the degree

of pressure on individuals to respond to the output demands of the formal structure, there may be more or less flexibility available to map situational events onto the output categories of the formal structure.

Most research and theory in this area has tended to focus on either task structures or the symbolic aspects of relationships. The idea of a "supposed to structure" is an attempt to focus attention on the intersection between these two. In every job, people must find ways of working out the intersection between the task and formal demands of their work situation. This dissertation has pointed out some ways in which this intersection may be managed in the context of hierarchical communication, but there is much more work required to better understand the dynamics of how people do this on an ongoing basis. For instance, the actual mechanisms by which a formal structure may lead to adjustments in task structure in a particular situation (as in Blau's [1955] study of the employment agency) are not well understood.

There is another point worth noting about this concept. While much work on phenomena related to images and language has focused on the idea of identity, the approach adopted here says nothing about whether or not people actually come to identify with the images they participate in maintaining. Rather, the approach is a decidedly rhetorical analysis that simply looks at how people communicate in terms of the intersection of their task and formal structures. I have tried to examine how people respond behaviourally to a structured context of formal expectations, whether or not they personally internalize and share any of the attitudes, values or ideals that may underlie the formal expectations.

7.1.5 Structural Roles of Authority and Responsibility

The concepts of authority and responsibility in hierarchical organizations have not been adequately examined in terms their roles within formal structures. Some progress has been made in this dissertation towards a better understanding of these roles, particularly in relation to the process of generating formal organizational information. By examining the two concepts in terms of the theory, it has been suggested that their structural roles are both somewhat paradoxical in nature.

It was suggested that the formal structure provides an operational definition of the concept of "good" for an organization. In other words, the formal structure sets out an idealized (simple and inherently positive) image of an organization—what is supposed to be going on, rather than what is actually going on. Thus, it provides an image of organizational reality that can not always be lived up to in practice, and as many organizational researchers have demonstrated, that provides a rather poor representation of

what is actually going on within organizations. In spite of this, individuals are assigned responsibilities within the formal structure, a process that amounts to a demand or expectation that individuals or units "do good," as contextually defined by the formal structure. As such, individuals and units are under pressure to generate information that confirms the idealized image of the formal structure. Furthermore, by virtue of their formal positions within the structure, legitimate authorities not only have the role of defining "good" for their subordinates in the first place, but also of evaluating whether or not their subordinates did "good," according to their own definitions of "good." Finally, hierarchical structures create a system of "nested interests," in which "good" or "bad" on the part of subordinates reflects as "good" or "bad" on the part of their superiors. This creates incentives that affect both the operationalization of formal structures down the ranks and communication about events up the ranks.

While the concepts of authority and responsibility have a long history in organizational theory, their roles within organizations are still not fully understood. This thesis has shed some light on aspects of these roles, suggesting they serve as mechanisms by which formal information is constrained in organizations. As discrepancies increase between formal reporting demands and the actual situation as experienced by the people involved, these mechanisms seem to place individuals in increasingly paradoxical roles, particularly in situations of low representational transparency. On the one hand they are expected to maintain formal images that conflict with their first hand experience, while on the other hand they may be held responsible if they are unable to "map" the situation appropriately onto the reporting categories of the formal structure.

7.1.6 Empirical Contributions

The Staging case study has demonstrated many aspects of the phenomenon of positive reporting in formal hierarchical communication and has provided evidence consistent with many of the hypotheses derived from the proposed theory. The case has also demonstrated a variety of mechanisms by which formal structures are confirmed and maintained in practice through formal communications, and has illustrated the workings of language and communication constraints at several levels of analysis within Staging's formal structure. While a single case can not be considered as a test of a theory, it has provided fairly strong evidence to contradict and challenge several alternative theories about how hierarchical communication works in organizations, including the simple notion that it functions as a negative feedback control system.

In general, the research provides a rare empirical contribution to the study of formal organizational communication in general, and the phenomenon of positive reporting in particular. There has been very little empirical work that has examined at close range over an extended period of time how people actually communicate formally within organizations, using case style interpretive research methodologies. The empirical work that has been done in the past on related questions has tended to apply survey methods or experimental techniques within laboratory settings. Furthermore, as noted earlier in the literature review, the distinction between formal and informal hierarchical communication has hardly even been mentioned in the literature, let alone studied empirically. In fact, I am not aware of any other empirical studies of formal hierarchical communication within organizations.

7.1.7 Case Research Methodology

In addition, there were also areas of contribution in terms of the methodologies developed for studying the Staging case. By employing a combination of qualitative and quantitative approaches to data collection and analysis, I have tried to develop methods that have not only been appropriate to the research problem and the kinds of data available, but have also allowed for a fairly rigorous examination of the data in terms of the hypotheses derived from the theory. While an interpretative research approach allowed for a comprehensive understanding of the Staging situation to be obtained, I have also developed interview and data analysis techniques that could provide a degree of methodological rigor to the often subjective process of interpretive research. For instance, the "implied valence" analysis was an attempt to quantify a phenomenon that could only be observed and understood through an in-depth interpretive methodology. Similarly, the "matrix" method of examining content overlap among reporting categories relied for its base data on a prior interpretive process of content categorization. By adopting this mixed qualitative and quantitative approach, it was possible to not only use the case as a source of anecdotal evidence related to the theory, but also to perform some preliminary, albeit tentative, hypothesis testing.

7.2 Some Practical and Theoretical Implications

The work has implications for an understanding of a range of organizational phenomena, both from a theoretical point of view and from the perspective of practicing managers or other members of organizations. In this section, I will consider a few areas in which the ideas developed in this dissertation may raise questions about our current

understanding, while suggesting potential new ways of thinking about some common organizational phenomena.

7.2.1 Practical Implications: Is this a "Problem" That Needs to be "Solved"?

My focus in this dissertation has been to examine the phenomenon of positive reporting from a scientific point of view. I am simply interested in understanding how it works. Meanwhile, however, a common reaction to this work—particularly from practicing managers—has been to ask: "What can be done about it?" or "How can this problem be solved?" At the same time, the people who have asked these sorts of questions have almost invariably also said something like: "If you want to get some really good data, you should come and study our organization." In other words, while people seem to recognize that the phenomenon I am studying happens all the time in their own organizations, they also tend to see it as a "problem" that needs to be "solved."

Is it a problem? That really depends on one's point of view. If I am trying to accomplish some goal, and find that by describing my activities in terms of an available positive valence category of the formal structure I may be more likely to achieve that goal, I probably would not regard this as much of a problem. Instead, I might be more inclined to think about it as a solution to my original problem of goal attainment. On the other hand, if I am trying to regulate, manage or control the actions of some organizational unit, and find out later that unit members have misrepresented their actions through their formal communications, I would likely consider that as a problem that needs to be solved, in order to keep better track of things in the future.

One way of framing a discussion on the practical implications of this research is provided in Figure 7.1. The horizontal dimension in Figure 7.1 suggests that processes of image construction and maintenance in organizations may have both "functional" and "dysfunctional" consequences, depending on one's point of view. The vertical dimension identifies two relevant organizational perspectives worthy of particular attention: the "insider" perspective of an individual, unit or organization attempting to maintain a particular image for outsiders, and the "outsider" perspective of some legitimate organizational stakeholder (including perhaps a unit's management), who may wish to "see through" the image being presented by insiders, in order to understand, influence or control "what is really going on," evaluate unit performance, make investment decisions, and so on. The insider and outsider perspectives correspond generally to Goffman's (1959) "performer" and "audience" roles. In terms of the theoretical framework, perhaps the key difference to emphasize is the fact that audience members stand in some structural relation

to insiders and have a direct stake in their performance. For instance, outsiders may be customers buying a product, shareholders making investment decisions, or managers evaluating a unit based on the images presented by insiders. That is, performances are viewed as part of a larger organizational, or socio-economic, system of interactions involving regulatory control, the flow of resources, and the exchange of goods and services.

	Functional Aspects	Dysfunctional Aspects
Insider Perspective	- Maintenance of resource flows - Image as an output commodity, traded for resources - Adaptation to new image demands from environment	- Reduction of image-reality dissonance - Image as a constraint on unit activities - Conflict between task and image demands - "Rhetorical work" to map events onto available image categories
Outsider Perspective	- Confidence in unit - Image as a promissory note - Use of image as input to further image production	- Impaired learning - Lack of direct control - Forced to take image at "face value" - Response to discrepant information - Image as a "smoke screen" - Means of increasing transparency

Figure 7.1 Some practical implications of the research.

Of course, Figure 7.1 simplifies matters considerably. For instance, as noted earlier, when organizations are structured hierarchically, units are related to one another in a "nested" fashion. Thus, a manager may be an outsider in relation to a group of his or her subordinates, but act with them as a fellow-insider in relation to the next level of management. Furthermore, interactions between insiders and outsiders are not uni-

dimensional, but occur over a "manifold" of parallel communication channels of greater or lesser transparency. Thus, insider-outsider boundaries may vary depending on the mode of interaction to which one is paying attention. I will not attempt to map out all of the permutations that may arise in such situations, but refer the reader to Goffman (1974) who has discussed such complexities in considerable detail, using his concept of interaction "frame."

A) Insider Perspective

In terms of the perspective of an insider or performer, the construction and maintenance of organizational images is crucial to the maintenance of resource flows and exchange relations which sustain the organization or its units. As Pfeffer (1981) has suggested: "every organization has an interest in seeing its definition of reality accepted . . . for such acceptance is an integral part of the legitimation of the organization and the development of assured resource" (p. 26). In such a context, images may be regarded as a kind of output commodity that is traded for resource inputs. Units must maintain images that satisfy their resource-supplying external publics in order to ensure a stable and continuous flow of necessary resources. From an ecological perspective, a unit's very survival may well depend on how successful it is at fitting into the image niches provided by its institutional environment. Yet we have a very limited understanding of how these sorts of dynamic exchange relationships evolve and develop over time. For instance, in the case of dynamically changing image demands associated with new buzzwords, how do units and managers actually adapt to their new output demands?

On the other side of the coin, image phenomena may have dysfunctional consequences from a unit insider's perspective because image demands place constraints on unit actions and informational outputs, that may conflict to varying degrees with task or other situational demands. Since no organizational reality is ever as pure as the simplified and positively biased images portrayed by its formal structure, insiders are always faced with the question of how to deal with image-discrepant information and must find ways of reducing "image versus reality" dissonance. This may involve various forms of "rhetorical work" associated with mapping events onto available image categories. Alternatively it may involve changing the organizational situation or task structure in line with image demands, whether or not such changes lead to more effective unit operations. A fruitful line of investigation, therefore, would involve detailed explorations of how individuals and units actually cope on a daily basis with discrepant information that is potentially image disconfirming. Festinger (1957) and others have explored how people deal with dissonant

cognitions at an individual level. However, very little work has considered how organizational members collectively deal with dissonance at the level of unit groups or entire organizations. For instance, one common phenomenon that may represent a prototypical mechanism for dealing with such organizational dissonance, is the practice of assigning blame for complex problems to "one bad apple" within the organization. That is, when something formally defined as "bad" happens, it is often formally blamed on a specific individual or unit—a "bad apple"—in order to maintain the legitimacy of the organization as a whole. This mechanism of coping with organizational dissonance is not particularly well understood in terms of its role in social processes of image maintenance, despite its frequent use in political organizations, professional sports teams, and elsewhere.

B) Outsider Perspective

From the perspective of outsiders, there are also functional and dysfunctional aspects of image phenomena worth examining in more detail. Stakeholders often seek assurances that a unit or organization's goods, services or other outputs, are available in stable, predictable supply and quality. Integral to such assurances is the maintenance of an image that instills confidence along key dimensions of stakeholder interest. From the perspective of outsiders, therefore, a positive image simplifies decision making by reducing uncertainty. A positive unit or organizational image is like a promissory note: something a stakeholder can invest in and hold onto with the confidence that it can be exchanged for real goods and services at some point in the future. In many instances, however, the image itself may be the most important output of concern. That is, a unit's image outputs may be a key input to further image production on the part of outsiders who have some stake in the unit. For instance, "good" information may be used by upper management to achieve certain aims or objectives, while "bad" information may be used by political rivals to promote themselves at the unit's expense.

Finally, with respect to dysfunctional aspects of images from the perspective of outsiders, there is always the chance in low transparency situations that a unit's image could be little more than a "smoke screen." Outsiders must often evaluate performance, trade, invest, and make decisions on the basis of images taken at face value, since opportunities may not be available to see what's going on backstage to seek corroborating evidence. Outsiders, therefore, lack direct control over a unit's actions and must seek to exercise control through the intermediaries of language and image. A number of fruitful lines of inquiry may be identified for this region of Figure 7.1. One involves examining how outsiders respond and react when image disconfirming information becomes available.

While some stakeholders may benefit from such information and seek to amplify it, others who stand to lose from the situation, may seek to stem the flow of contradictory information and help the unit sustain its smoke screen as long as possible. Another area relates to understanding the impact of image and language phenomena on organizational learning. Given the hierarchical communication constraints that have been discussed, whereby negative information is systematically filtered out through the formal reporting process, the lack of accurate and unbiased feedback creates a situation in which organizational learning may be severely impaired. Models of organizational learning need to reflect the effects of image and language in organizational phenomena.

A final area of research involves investigating the various means by which outsiders seek to increase the transparency of unit informational outputs in order to exercise more control over unit behaviours. Two broad classes of mechanisms may be worth particular attention: performance monitoring techniques and organizational design strategies. Traditionally, various performance monitoring techniques seem to have served as the mechanism of choice within bureaucratic organizations, in attempts to increase the transparency of unit actions so that they may be controlled by managers or other legitimate stakeholders. Performance monitoring techniques typically involve giving a vague output demand a precise operational definition, resulting in the creation of new, more precise image categories. But this sort of precise operationalization frequently results in selective transparency, where outsiders focus primarily on the quantitative dimensions of a situation while ignoring the non-quantitative aspects of performance. As discussed earlier in the literature review, such mechanisms have often been shown to provide a mixed blessing: unit behaviours may become transformed in ways that undermine broader organizational goals in order to generate positive information with respect to the measurement criteria (e.g., Blau, 1955; Irving et al., 1986).

An intriguing possible alternative worthy of further investigation, involves the use of an organizational design approach that attempts to increase the degree of transparency among interdependent operations or activities. In such an approach, control is exercised through lateral relations among interdependent actors, rather than through an inherently biased system of hierarchical information processing. A well documented example of such an approach has been Japanese style "just-in-time" manufacturing techniques (e.g., Monden, 1983; Duimering and Safayeni, 1991), where one of the basic principles of design seems to involve the deliberate increase of task-related transparency among interdependent activities. For instance, in the just-in-time system, manufacturing inventory is explicitly viewed as playing a role of hiding errors and sources of process variability.

The deliberate reduction of inventory, therefore, leads to an increase in transparency, forcing organizational members to address problems that impact upon the activities of interdependent others. Thus, learning occurs at—and organizational control is allocated to—the operational levels at which organizational activities intersect, rather than relying on the formal communication system to perform these functions. While the just-in-time approach evolved in the context of manufacturing operations, some of the design principles implicit in the strategy may be generalizable to broader organizational contexts.

7.2.2 Some Theoretical Implications

This research also has implications for our theoretical understanding of certain well known organizational phenomena.

A) "Buzzwords"

This work has focused on the analysis of reporting behaviour within the context of an existing formal structure. And although it has examined the impact on reporting associated with a new output category (Root Cause), the study did not examine the evolution or development of this category within the Company. Where did "Root Cause" come from and why did it have a positive valence in the first place? The origin, development, or "life cycle" of buzzwords in organizations has received very little attention from organizational researchers. Why do new language categories acquire a strong positive valence within organizational environments, forcing behavioural and language adjustments on the part of organizational members? Why do they subsequently lose their valence and "go away"? What makes a good buzzword? What role does "emotion" play with respect to buzzwords? An exploration of these sorts of issues would seem to have significant implications for understanding a broad range of common organizational experience.

It is quite likely that the growth, propagation and development of buzzwords (or valence categories in general), either internally within organizations, or externally within organizational environments, follows a process somewhat similar to that observed in Staging for hierarchical reporting. That is, from a different perspective or level of analysis within the larger Company structure, "Root Cause" was likely used as a "feature" or "exemplar" in the operationalization of another positive valence category. Valence categories seem to exist in language (i.e., semantic) networks that are held together by some system of connections between categories. In the Staging data, these connections were shown to be based on similarity relations in some cases (i.e., synonym categories like "highlights" and "achievements"). In other cases, the connections were based on legitimate

reporting relations in which one category might represent a feature or exemplar of another super-ordinate category (e.g., "Success" as a feature of "Root Cause" reporting). These connections are more likely to be based on plausibility (i.e., they "sound good") than any criteria of strict logical validity or propositional truth conditions. As such, emotion and social relationships (e.g., liking another buzzword user) must play a significant role in establishing semantic connections and the strength of category valences. For instance, quite clearly, the fact that "USM" had a positive valence in relation to Staging (by virtue of their respective roles in the Company's formal structure), led to "Root Cause" also having a positive valence within Staging, because of the connection between the category "Root Cause" and "USM," the "user" of this category.

B) The Growth of Bureaucracy

Beer (1974) has suggested that an organization's "bureaucracy" acts as a self-sustaining, self-reproducing, system of "cancer-like" growth within organizations. Is this a valid argument? If so, why might this be the case, and what are the systemic mechanisms that allow for the growth and self-reproduction of bureaucracy? The theoretical framework has direct implications for a better understanding of the growth and persistence of bureaucracy within organizations. Specifically, if formal structures are designed in such a way that they must be confirmed by the people working within them, can they ever be eliminated from within the structure itself? The formal system sets up self-confirming positive feedback loops internally, that can only be broken at personal risk to those involved. Moreover, elaborated formal structures are used systematically as evidence that people and units are doing as they are supposed to within the structure. Incentives, therefore, encourage the growth and elaboration of structure rather than its elimination.

Furthermore, while sub-structures may be elaborated as operationalizations of higher level structures, the subsequent elimination of a higher level structure later deemed to be inefficient, does not necessarily imply the consequent elimination of all of the sub-structures previously elaborated for the structure. Because of the loose connections in language between structural levels, bureaucratic sub-structures (policies, procedures, etc.) may remain long after the super-structures that lead to their original creation have been eliminated. Perhaps the elimination of bureaucratic structures is only possible "from the outside," by higher level authorities through broader categorical decisions, such as the complete shut-down of units deemed to be "too bureaucratic." But this raises other issues of theoretical interest, with respect to organizational decision making.

C) Decision Making

If formal information systems provide positively biased, selective and simplified information to higher level authorities, their decision models must on the whole consist of rather limited and biased representations of decision situations. This implies that organizational decision making has a lack of precision (or requisite variety; Ashby, 1956) with respect to decision situations. Thus, decisions "sent" down the hierarchy are "categorical" in the sense that they have the effect of "adjusting the categories" (or adjusting category valences) for lower levels. From lower levels this amounts to the creation or elimination of categories, and the application of "blanket policies," which are incapable of discriminating among the variety of situations they are supposed to deal with. In terms of the proceeding comments about bureaucracy, while higher level authorities may be able to restructure the categories to eliminate "excess" bureaucracy, they may only be able to do so in an "all or nothing" manner, eliminating both "good" and "bad" lower level structures at the same time.

Such a perspective on decision making also suggests that a major effect of decision making in hierarchical organizations may be the disturbance and disruption of lower level activities by higher level authorities. An analogy might serve to clarify the point. Suppose someone is playing poker, subject to all of the constraints that implies for the actions and moves of the poker player. Now, suppose that the poker player's boss, who manages the situation based on a simpler model than the player, makes a decision that is supposed to help the player win the poker game. The best the boss can do is to say something like "black is good" or "play hearts," because his decision model is too simple and based on abstract categories like "black," "red," "hearts," etc., that have no direct relevance to the player's task structure, defined in terms of the ongoing situational constraints of the poker game.

Beyond these sorts of implications for understanding the impact of higher level decisions on lower level organizational units, the theory may also have potential implications for a somewhat different way of understanding the process of decision making itself. Work on decision making has tended to frame the process primarily in terms of a "downward orientation" or focus: decision makers look down at some decision situation (or task situation) and make their decisions in relation to that situation. This general orientation has taken two forms, which can be viewed as somewhat analogous to the scientific notions of "deductive" versus "inductive" approaches to the process of research. Early work (e.g., Simon, 1945/1976), assumed decision making was generally a deductive process (albeit based on bounded rather than perfect rationality), whereby information

about the situation in question was examined prior to making a decision. More recent work has cast decision making as a more inductive process, in the sense that decision makers may realize afterwards what "decisions" or "strategies" they have made by retrospectively examining and making sense of the situation in question (e.g., Mintzberg and McHugh, 1985; Weick, 1995). Both of these views, however, generally share the assumption that the task situation about which the decision is being made is the primary focus of the decision maker's attention.

The theoretical approach developed here would suggest that the primary focus of attention would be the positive valence categories that place formal reporting constraints on the decision/task situation, rather than the decision/task situation itself. Thus, rather than making decisions (either beforehand or retrospectively) in relation to the task situation (a "downward orientation"), decisions are made which rhetorically make sense in terms of the communication constraints on the situation (an "upward orientation") associated with the system of valence categories of the formal structure. This might be followed (or preceded) by local task or situational adjustments such that the situation can be legitimately mapped onto the structural categories resulting from (or formalized by) the decision. The degree of representational transparency associated with the task situation and the decision would influence the nature and extent of such adjustments.

Such an approach was clearly the case in Staging. The decision to implement "Root Cause" had nothing directly to do with the situation in Staging itself, but essentially amounted to a rhetorical strategy in relation to a system of formal valence categories that had to do with the idea of shutting down Staging because it made USM look bad within the Company. Only as a kind of second order process was this decision connected to the task situation within Staging itself. Perhaps a better way of describing this perspective on decision making would be to say that a decision situation consists of both a system of valence categories associated with the formal structure along with a system of task or other constraints about which the decision is being made. A decision in this view, amounts to a kind of rhetorical bridge between the task situation and the valence categories of the formal structure.

D) Structured Organizational Rhetoric

Eccles, Nohria and Berkley (1992) have argued that managers need to use persuasive rhetoric to promote their ideas, initiate change and encourage employees to identify with their organizations. The theoretical perspective proposed here has implications for an understanding of the "deep structure" of rhetorical interaction in

organizations. In other words, what constitutes "good," successful or persuasive rhetoric in organizations? In the terms of the theory, organizational rhetoric must function within the constraints of the formal structure if it is to persuade. Since the formal structure defines "good," for any change, decision, or action to be "sold" as being "good" for the organization, it must be represented in relation to the positive valence categories of the formal structure.

More generally, however, individuals may not always attach the same valences to categories as the formal structure. Thus, for rhetoric to be effective in persuading individuals, it must appeal to the positive valence categories held by individuals themselves—the things they value, consider good or important. Thus, managers may often find themselves caught in the middle between the conflicting valences of individuals and the formal structure, much like the Staging Manager did during the case study. On the one hand he had to respond to structural demands for Root Cause, but on the other hand, he had to "sell" Root Cause to employees who were distrustful of the objective. The practical result was a kind of hedging behaviour, where Staging employees responded formally to the Root Cause objective, while gradually becoming more and more convinced over time that Root Cause was "just" an exercise in rhetoric.

E) Organizational Control

The theoretical framework suggests that organizational control systems tend to control the informational outputs of organizational units, rather than their actions directly. Nonetheless, formal structures do control something and changes in structure typically do lead to changed behaviours of some sort on the part of individuals within these structures. Prior research on organizational control, has generally neglected to consider the mediating role of language in the process, assuming that control structures can directly control behaviour. However, the nature of the connection between control structures and "controlled behaviour" is indirect and not at all obvious. A more comprehensive theory of control is needed.

The structure of "nested interests" in hierarchical settings raises further questions about traditional concepts of organizational control. Rather than a negative feedback type model of control, perhaps a kind of buyer-seller exchange model would more appropriately represent the phenomenon. That is, a subordinate receives rewards in exchange for informational outputs that his superior can subsequently use to make herself look good in formal reports up the hierarchical ranks. From the superior's perspective, she can "buy" good information from her subordinates using rewards she has the legitimate right to

distribute down the ranks. The superior then has the legitimate right to use the information she "buys" as evidence for upper level authorities that she and her unit are doing as they are supposed to within the structure.

F) Sensemaking *in* Organizations Versus Sensemaking *By* Organizations

Is this work about how people think in organizations? For instance, the anthropologist Mary Douglas, argues in her (1986) book *How Institutions Think*, that institutions tend to make the "big decisions" for the individuals within them, by placing certain constraints on how they think about and perceive the world. She succinctly sums up her position by arguing that "institutions do the classifying"—they provide a ready-made set of cognitive categories that the people within them adopt and then "think for themselves." Within the organizational sciences too, there has been a great deal of recent work under the label of "sensemaking," which focuses on how people in organizations "make sense" of the events and ongoings around them (e.g., Weick, 1995).

By deliberately trying to understand human cognition in terms of the institutional structures in which people live and work, Douglas' perspective comes much closer to the one proposed in this dissertation than much of the recent work on "sensemaking in organizations," which by and large has ignored the role of formal structures in pre-structuring cognition. However, neither of these viewpoints really addresses the phenomenon I am trying to describe here. Essentially, I have been somewhat disinterested in the question of what people, as individuals, really think in organizations. Instead, my focus here has been on what they formally "say." Just as there is no "one to one" relationship between the ongoings and events in organizations, and how people represent them in language, there is also no simple "one to one" relationship between what people formally say and what they actually think. It is important to distinguish between the outward, public communicative behaviour of people in organizations and how this might be constrained by the demand categories of an organization's formal structure, and the private cognitive systems used for thinking and sensemaking within the heads of individual organizational members. Rather than a theory of sensemaking *in* organizations, therefore, this work really amounts to a theory of sensemaking *by* organizations. It tries to show how information about dissonant organizational events and ongoings are organized into unified organizational images that make sense to external audiences.

The relationship between an organizational image and individual cognition is worth considering, however. To some extent surely, individuals within organizations will come to identify with, or share, the formal cognitive structures of their organizations. This is

probably more likely to happen with respect to the more stable categories of a formal structure. For instance, it is common in religious organizations and national cultures, to encounter individuals who (to all outward appearances at least) seem to wholeheartedly identify with the formal values and categories of their organizations and cultures. However, there are also people who claim that they "do not fit in" and do not identify with the institutions and organizations of which they are formally members. The case study focused attention on a time in Staging's existence when it went through an abrupt, imposed change in the valence of the central categories of its formal structure. People reacted to this change and quite plainly did not agree, or approve of it. However, I did not, nor could ever, look inside their heads. At best, inferences can be made about they "really felt" based on what they said.

To varying degrees people's internal cognitive categories may or may not map onto the external categories of the organization, creating more or less individual dissonance (Festinger, 1957). No doubt, many people reduce personal dissonance by thinking in ways that are consonant with the categorical structures of their organizations. My argument has been that organizations reduce dissonance at the level of formal, public communications, forcing discrepant information (discrepant "organizational cognitions" as it were) under cover. This discrepant information continues to exist, however, in the backstage regions of the organization, to be faced and dealt with by individuals. They must find their own internal ways of coping with any dissonance that they encounter between the formal image and the reality they experience first hand. In the earlier discussion of "politics," one Staging engineer referred to this as each person "finding their own balance," and the evidence from Staging seems to suggest that different people find different points of balance.

One theory is that different people might implicitly operate on different sets of categories to begin with. For instance, some people may organize their cognitive structures to map well onto the physical demands of a task, and only pay attention to things like formal performance measures, or other constraints of the formal structure, as an afterthought. Others might orient themselves (and thus "see their task") directly in terms of the output categories of the formal structure rather than primarily in terms of any physical task constraints that may exist. That is, different people may simply see the same tasks differently, incorporating varying amounts of the "formal structure" into their own personal "cognitive structures." Under such a theory, people would not necessarily end up having different levels of tolerance for the resulting dissonance. Instead, they would simply experience different levels of dissonance given the same input conditions. Rather than just

having a different point of "balance" on the same scale, the scale itself is tipped in one direction or the other by how each individual sees his or her task, such that the same bit of information generates a different level of dissonance for different people.

Finally, there has been a great deal of evidence since the early work on cognitive dissonance by Festinger (1957) and his associates, about the relationship between dissonant behaviours and attitudes. A fairly robust conclusion of this work is that behaviour seems to have a stronger affect on attitude change than vice versa. In other words, if someone's public behaviour is dissonant with his or her attitudes, odds are that the person's attitudes are more likely to change in accordance with their behaviour than the reverse. Since formal structures impose a fairly rigid set of constraints on the communicative behaviours of their members, this may suggest a mechanism by which people actually do come to identify with the formal values and goals of their organizations over time. If people spend enough time talking the language of the formal structure, eventually they may come to believe what they are saying.

7.3 Future Directions for this Research

The preceding section has mentioned a number of practical and theoretical areas that could be examined in future research. While some of those topics ranged quite a distance from the focus of this dissertation, I would like to end with some comments on a few areas of research that are more closely related to the present work and of more immediate interest.

7.3.1 Generalizability of the Theory

While the work so far has concentrated on examining constraints on formal communication within an organizational context, there are social constraints on communication and language use in all behaviour settings (Barker, 1968). By generalizing some of the concepts developed here, it should be possible to develop a more fundamental theory to explain communicative behaviour in the context of social situations more generally. For example, while the concept of legitimate authority has significance in formal organizations, in many settings there may be no obvious authoritative formal structure that imposes valences on a set of reporting categories. However, as Lewin's (1935, 1974) work on field theory in social psychology has demonstrated, it is possible to think about social behaviour in terms of a system of cognitive categories that have valences for the individual involved. Thus, one avenue of generalization would be to replace the idea of authority with the more general idea of a system of valence categories. The precise source of the valence on particular categories may be less relevant for a general theory, than the

general structure of communicative behaviour associated with the existence of an established system of valence categories. As a simple example, it may be possible to describe fashion behaviour (i.e., dressing according to the current fashion) in terms of a general version of the theory proposed here. For whatever reason, certain styles of clothing, designer brand names, etc., acquire valences among certain groups of people, and the symbolic response in terms of dressing behaviour is pre-structured by these valence categories.

Lewin's work on field theory was never fully extended into the domain of group or collective behaviour that was qualitatively different from a simple sum of the individual behaviours of group members. To a small degree, this dissertation has been an attempt to do this within the context of a very specific class of collective behaviours. To consider formal communications by unit groups within organizations as a process of mapping discrete individual behaviours onto an image that is supposed to represent the collective behaviour of a group is a new approach to modeling group behaviour that may also be generalizable. In other words, perhaps one way of modeling group communication and behaviour is to think of a group as an image, that is continually sustained by group members, through their ongoing symbolic action in terms of the valence categories defined by the group image.

7.3.2 Empirical Work

There are many empirical directions that could be taken to follow up on this research. First, there are numerous additional ways in which the Staging data could be further analyzed. For one thing, I have not even begun a detailed examination of the documentary data collected during the study, including for instance a collection of charts used by the Staging Manager and one Operations Engineer during presentations at OPS review meetings. Although this data is somewhat fragmented and incomplete, various types of analysis could be performed to provide corroborating evidence for the results presented here.

Other kinds of empirical work can also be done. For instance, many of the hypotheses derived from the theory could be tested quite effectively within laboratory settings. One style of experiment would be to provide experimental subjects with a standard set of facts about some fictitious situation and then to instruct different subject groups to summarize or report on the situation for different output conditions. As an example, subjects could be provided with a number (say 10) of specific statements about a person's past job experience. Then different subject groups could be provided with

different descriptions of jobs that the person is said to have applied for. If subjects are asked to select the five best statements about the person's experience to be included in the job application, comparisons can be made between subject groups as to the influence of output demands on the process of information selection and abstraction.

Finally, there could be interesting opportunities to examine archival data collected by government investigation panels during public inquiries into disasters or public wrong doings. While such investigations may never uncover all of the facts of a complex situation, they may provide a great deal of information about the "backstage" events leading up to a crisis or cover-up situation. In terms of the theory presented here, they may provide a good source of data about how people map diverse and contradictory events onto the reporting categories of their formal structures in ways that maintain positive and rational images about internal ongoings.

7.3.3 Better Representation of the Phenomenon

So far I have represented the proposed theory in terms of a language argument and a number of hypotheses. At the proposal stage of this dissertation I suggested that set theory might be used to provide a better method of representing the phenomenon of positive reporting, particularly with respect to the relationship between output valence categories and the features of organizational events selected as the basis for event reporting. I have set aside that approach for the time being, for a couple of reasons. First, as the Staging data has shown, many reporting situations do not seem to fit cleanly into a "feature --> category --> super-ordinate category" categorization scheme. Consequently, the set theory approach simply became too cumbersome and unwieldy to model the more complicated reporting situations that appeared in the data. Second, the set theory approach never considered the role of valence anyway, but captured only the purely cognitive elements of the situation. Most significantly though, an alternative approach has been found that seems more promising in terms of capturing more of the phenomenon in the first place (including the idea of valence, for instance), while at the same time offering a simpler and more intuitive system of representation.

The approach has its conceptual roots in Fritz Heider's (e.g., 1958) work on the psychology of interpersonal relations, commonly referred to in the literature as "balance theory." Balance theory was a forerunner to "cognitive dissonance" (Festinger, 1957) theory and in some sense provides a more general representation of a class of cognitive phenomena that included those described by dissonance theory. In Heider's early formulation, he considered the interaction between two people (A and B) and a third entity

(C), which could be another person, an object, behaviour, etc. associated with either A or B. For instance, C could be a friend of B, something owned by B, or something B dislikes. Heider showed that the three way interaction among A, B and C could be modeled as a triangular graph as shown in Figure 7.2.

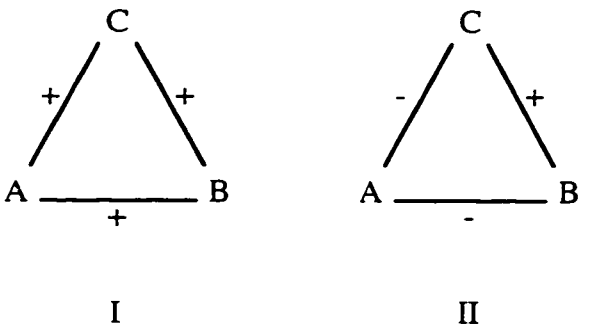

Figure 7.2 Two simple illustrations of Heider's Balance Theory.

Based on the kind of association that existed between A and B (e.g., whether or not they liked each other), this social context would influence the valence that A attached to C. Specifically, there is a kind of force built into the interaction, that "pushes" the system towards balance, where "balance" is represented in the graph as a positive product of the valence signs around the triangular loop. Thus, in Figure 7.2 - I, since A likes B (+) and B likes C (+), there is a social force within the system that pushes A in the direction of also attaching a positive valence (+) to C. In Figure 7.2 - II, A dislikes B (-) but B likes C (+), creating a social force that pushes A towards attaching a negative valence (-) to C. In both cases, the products of the signs around the loops balance to a positive sign.

Cartwright and colleagues (Cartwright and Harary, 1960; Harary, Norman and Cartwright, 1965) have extended Heider's work by modeling more complex social networks using directed graphs, and this is the version of the approach I hope to explore for the further development of the current theory. The logic is essentially the same as for the simple three-node graphs above, but each loop of a multi-node network tends towards balance through the assignment of valences around a loop. The work is exploratory at this stage, but a simplified example is provided in Figures 7.3 - 7.5, using the case of "tour" reporting within Staging (see section 5.5.1). For simplicity, I have only included the six

"features" of tours for the three levels of reporting (i.e., characteristics of the people given tours of the Staging facility), ignoring the super-ordinate categories that were also associated with the "tour" category. Furthermore, for the present I have ignored various additional aspects of the situation that could be modeled, such as valence weight on an arc of the graph, directionality within the graph, etc.

In Figure 7.3, the set structure of the tour category at the SM level is represented as a graph. The graph shows the six features of tour reporting mentioned during the interviews, five of which were mentioned for the SM level (excluding "very high level"). Because of the structural relation between SEs and the SM, there is a positive valence assigned to the arc connecting these two nodes in the graph. Positive valences are also assigned for the five features of tour mentioned as "good" to report to the SM. Thus, to balance out the remainder of the network, positive valences are assigned to the arcs between "SEs" and the five "good" features of tour at the SM level.

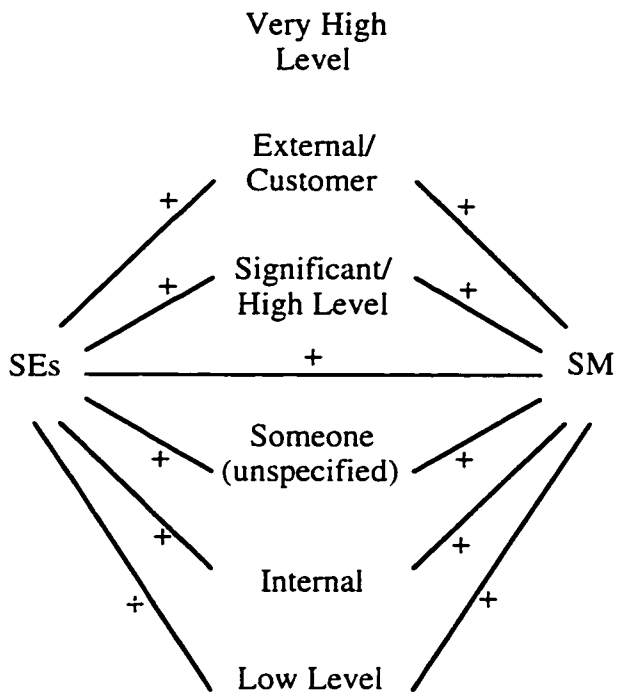

Figure 7.3 Representation of "tour" reporting by SEs to SM.

Figure 7.4 illustrates how the meaning of "tour" changes for reporting from the SM to the D level. While the SM had a positive valence towards the features of "Internal" and "Low level" in Figure 7.3, these features have a negative valence for the D, forcing a valence reversal towards these features on the part of the SM. Similarly, since the feature "Someone (unspecified)" was not mentioned for the D level, to some extent the D's valence towards this feature is ambiguous. This has been assigned a negative valence on the SM's part, to represent the idea that unspecified tours would not be reported to the D. Alternatively, the link could have been dropped from the graph all together. The addition of the positive valence connection between the D and the feature "very high level," forces an addition of this positive valence feature to the SM's tour set structure at this level.

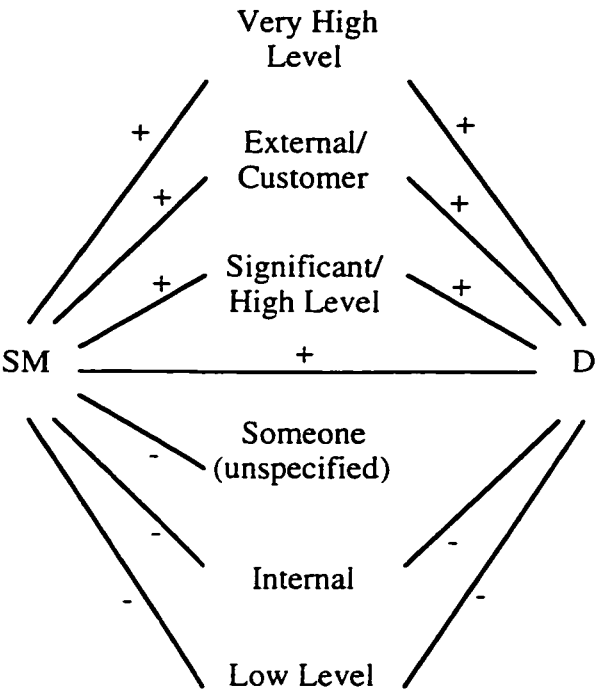

Figure 7.4 Representation of "tour" reporting by SM to D.

Figure 7.5 represents the "tour" set structure at the VP reporting level. Here, only two features were mentioned for the VP level: "External/Customer" and "Very High Level." Here, the feature "Significant/High Level" is ambiguous in valence for the VP, leading to a valence reversal for this feature on the part of the D.

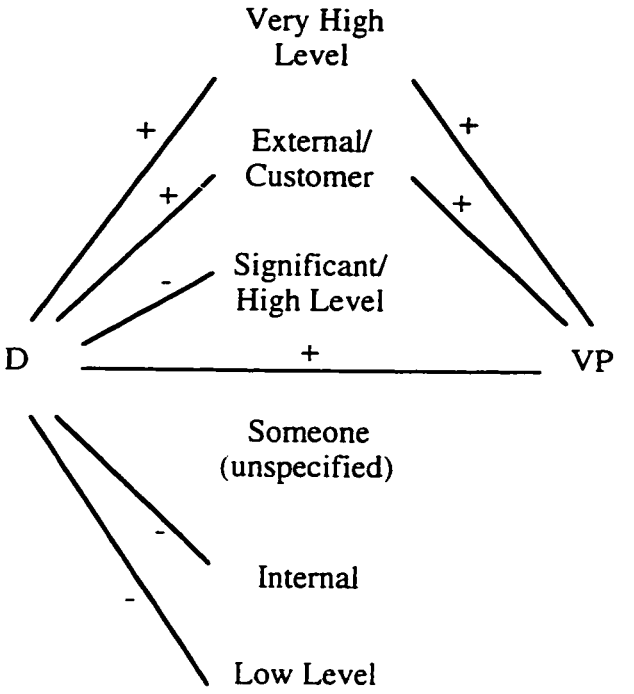

Figure 7.5 Representation of "tour" reporting by D to VP.

The method illustrates how the same word changes meaning (i.e., modeled here in terms of the features or set structure of "tour") in different reporting contexts. The addition of the D into the graph, forces a change in valence for some features on the part of the SM. Similarly, the addition of the VP forces valence changes on the part of the D. Another nice feature of this representation scheme is that it shows how reports provided to higher level authorities tend to mirror their expectations. The valences on the left (subordinate) side of each graph tend to mirror those on the right (superior) side, simply because of the internal system of forces built into the interaction structure. Although this is a very simplified example, I think the general method has the potential to offer a more rigorous and explicit way of modeling some of the formal reporting mechanisms explored in this dissertation. In particular, by combining structural aspects of the hierarchical interaction situation with semantic properties of the language used in reporting, the method provides a way of explicitly representing how social context may influence and place constraints on word use.

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Appendix A

Questionnaire

Name: _____

This questionnaire is designed to help us better understand the Staging operation and to suggest possible ways in which the operation of the organization can be improved. We can assure you of the complete confidentiality of your comments. When we report on the results of this study, we will only present summaries of the overall group, and never refer to any individual person directly. Therefore we encourage you to be as open and frank as possible in your comments.

Background information:

1) What is your official position or job title?

2) How long have you worked in the Staging organization?
-Have you been here since Staging began?

We would like to get a good understanding of your everyday job situation.

3) Could you briefly describe the main types of activities you do in your job (your main job responsibilities)? [broad classes of job activities]

4) What are the formal responsibilities associated with each of these general parts of your job?
-What sorts of things are you officially supposed to do in each part of your job?
-Are there any formal (e.g. written) job descriptions?

5) In the course of doing your job, you no doubt interact with a number of others, either within Staging, or outside of the Staging organization. Using the diagram, could you please identify the people (either individuals or groups) that you interact with most as you do your job. For each of these interactions we would like to ask four questions:

   a) Could you give some specific examples of things that they do that are helpful to you in your job?

   b) Could you give some specific examples of things that they do that are not so helpful to you in your job?

   Now, we would like you to try to put yourself in their position, as they might experience this work relationship:

   c) Could you give some specific examples of things that you (or Staging in general) do that they would find helpful in their work situation?

d) Could you also give some specific examples of things that you (or Staging in general) do that they might not consider to be helpful in their work situation?

In addition to the nature of the work itself, we would like to learn about the kinds of reporting and evaluation that are associated with your job.

6) For each major part of your job, what sorts of formal reporting (information processing) or evaluation takes place?
-Examples of reports?

In every job situation, there are plenty of things that happen, but only some of these things are actually reported to your boss.

7) a) Could you give some specific examples of the kinds of things that would be good to report to your boss about your job situation?

b) Could you give some specific examples of the kinds of things that would be not so good to report to your boss about your job situation?

c) About what percentage of the things that you report to your boss would be good things to report (as opposed to things that would be not so good to report)?

Now, out of all of the things that you report to your boss, some of these things might be included in some form in reports to higher levels of management, while other things might not be reported to higher management.

d) Of the things that you report to your boss, what sorts of things do you think he would consider to be good to include (in some form) in his reports to higher management?
-i.e., in reports about Staging's performance as a whole

e) Of the things that you report to your boss, what sorts of things do you think he would consider to be not so good to include in reports to higher management?
-i.e., in reports about Staging's performance as a whole)

f) About what percentage of the things that he reports to higher management do you think would be considered good to report (as opposed to things that would be considered not so good to report)?

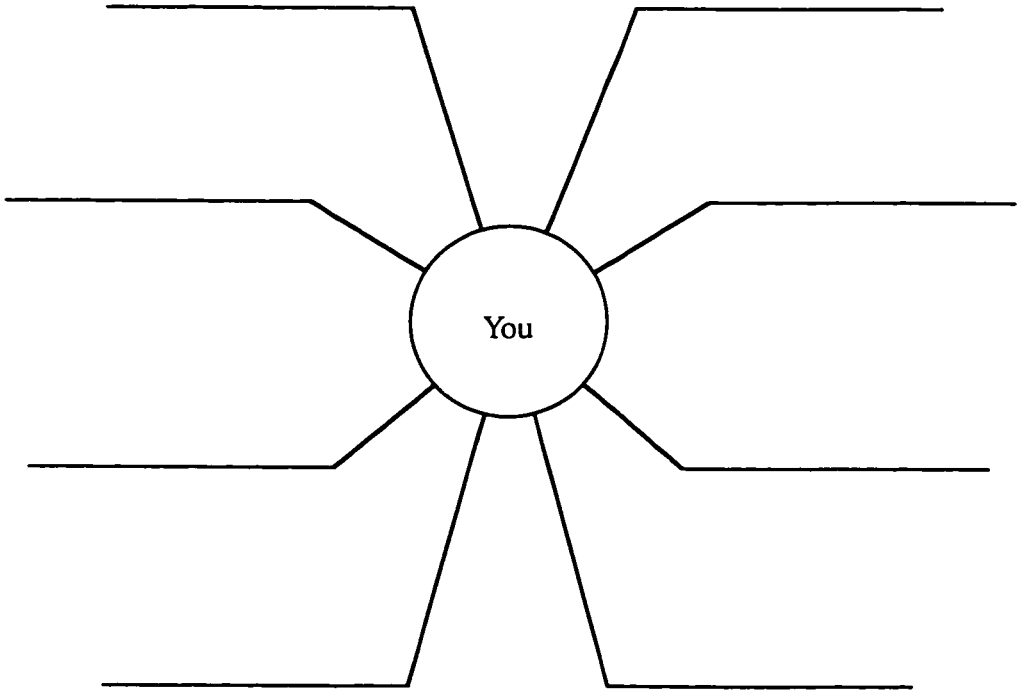
8) a) Could you give some specific examples of how these kinds of formal reporting mechanisms are helpful to you in your job?

b) Could you give some specific examples of how these kinds of formal reporting mechanisms are not so helpful to you in your job?

c) Could you give some specific examples of how these kinds of formal reporting mechanisms are helpful to Staging as a whole?

d) Could you give some specific examples of how these kinds of formal reporting mechanisms are not so helpful to Staging as a whole?

People or Groups Connected With Your Job



Appendix B

Overview of the Staging Process

The formal process followed by people in Staging Engineering and Staging Installation is outlined in a detailed Staging document called "Staging Process." The following description of the process summarizes the main points of that document, and also describes some of the routine issues that people in Staging had to deal with as they worked through the standard Staging process. That is, formal process descriptions tend to define how a process should be carried out in ideal circumstances. In reality, however, the implementation of any process always involves a certain amount of adjustment depending on the kinds of situations encountered by the organization or its members. The following includes some comments about these kinds of adjustments:

- The staging process begins with the Operations Engineers tracking the Company's "MIF" (Marketing Information and Forecasting) system by Market Region, in order to identify upcoming customer orders as potential candidates for staging. Orders are normally chosen if they have sufficient "interval" available to allow time for the staging process to take place, without risking late delivery to the Customer. Each Operations Engineer is assigned specific Market Regions. The Company organizes its activities according to the following five International Market Regions: North America; Central and Latin America; Australia and South-East Asia; China; and the United Kingdom and Europe.

- Operations Engineers negotiate with Project Managers in the Market Regions about whether or not to stage upcoming customer orders. As discussed in section 4.2.3, even though the operation was established with the intent of eventually staging all jobs for international markets, it was never given an official mandate to stage 100%. With the exception of the China market, individual Project Managers retained the formal authority to decide whether or not an order gets staged (the China market group formally specified that all of its orders be staged). In general, staging was left as an option for Project Managers to take at their discretion, forcing Staging to engage in "selling" its services to the Market Regions on a continual basis. During 1995, approximately 30% of international orders were being staged.

- "Customer Orders" consist of "initials" and "extensions". "Initials" are first time customer installations. "Extensions" consist of additional equipment (e.g., extra units) sold to a customer to improve the capabilities of an existing field installation.

- Based on agreements with Project Managers to stage their orders, forecast information is consolidated into a schedule of orders to be staged. Schedules tend to be quite variable, due to component delays from Manufacturing and/or changes in plans by the Project Manager. For instance, Project Managers frequently cancel staging of their orders if they feel the interval is too tight.

- The Installation manager, ICs (In-Charge Installers) and the Warehouse are provided with advanced schedules of the orders to be staged.

- Warehouse staff monitor the arrival of material to be staged and keep it separate from unstaged material. Warehouse staff are a prime source of up to date information on the availability status of material for staging orders.

- "Job binders" are prepared by staff in the Staging Engineering department, and are modified or partly customized for each customer order. Binders include system and equipment specs, staging check-off sheets, process flow charts, a problem logbook, "IBS reports", building plans, engineering notes for the job (if available) and any other information relevant to the particular order. IBS is an internal computer system that tracks material movement within the Company for billing and accounting purposes. The IBS report indicates all the equipment required for the order, as well as whether the equipment has arrived in the warehouse or is late coming from Manufacturing.

- Both the Operations Engineer and the IC keep track of order arrival status. Orders are officially supposed to be "pulled" from the warehouse into Staging at one week prior to the "D-Date," or when the material for the order is 90% available in the warehouse. The D-date is the deadline by which Manufacturing is supposed to have everything completed and delivered to warehouse. Typically orders are considerably less than 90% complete by the D-Date, and orders must often be pulled into Staging when they are only about 60% available. Exactly when an order gets pulled in varies, depending on the schedule, available floor capacity, manpower availability, how soon to the delivery date, whether the end of quarter is coming up, etc. Sometimes orders are pulled early to balance manpower utilization, level the workload, or to complete an orders on time if the Staging interval has been scheduled too tightly. Orders that are pulled early with material only partially available, are occasionally at risk of being canceled half way through Staging. For instance, if some components are very late from manufacturing, the Project Manager may demand that the order be shipped as is, particularly if it is near the end of a quarter and the Project Manager is under pressure to get the order into the customer country for billing purposes.

- Staging is supposed to have an "interval" of 2 weeks for hot staging and 1 week for cold staging. However, for most market regions there is no "built-in" interval for the staging operation. Officially, the assumption is that by consuming part of the available interval for staging, at least a week should be saved at the installation site, thus still meeting customer installation deadlines. Some markets, such as China have made special accommodations, by including a designated interval for staging.

- "Cold staging" primarily involves the Helpers checking the material received against engineering specifications and against IBS reports, to ensure that all of the equipment that is supposed to be shipped for an order is actually present and accounted for. "Hot staging" orders are first cold stage checked by Helpers; then key components are assembled and hot staged by Installers, involving ICs where necessary. Late or missing items get flagged by the Helpers, and listed for the Installers or ICs to contact the Customer Service groups, who assist in tracking and locating material. IRs (Installation Requests) are issued to formally request corrections to problems found in Staging. If spec errors are found or spec changes are required, Spec Writers are requested to issue a JIM (Job Information Memo) as

a corrective measure. An RMR (Return Material Requisition) is generated to return extra or unnecessary material back to Manufacturing.

- All problems found during staging are recorded in a "Problem Logbook" by Installation staff. The logbook is used to track the status of each problem and the corrective action taken to solve the problem. The logbook is updated frequently during the staging process, as problems are solved or new problems are identified.

- The Installer is normally the first person in Staging to contact Spec Writers or Customer Service to resolve staging problems. If the Installer is too busy or is having difficulties getting the issue addressed, the issue is escalated to an IC and then to the Operations Engineer.

- The Operations Engineer keeps the Project Manager up to date on the progress of the order in Staging and provides information on the kinds of problems detected, material shortages, whether the order is expected to ship on time, etc.

- Orders are usually held as long as feasible, to ensure that they are as close to 100% complete and accurate as possible prior to shipment. Orders may have to be shipped incomplete if the delivery deadline is approaching. If so, outstanding or reordered material would be shipped directly to the field installation site, rather than first to Staging.

- When a staging order is ready to be shipped, the IC notifies the Operations Engineer and submits the Problem Logbook. Updates to the IBS system are made by the Operations Engineer based on information provided in the Logbook by the ICs. Changes to IBS records reflect consolidations of material into fewer boxes that occurred during staging, returned material, or any other changes to material or packaging that needs to be tracked for export and billing purposes.

- After all IBS updates are completed, the Warehouse is told that the order is available for crating and shipping. They remove the material, crate, and ship the order.

- Within two weeks of shipping a finished customer order, a Problem Summary (or Staging Report) is prepared by the Operations Engineer, in consultation with the ICs. Any outstanding problems that still need to be "closed out" after the order has shipped are tracked to resolution. The report is sent to International Field Installers and to Project Managers. It indicates all the work that was done on the order during staging, and provides a detailed list of all problems detected and solved. It lists all equipment shortages, completed and outstanding JIMs and IRs, and any late material being sent directly to the field as a separate shipment.

- Formal reporting and data compilation for the order is then completed by the Operations Engineers. This includes entering problem information from the Problem Logbook into the Problem Database and calculating the amount of cost avoidance for the order. On a monthly and quarterly basis, Operations Engineers present summary statistics on the number of orders staged by market region, the number of problems detected and solved per unit, and the total cost avoidance resulting from Staging activities.

Appendix C

Detailed Responses to Echo Questions and Sample Comments

Table C.1
Samples of comments made about Staging Manager

Comment Category	Sample Comments
A) How the Staging Manager is Helpful	
Defines priorities; direction; performance criteria	"I guess the whole purpose for Root Cause; why we're doing it and why it's good; underlining it in my mind; justifying it in my mind; reaffirming it"
	"He has a clear goal as to what Staging is supposed to do; where we are supposed to be eventually down the road"
Escalation of issues; Supports me	"Main route for escalation of serious problems"
	"He basically tries to support me"
Feedback on work	"He does my performance review"
Filters/selects information for upper management; handles political/delicate issues	"If there are contentious issues, of a political nature"
	"Identifies information that should be shown to upper management"
Shares information; political views	"Shares political information; very honest with passing information down"
Pays me	"He pays me"
Task allocation	"He adjusts resources as required within the department"
Provides exposure with upper management	"Potential exposure. What I mean by that is acting in his absence, performing his job function when he's not there, . . . if there's any root cause reporting that he has to do, or presentations, I'll do it sometimes."
Agree on political response to "Root Cause"	"We're pretty much aligned in the way we're interpreting this whole project."
Nothing	"Geez, do I have to come up with something? I don't think he does anything to help me."
B) How the Staging Manager is Not so Helpful	
Not promoting Staging's or Customer's perspective within the Company	"I think there was potential and there were opportunities to market this function, but that were not taken"
	"my beef is that <the Staging Manager> has got to be pushing a lot harder"
	"the UK market had specific complaints . . .. We got that feedback directly from a customer. The end customer was in our building saying 'You never get it right! We're always getting this problem, you're not doing anything about it.' But <US Manufacturing> may not have visibility to that problem at all . . . because the feedback hasn't gotten back."
Task allocation; treatment of employees	"Doesn't give people in the department credit for the abilities they have. They are almost managed like children. Like 'can you do this for me?' Then an hour later 'have you got it done yet?'"
Too focused on measures of his own performance	

"His entire objective for his staff I think is: 'how can you make me look good?' So it's kind of a: 'what have you done for me lately?' And you've got to go a little bit beyond that I think."

"Ultimately the business was managed in terms of dollars and cents."

Not reporting problems to upper management

"I don't think he really feels comfortable escalating stuff. That's how one rises to the top in <the Company>, by not escalating stuff. Only the good news travels up. The cream travels to the top."

Career self-interest

"He's a climber. He's under pressure to show things look great right now, to get the next promotion."

Poor definition of priorities; direction; poor feedback

"He's way off with objectives. What are our goals? It's not very clear. We're very much reactionary. There is very little long term planning, and I guess that's kind of because there is no long term plan."

Not dealing with our job security concerns

"I told him when he first told us about the issue of our department down-sizing that 'I must admit for me that would be a very big concern; I have to feel there is some clear path for me.' Because it's pretty hard for somebody in the department to enjoy staying here to close the doors. He has paid lip service as far as an answer, that he's going to go after <the Director> . . . to make sure his staff is looked after. I don't think anything has been done. I don't think he could care less, so I don't put much credence in it I guess."

Disagree on political response to "Root Cause"

"The perception thing. Because we have two different schools of thought on root cause, often we get into conflicts on the methodologies."

Nothing

"Really there isn't a heck of a lot."

C) How Staging Personnel are Helpful to the Staging Manager

Skills/Knowledge/Doing a good job

"The added knowledge that I bring."

"Just making sure that we're doing things well as we're supposed to. Making sure that everything is complete and accurate and gets out of here on time."

Provide information he needs to meet his objectives; make himself look good

"Cost avoidance. I guess there was a time when we had to justify that this operation wasn't costing the corporation money. That it was having a payback of 2 to 1 actually. Through cost avoidance, that's what they used to justify this place being here. And now with the Root Cause as the directive, we have to start solving problems and make sure that they are solved at the source. So feeding problems to the Root Cause team, and making sure that they somehow get resolved, that helps <the Staging Manager> meet his objective."

"Well we provide information, that makes his job easier. And its usually information for metrics, like OPS reviews, right. We do the cost avoidance, provide the figures on cost avoidance and any other metric that he may ask about a specific job. We provide him with weekly highlights, you know generally keep him apprised of what's happening on the floor. So that information makes his job easier. [How would it make his job easier, just to clarify?] Well, he in turn has to provide information, in the form of OPS reviews to his manager. So he can't do that effectively unless we give him the information to do that."

"I guess I try and play the game a little bit some time. I try and figure out what he wants and anticipate it. Find ways to make him look good, to give him something to say, as far as his 'what have you done for me lately?'"

Agree on political response to "Root Cause"

"I think he appreciates the political savvy or awareness for one. The fact that he doesn't have to spend countless hours explaining and trying to get my buy-in about the fact that we have to play the political side as well."

"[So there's a real pressure from higher levels ... to really get something happening quick?] Exactly. [To show some very quick results.] The politics. . . . I saw the politics almost immediately behind it. My read on it was 'quantity of problems now with resolution as quick as possible, we'll worry about the mechanics and logistics later.' <The VP of Manufacturing> has a very specific need of standing up and saying 'We're doing something about Root Cause, . . . we're not just putting the band-aid on anymore, we're now trying to investigate why the problem happened, and eliminate it forever.' And '. . .I need evidence that things have been happening,' right. And I can show you the memo I wrote. I said, 'I'm going to pull a whole bunch of problems that we've known about for a long time, that are closed. And I'm going to show them as ones that we've basically put through our process, which is informal. And that's just, you've got to do it. . . . [This is something that you sent out to . . . only Staging members of the Root Cause Team?] Yeah, just those people. And I know that some of them thought 'Holy mackerel, some bull shit there!' right, and there is. But . . . it was strategic, it was very strategic in the sense that, I'm going to be strategic in what I pick, and the intent is to show a volume of problems that are completed."

Tell about problems before they're too big

"Address issues before they become too big, as well as notify him of major issues."

Nothing

"Good question. I think we don't help each other. . . . I don't think we really help each other much. . . . We're in that situation where we try to help each other out if we can, but it's rarely, you know."

D) How Staging Personnel are Not so Helpful to the Staging Manager

Not political enough

"I feel he may feel that maybe I'm even being a bit conservative with the approach [to Root Cause]. He may want to be even more aggressive on the political side."

"<The Staging Manager> calls it 'dancing,' which is normally 'rambling off.' It's funny, whenever he's cornered he'll always just come back with as many words and as many clichés as he can think of, as fast as he can. If you actually sit down and listen to him and try to comprehend it, you will realize he didn't say anything at all. [When you say 'dancing,' what is he doing?] That's what he calls it, he calls it 'dancing.' Like whenever you get cornered, and he just goes 'Blah blah la la la la.' [He refers to his own acts, what he does himself as 'dancing'?] Yeah. [Like 'I danced my way of the corner?'] Exactly. And sometimes when he asks a question I will turn around and say, 'Well could you say that again, I didn't quite follow you?' Just because you know he doesn't know what he just said! Hah hah hah! This is one of the ways I don't help him right? [So you try to call him on his game or something?] Somewhat, yeah. It doesn't happen that often, and now I just kind of let it go because I know it's a game and I just don't want to get involved in playing that. There was one time where, at one of our first staff meetings, I made a comment and he said 'Could you make sure you follow up and

ensure that is implemented with Scott blah blah blah blah . . ..' And it was just something that didn't involve an action! And I said, 'I don't follow you.' And he kind of repeated it and I said 'I've got to admit I'm still confused. I don't know what you want me to do.' And then everybody just laughed. Because it was just gibberish, but it's almost like where you have to say something."

Disagree with his political views

"From his point of view, you probably will only be valuable to him as long as you kind of line up with his principles."

"I believe in what we are doing and I believe that it has some definite value. . . . I have a hard time in just doing things because of a cost point of view or because of a business point of view. I tend to do it more because it is the right thing to do. So that's probably like a constant [irritant to <the Staging Manager>]. I don't know, I think he probably just tunes me out after a while. You've got to line up right? Sometimes, you know what the 'correct' answer is but you are still going to say what you think the answer is and then give him what he wants to hear. [I see. That's an interesting distinction.] Sure, well there is always . . ., there is the 'politically correct answer' and the 'answer.' [No vagaries in between these two, just two totally distinct . . .?] No no no, there are many shades of gray. But usually there's 'really, really right.' There's 'really, really correct' political answers too, which means absolutely no commitment, and nothing that you can be held accountable for, or that can come back to haunt you. That's the best answer."

Risk of Root Cause not being a success

"I think he's aware that for this to be successful, there's going to have to be some sort of growth and development on my part, . . . So I think he would be concerned . . . Root cause is a big animal. And will it be successful and will I be able to get into the proper networks and be effective?"

Not giving information he can use to make himself look good

"For example I don't think <P08> is in close favour with <the Staging Manager> right now and that's partially because the things he is involved in aren't immediately presentable to his boss, so he doesn't have any really cool stories that he can tell. Like his job is a day to day operations, nothing fancy or earth shattering."

Take a new job too early

"I think when I go to try and leave he is going to find that disturbing and unhelpful, because it doesn't support him. . . . I need to feel that there is a reason I'm doing what I'm doing, for any job I do. And knowing that, I think we are on a fixed time line, what we do really doesn't matter. It's pretty hard for me to get excited about doing anything, I've got to admit, so my motivation is gone. I think if any of us try to move, I think he is going to be a little . . ., he will probably try and block it a little bit."

Nothing

"Haven't run into anything yet."

Table C.2
Samples of comments made about US Manufacturing Management

Comment Category	Sample Comments
A) How US Manufacturing Management is Helpful to Staging	
Seem serious about Root Cause (SEs)	"They seem to have a sincere interest in solving problems."
Positive attributes (SM)	"He speaks his mind. He's very politically astute. He's very articulate. He is goal driven."
	"They give me the right answer the first time. [What do you mean by that?] If I have a dilemma. And I talk to them about it. And I don't know what to do. Generally speaking there are probably numerous alternatives. They are very efficient at providing the most appropriate alternative the first time."
Share political information; insights; advice (SM)	"Provide insights into business situations that help me to understand the scope of the situation. Again, not that I need to know it, but it's useful information. They provide me better understanding of the strategically related, or executive spin on interpreting a situation. So in other words, 'Why did <the Main Canadian Manufacturing plant> shut down?' The answer from one perspective is 'We're not cost efficient, we can't produce as cost efficiently as someone else. So we're going to outsource it.' That's a text book business answer. I talk to a few of the senior executive, 'Why did <the Main Canadian Manufacturing plant> shut down?' 'Because we've got a militant union who's not willing to cooperate.' OK, which adds to the entire cost theory. So again, they've just now plugged me into really what was the contributing factor, that I wouldn't have got at any other level. Now I didn't need to know that to do my job any better or not. But it was in any case very useful information. It helps me to understand the mind-set and the way people operate and behave at that level."
	"So they help me to understand what's required to operate at that level. They provide to me a first hand impression of acceptable behaviour at that level. What's expected, what's not. What's acceptable, what's not. At that level, it's very simple to say 'You don't provide excuses.' You either get the results or you don't get the results. You don't provide an excuse as to why you think you can't get the result. That's not an option. At any level below that, you can get away with showing up after the fact with an excuse as to why you didn't deliver. And you can carry on. At that level you don't dare show up after the fact with an excuse as to why you didn't deliver. You show up having delivered, or you show up not having delivered, and everybody understands exactly why. [OK, so by interacting with these people, you're getting an idea of what the rules of the game are at this level?] Sure. Sure. And it helps me to also understand more of the strategic intricacies of how the business operates."
They pay me (SEs)	"Well they're an aid to us because they're really our paycheque right?"
Nothing (SEs)	"I don't even know what they're doing right now to help us."

B) How US Manufacturing Management is Not so Helpful to Staging

Political agenda to use Root Cause to shut down Staging (SM, SEs)

"I think we feel that a lot of this is being done for just smoke and mirrors. I really wonder if it matters anyway. [So the whole Root Cause program may be just 'smoke and mirrors'?] Yeah, that's my own personal point of view."

"That's based on our new management, they don't want to see 'cost avoidance' . . . I guess they want to see that we are solving problems and trying to run ourselves out of a job, which is our focus right now."

"So let's basically take a group and say 'You will put yourself out of business and your objective will be to make sure I don't look bad for it.' . . . [So you're saying your objective is to put yourself out of business and who, <the US Quality Director> doesn't look bad?] I thinks it's to make sure they don't look bad for doing it. [To make sure <the US Quality Director> and <the US VP of Manufacturing> look OK in the end?] Yeah. I think that was why the whole Root Cause bogey was thrown out there, right. We were going to prove that Root Cause was successful in the next six months to justify that."

"<The Staging Manager> explained it to us, and it's more or less right, that you have a body and a gangrene hand that keeps giving you trouble. Do you let it spread or do you cut off the hand? That's almost a direct quote <from the Staging Manager>."

Poor direction, feedback, support (SM, SEs)

"Often they will operate in this manner, and I won't have all the information available to be able to understand. So I often have to trust them on blind faith that what they're doing is the right thing."

"I think there is certainly a bit of confusion with direction right now."

Narrow manufacturing quality focus (SM, SE)

"I think that our scope is broader than their scope, so I think we've got some conflict there. [Scope in terms of what?] Problems that we're tracking. They're a manufacturing quality group, they're concerned with manufacturing defects and problems. We are not solely looking at that. We are fixing all <of the product>. Our mandate is 100% complete and accurate. And as our charts will show, there's a very small piece of that puzzle that is strictly manufacturing quality. We deal with billing, engineering spec issues, the whole thing. We don't want to focus only on sampling manufacturing quality problems."

"The other perception I have is this senior executive that we'll be dealing with in particular in the manufacturing side, may be missing some of the big picture items that we're seeing. Just because they're focused on manufacturing quality, right. Manufacturing quality is only one thing that we look at. We look at billing for instance. We may find that there's a major Root Cause opportunity because the billing system is screwed up. And they probably—not to their blame—but they probably wouldn't even think of that at all. And because we're now into their organization, are they going to sponsor us resolving a problem that has no direct benefit to their group? So the perception is that they've got this—you know we use the 'paradigm' term—of what they want us to solve, yet we've got this very broad scope, with all kinds of other large issues that we want to address as well. And the perception may be that they not support that, just because they may not know about it right. [So there's a feeling that they would prefer to have you highlight Root Cause problems that they can solve?] Right, as well as it's within their sort of circle of influence."

Have to be in line with their objectives (SEs)

"They are our survivability and we have to be in line with what they want and what they need, I guess."

"They have certain objectives, and they want to tie in our activities with their objectives. If we solve a lot of problems outside of their objectives, I'm not sure if that gets them a lot of points. Because they probably have a lot of problems. They have to reduce the problems they have. And we may be reducing other people's problems, but the net number of their problems hasn't changed, so they're still bums. If they've got 10 problems and we solve 20 having to do with billing, they've still got 10 problems, and it appears as if they haven't done anything about it. . . . And this has to do with how we're aligned with the organization. Maybe we shouldn't be with them, which is sort of an interesting idea."

Make decisions without full information (SM)

"Not understanding a situation sufficiently to make an informed, or an informed opinion, or an appropriate decision. In other words, he will be very quick to make an opinion or a decision, based on some information. But yet when I provide him more information, it's 'Oh, OK, so maybe we shouldn't do that'. So there's a tendency towards his desire to solve the problem at the expense of not considering all the information. I find that not helpful. It's almost as if I have to be out their covering his tracks for him. Which I don't mind. It just makes it very difficult. He puts me in very awkward situations."

Concern over job security (SE)

"I'm personally concerned about what I am going to do next for a job. I think it would be helpful if they told me that I would be—I probably wouldn't believe them any ways—but if they told me there was a plan that we would like to continue this business, that employees would not be like stuck out in the cold, I would feel a little bit more loyal as far as willingness to jump in."

Demand quick Root Cause success (SE)

"The other perception is it's also political. I recognize the politics behind it, and the necessity to have quick, . . . quick responsiveness to problem resolution. They need to be able to talk about things that they're doing right now, and they have to have results. They want to know the results right now. They need some material so when they go over to the <customer> and they get blasted by someone, they can say 'Our Staging and Root Cause Team identified that problem; you guys were bitching about it for years; it's gone, you're never going to see it again.' Next thing you know, the <customer> goes, 'What a great company, we're going to buy $500 Million worth of product off you guys, because <the competitor> didn't do anything about it', about their problem."

C) How Staging is Helpful to US Manufacturing Management

Buffer the customer from their problems (SEs)

"We are a bit of a buffer I guess to the market for some of the problems coming out."

"It's a great safety net for them. . . . We catch things prior to them going to the customer. So where there's any type of problems, it's the final and ultimate check from a consolidated job by job basis. Which is very important to them because . . . imagine they supply say 80% of the order and they can influence the product quality on that 80%. But there's this other 20% that's supplied by someone else that they have no control over, that they're gonna get their asses kicked for, because the job didn't work. And eventually they may do their investigation and find out that the defective components of the systems was not theirs; the customer doesn't care. They're 'Manufacturing', and the job didn't work. They're going to say, 'Well we're <US Manufacturing>, we only do <some of the components, not the entire order>..' 'Well I don't care what you make. As far as I'm concerned, you gave me a product and it doesn't work.' So we have that added element that they don't.

. . . [So you're saying that if you're solving problems that may have been caused elsewhere, they may still benefit because they're still taking the heat for the problem if it hits the customer?] Right. They're still taking the heat, they're still expending resources investigating, they're still doing whatever. And there's a lot of time and effort that goes into trying to understand what the problem was, how it occurred, right off the bat. Often it might be a trip for the VP. The VP he may have to go over to the UK to listen to this whining customer, even though it has nothing to do with his sphere of influence. Whereas if it just went in there and worked, he doesn't get a call. You don't have to have a team of VP's go over there and shmooze the customer back."

Solving Root Cause problems (SEs)

"We're solving problems, first of all, directly on their product that they're handling, it's going through their process. As well as we're gonna find the Root Cause and resolve it for the other non-US Manufacturing equipment that goes with the order."

Please them; Help meet their objectives (SM)

"Meeting my objectives. Exceeding my objectives. For example, using half of my budget in the first year of Staging's operation. Another example would be our Root Cause success so far."

"Help them to meet their objectives."

"I think what he ultimately appreciates, and I thrive on, are basically pleasing him. As simple as that may sound. [OK, in what sense, pleasing him? What do you mean by that?] Executing a plan that is needed to provide a result that he needs. Giving him information that he needs. Giving him an interpretation or an understanding of what he needs. If he needs to cut his budget in half, we'll find a way to do it. If he needs to increase the efficiency of the operation, we'll find a way to do it. If he needs to improve customer satisfaction we'll find a way to do it. [When you say 'giving him an interpretation,' what do you mean by that? . . . How are you using 'interpretation' here?] My understanding of a situation for what I think it is. In other words, let's look at the labour relations issue. He will say 'You've got Installers that cost $65 an hour, and they primarily do hot staging.' I said 'I agree'. 'Therefore, if I'm looking to reduce dollars, . . . I eliminate hot staging, because it gets rid of Installers'. I say, 'Unfortunately I disagree, it's not that simple. The Installers are involved in more than just the hot staging activity. He's also involved in managing the activities of all the Helpers. If you take away the hot staging portion of his job, that does not mean you eliminate his job. It's not that simple a cause and effect. Therefore, you can't meet your cost reduction target by eliminating hot staging. You can meet your cost reduction target by looking more closely at the size of the jobs that we're doing, the complexity of the jobs that we're doing, and the market specificity of the jobs that we're doing. We can move towards a sampling technique, so that we don't stage all jobs for all markets, we will decide to stage only a certain percentage of jobs for all markets. Thereby, having less volume, I need less people, we meet your cost reduction targets, if that's your objective.' [OK, so he comes at you with some kind of a request or an objective that he'd like to do; like cutting some costs here. So you're trying to give him a better understanding of what the meaning of this is here, how it impacts you?] Sure, he'll come to me 'we've reduced your budget to $3 Million, I need another $1 Million out of you'. After I've dealt with 'Thank you very much, so on and so forth . . .,' he will give me his interpretation of what has to be done to establish that $1 Million cost reduction. I will sanitize it and say 'No I don't think that's the most effective way to address the situation. I think it should be done this, this, this, and this.' 'Fair enough, do it.' [OK, but then the overall $1 Million that

he's looking for is still there, it's just a matter of finding the best way to do it here?] Exactly."

Give information for their decision making (SM)

"Providing timely and accurate information to him to help him make decisions."

Staging make's them look good within the Company (SE)

"I think we are kind of a good news story in a way for them. Often Manufacturing gets saddled with a lot of sad stories. [In what sense is Staging a good news story for them?] I think it allows them to show how they are addressing—it allows them to prove or show how they address international concerns that may or may not be their problem. It allows them to stand up and say to Engineering: 'Hey look, I'm fixing it, I am working on your problems.' I think they would use us as a bit of an 'egg on the face' for some of the other groups, when they are busy flinging mud at them."

Cost saving if they shut us down (SE)

"We're going to be helpful to them as far as a cost savings measure, right? If they are able to close it down they can show a direct reduction in manufacturing costs next year."

D) How Staging is Not so Helpful to US Manufacturing Management

Expose them; make them look bad (SEs)

"We also expose them as far as their manufacturing deficiencies. Like quality errors."

"[You're being told they don't want to hear about 'cost avoidance' anymore. What's your interpretation of that?] I guess it's just because the focus is on immediate dollar savings, and the fact that no one . . ., well we are not highlighting the fact that we are going after the Root Cause of the problem. Now that our managers are in <US Manufacturing>, they are sort of responsible for manufacturing as well. We are like airing dirty laundry now. Before the manufacturing was in Canada and <US Manufacturing> was sort of miffed because they'd be cited for all the blame. [So they see cost avoidance as 'airing dirty laundry'?] I would think so yes. [In what sense?] It just highlights mistakes, screw-ups. The Director down there is responsible for delivery, customer satisfaction, quality, anything to do with the product. So if they sit down there and say 'Yeah we make our deliveries 99% of the time,' and then have another metric that says 'oh yeah but it cost us an extra million dollars to make sure that it was right by the time it got to the customer site' . . . I guess they were two conflicting metrics."

Cost of Staging (SM, SE)

"Also there's the cost impact right, they're paying for Staging."

"We are reasonable certain there is a financial incentive to minimize our function."

Lack of "political astuteness" (SM)

"Have a naive perception of a situation. In other words, not be able to understand the scope of the situation. If Staging needs to be shut down, why can't I understand that? . . . And I don't know if I'm being too harsh on myself by using the work naive, but I can't think of a better word. Basically I think it's a lack of experience in dealing with similar situations, at his level. You could almost call it, to a certain extent 'political astuteness.' Something that I haven't yet developed to his level of understanding."

Point out difficulties of closing down Staging (SM)

"Maybe providing too much information. [About what?] A particular situation: 'You want to shut down Staging. Please be aware of this. You're going to have to

deal with all of these marketing questions, which you didn't think were there.' He may be tired of me telling him what to watch out for."

Give information that's not relevant (SM)

"Giving him information that's not relevant. ['Irrelevant' being in what sense?] I have a tendency to give you more information than you want. In some situations you may find that helpful, in others you won't . . . [So too much detail maybe?] Sure. Too much detail or not enough."

Not focusing on the right priorities (SM)

"Not focusing or prioritizing on the right things at the right time. An example: I may be focusing on my personal departmental budget, trying to strip costs, when in fact I should be looking at expanding market growth, even if it is more costly."

Table C.3.1
Comments made about Project Managers

Comment Category	Number of People	Number of Comments
A) How Project Managers are Helpful to Staging		
Help select orders to stage; agree to stage	5	8
Share information; accurate forecasting	4	6
Adjust administrative process to accommodate staging	3	4
Help solve staging problems	3	3
Help "sell" and promote Staging within the Company	1	4
B) How Project Managers are Not so Helpful to Staging		
Deadline more important than shipping a complete job	7	9
Communication issues; not sharing information	4	7
Schedule fluctuations	2	3
Put unreasonable demands on Staging	2	3
C) How Staging is Helpful to Project Managers		
Solve problems in Staging	6	11
Provide information	4	7
Meet our schedules	4	5
Accommodate their requests	3	5
Make Project Manager look good	2	2
D) How Staging is Not so Helpful to Project Managers		
Extra step in process; Increase delivery interval	6	7
Communication issues; not sharing information	3	3
Not dealing with Root Cause	1	3
Nothing	4	(4)

*A total of 9 people commented on this connection.

Table C.3.2
Samples of comments made about Project Managers

Comment Category	Sample Comments
A) How Project Managers are Helpful	
Help select orders to stage; agree to stage	
	"Agree to the request for staging."
	"Approve which jobs get staged."
Share information; accurate forecasting	
	"Give information on changes to the schedule."
	"Ability to level loads, balance volumes; avoid end of quarter peaks and valleys."
Adjust administrative process to accommodate staging	
	"China has a built-in interval for staging."
	"The UK market has one guy in Canada who deals with 5 or 6 project managers in the UK; sort of a funnel effect so we don't have to deal with so many people."
	"Minimize the number of contacts and interfaces; e.g. a single point of contact for W-Tech."
Help solve staging problems	
	"They help chase shortages; they can sometimes put more pressure on than us."
Help "sell" and promote Staging within the Company	
	"Spread the word; communicate Staging successes."
	"Bring in customer representatives to tour Staging to see how the Company is reducing the delivery interval."
B) How Project Managers are Not so Helpful	
Deadline more important than shipping a complete job	
	"The project manager may pull a job that's not fully staged to get it into country before the end of quarter."
	"At the end of quarter they're not receptive to staging."
Communication issues; not sharing information	
	"Don't contact us when there's a change."
	"Poor communications within their organization; e.g. we agree to a change with their boss, but it doesn't filter down."
Schedule fluctuations	
	"The project managers try to get jobs into country to bill before the quarter ends, so we have 2 weeks dead time at the end of each quarter."
	"Changing their minds about whether to stage or not."
Put unreasonable demands on Staging	
	"We end up taking ultimate responsibility for an entire order if it's a staged job; they hold us accountable for stuff beyond our control."
C) How Staging is Helpful to Project Managers	
Solve problems in Staging	
	"If we find problems and expedite resolution, it makes installation quicker and easier than if the problems were found later in the field."
Provide information	
	"Notify them on schedule changes."
	"Give problem summaries, shortage lists, IR reports."

Meet our schedules

"We're flexible; we adjust to their schedule fluctuations to meet their needs."

"Meet our shipment dates."

Accommodate their requests

"Give them an opportunity to let the customer visit here to inspect and see the order before it ships."

"We try to modify anything they want modified."

Make Project Manager look good

"Improve the customer's perception since the job is 100% when it reaches their site; we're not airing dirty laundry in front of the customer."

D) How Staging is Not so Helpful to Project Managers

Extra step in process; Increase delivery interval

"Extra work for them, since there's an extra step in the process for them to manage."

"They look at the immediate shipping interval, especially at the end of quarter."

Communication issues; not sharing information

"They may not get information on time from their perspective; e.g. on shortages."

"Don't convey to the markets the basis for executive decisions in US Manufacturing; i.e., reducing the volume of staging for certain markets affects their planning."

Not dealing with Root Cause

"They expect to never see a problem again after we catch it once. When they do (on a job that wasn't staged for instance), it's frustrating. We're not really addressing Root Vause, only a band-aid."

Nothing

"Nothing; our goal is 100% satisfaction."

Table C.4.1
Comments made about Customer Service

Comment Category	Number of People	Number of Comments
A) How Customer Service is Helpful		
Track material, shortages, process IRs	6	10
Quick response	2	2
Provide technical information	2	2
Track problems with specs	1	2
B) How Customer Service is Not so Helpful		
Slow response	5	7
Individual differences among CS reps	1	1
C) How Staging is Helpful to Customer Service		
Give information; be precise	4	5
Early detection, resolution of shortages	3	3
Special project capability for W-Tech	1	2
Communications etiquette	1	2
D) How Staging is Not so Helpful to Customer Service		
Call too much; false alarms	3	3
Incomplete communications, information	2	3
Tight intervals; time pressure	1	2

*A total of 6 people commented on this connection.

Table C.4.2
Samples of comments made about Customer Service

Comment Category	Sample Comments
A) How Customer Service is Helpful	
Track material, shortages, process IRs	
	"Find shortages and chase them."
	"Process IRs, RMRs, deficiencies."
Quick response	
	"Do the job by 1 phone call."
Provide technical information	
	"Give information on updates."
Track problems with specs	
	"Find problems with specs and track it down."
B) How Customer Service is Not so Helpful	
Slow response	
	"They're busy; sometimes they don't call back."
	"Left 10 messages with no reply."
Individual differences among CS reps	
	"Some customer service reps are not very helpful; some are OK."
C) How Staging is Helpful to Customer Service	
Give information; be precise	
	"I give them information; e.g., if some equipment is not right in the order, I tell them."
	"Use e-mail, so there are fewer errors; phone calls are subject to errors."
Early detection, resolution of shortages	
	"We expedite the resolution of problems and provide them with complete shipments."
Special project capability for W-Tech	
	"We do special projects for them; the existence of this facility means we can offer the capability to do additional work like that."
Communications etiquette	
	"At the beginning of a staging job we may have 75% shortages; so we wait a few days before calling them."
	"Don't call everyday."
D) How Staging is Not so Helpful to Customer Service	
Call too much; false alarms	
	"We call too often; sometimes unnecessarily."
	"We ask them to issue an IR and then find out that we didn't need to; the material came in late or we didn't check the cartons properly."
Incomplete communications, information	
	"Missing information in our requests."
Tight intervals; time pressure	
	"If it take too long to stage, either due to issues here or late material from manufacturing."

Table C.5.1
Comments made about Spec Writers

Comment Category	Number of People	Number of Comments
A) How Spec Writers are Helpful		
Correct their errors; issue JIMs	9	14
Provide product and technical information	6	12
If they don't make mistakes	6	6
Attach engineering notes to specs	3	6
Quick response	3	5
Misc.	4	4
B) How Spec Writers are Not so Helpful		
Slow, poor response	8	17
They make mistakes	5	6
Negative attitude; feel we're checking up on them	4	7
Repeat the same mistakes	4	4
High turnover; inexperienced	3	6
Computer spec writing tool errors, difficulties	2	4
Ask us to make last minute changes	2	2
Don't include engineering notes	2	2
C) How Staging is Helpful to Spec Writers		
Provide opportunity for learning	5	8
Better to find errors here than in the field	5	5
Provide information, suggestions on solving problems	3	6
Etiquette of interaction	3	3
Provide specific, precise requests	1	2
D) How Staging is Not so Helpful to Spec Writers		
Call them too often; generate work for them	8	15
They don't like our feedback; it makes them look bad	4	8
False alarms	2	4
Nothing	1	(1)

*A total of 12 people commented on this connection.

Table C.5.2
Samples of comments made about Spec Writers

Comment Category	Sample Comments
A) How Spec Writers are Helpful	
Correct their errors; issue JIMs	
	"If they spec an order wrong, or things don't match, then they correct it."
	"Be willing to issue a JIM when they have to."
Provide product and technical information	
	"We call if we see a discrepancy between the specs and the engineering notes."
	"Guide how to handle new product."
If they don't make mistakes	
	"If they don't make mistakes, we don't have to ask them to issue JIMs."
Attach engineering notes to specs	
	"Issue engineering notes with the specs."
	"The engineering notes tell whether A or B doors are already on site; the colour of the units and labels so we can match those in the field."
Quick response	
	"Quick JIMs and release new issue of the spec."
Misc	
	"If they find out and correct spec errors themselves errors we hadn't detected or knew about."
	"For Root Cause they give information on what kind of tools they use to spec jobs."
B) How Spec Writers are Not so Helpful	
Slow, poor response	
	"They're sometimes hesitant to issue a JIM on small items, since it looks bad on them as something they missed; so they save up items to issue on a single JIM."
	"Not responsive to our requests."
They make mistakes	
	"99% of the time we have to call them since there's a problem."
Negative attitude; feel we're checking up on them	
	"They see Staging as attacking their job performance."
	"One spec writer yelled at me 'Do you want to do my job?'"
Repeat the same mistakes	
	"They don't learn from their mistakes; the same problems come up again and again."
High turnover; inexperienced	
	"Errors due to a lack of experience."
	"Lots of personnel changes."
Computer spec writing tool errors, difficulties	
	"The way the system is set up you have to order an entire package of components; but the customer only wants certain items in the package."
	"Sometimes the specs only identify a higher level bill of materials code; so we have to blow up the bill of materials to see if all of the parts were shipped."
Ask us to make last minute changes	
	"Ask us to make changes to the job when it's too late."
Don't include engineering notes	

"Some are reluctant to provide the engineering notes since they feel we'll go through it with a fine-tooth comb and criticize their specs, and highlight inconsistencies between the notes and the specs."

C) How Staging is Helpful to Spec Writers

Provide opportunity for learning

"Theoretically, we can identify to them chronic issues which could help them be more efficient."

"We give them an opportunity to see the equipment, especially new engineers, to see the whole system: most don't get to go on site to see what they've spec'd."

Better to find errors here than in the field

"We find their mistakes, save them lots of money. The main purpose is to get as complete a job as possible. If we sent them out as they are now, it would be a disaster."

"By checking their work, it minimizes interruptions from the field."

Provide information, suggestions on solving problems

"Provide information and technical knowledge to help them solve problems."

"Provide suggestions on solutions to problems."

Etiquette of interaction

"Before I call, I make sure the issue is legitimate; no false alarms. Otherwise it wastes their time."

Provide specific, precise requests

"Make sure I have the precise information."

D) How Staging is Not so Helpful to Spec Writers

Call them too often; generate work for them

"They see us as generating more work for them. In some cases they might not hear about their mistakes if it reaches the field."

"Too many complaints."

They don't like our feedback; it makes them look bad

"They feel like we're checking up on them; they don't like our feedback."

"Highlights their mistakes; makes them look bad, because they're measured on the number of JIMs on an order."

"If we have a real problem with a Spec Writer we may escalate it to their boss; this makes them look bad."

False alarms

"If we don't notice an engineering note during staging and make it a problem for nothing, it wastes their time."

Nothing

"Don't think we do anything that's not helpful."

Table C.6.1
Comments made about the Canadian Warehouse

Comment Category	Number of People	Number of Comments
A) How the Canadian Warehouse is Helpful		
Overall good performance of their job	8	11
Communication	8	10
Track lost cartons, urgent and special items	8	9
Quick, responsive to our requests	5	7
Obliging, helpful attitude; accommodating	4	8
Handling our schedule fluctuations	3	3
B) How the Canadian Warehouse is Not so Helpful		
Material handling issues	5	7
Communication	3	4
Slow response; Changes to the schedule	2	3
Environment, health, safety issues	2	2
Misc	2	2
Nothing	3	(3)
C) How Staging is Helpful to the Canadian Warehouse		
Communication; giving information	6	11
Help them re: material handling	6	7
Cooperate; accommodate their requests	5	8
Do IBS updates on time	4	4
D) How Staging is Not so Helpful to the Canadian Warehouse		
Material errors; IBS errors	6	7
Schedule fluctuations; time pressures	5	9
Staging is extra work; an extra constraint	3	4
Not communicating; not giving information	3	3
Nothing	2	(2)

*A total of 14 people commented on this connection.

Table C.6.2
Samples of comments made about the Canadian Warehouse

Comment Category	Sample Comments
A) How the Canadian Warehouse is Helpful	
Overall good performance of their job	"Knowledge of how orders come in and go out."
	"They make things happen without us having to know or worry about the details."
Communication	"They tell us if something they're doing could affect us."
	"They give us information; e.g. they tell us a unit will be late, so we can plan the manload and reassign the people."
Track lost cartons, urgent and special items	"They chase late jobs."
	"They track lost parts and help locate them."
Quick Responsive to our request	"They get items to us on short notice."
	"They're sensitive to the delivery interval, so it helps us meet delivery deadlines."
Obliging, helpful attitude; accommodating	"Extremely helpful."
	"Never say no; obliging, keen attitude."
Deal with our schedule fluctuations	"They deal with blips in our schedule; e.g., if we cancel orders, they handle it."
B) How the Canadian Warehouse is Not so Helpful	
Material handling issues	"A couple of fork truck drivers are careless with handling the material."
	"If they deliver late material and mix it with other cartons already here. Then it's hard to identify the late material."
Communication	"Paper work gets lost; e.g., we like to have the bill of lading dropped off with the ICs to avoid losses of material."
	"Notify us late on shipping requirements; e.g., the size of the shipment may be a constraint."
Slow response; Changes to the schedule	"They don't deliver fast enough sometimes."
	"They change the shipping schedule."
Environment, health, safety issues	"Smoking in the building."
	"Crating is noisy."
Misc	"We have different priorities. They're measured on the ability to ship; we're measured on 100% correct jobs. Sometimes these two don't align."
Nothing	"Very little conflict."

C) How Staging is Helpful to the Canadian Warehouse

Communication; giving information

"Inform them in a timely manner when orders are ready to ship, so they can get it out by the end of the week, quarter, year-end, etc."

"We try to get firm commitments 3-4 weeks out from the Project Managers on whether to stage or not. They need to know in advance; the sooner the better."

Help them re: material handling

"Keep material in order and packed right."

"Put ticket 'Cold Staged' on finished skids."

Cooperate; accommodate their requests

"We try to correct problems that might affect them."

"They asked us not to ship on a Friday they were doing inventory, so we worked around them."

Do IBS updates on time

"Make sure IBS is updated and the information is correct, so they don't have to look for cartons that have been consolidated."

D) How Staging is Not so Helpful to the Canadian Warehouse

Material errors; IBS errors

"Sometimes we ask them for missing cartons before we thoroughly check the work area."

"If we miss IBS updates, they end up looking for cartons that aren't there."

Schedule fluctuations; time pressures

"Canceling or adding jobs."

"If things are late, it adds to their pressure."

Staging is extra work; an extra constraint

"The existence of Staging is an extra job for them to handle."

"They can't just manage as they want; we put constraints on them since they have to respond to the best interests of Staging."

Not communicating; not giving information

"We don't give them exact enough information; e.g., exactly when a hot stage will be done or when material is supposed to arrive."

"Not giving them sufficient notice that we'll miss a delivery date. E.g., they schedule overtime to ship a order and we forget to tell them we're not done."

Nothing

"Nothing really."

Table C.7.1
Comments made about International Installation

Comment Category	Number of People	Number of Comments
A) How the International Installation Department is Helpful		
Information on manpower costs	2	2
B) How the International Installation Department is Not so Helpful		
Poor coordination/relations	9	31
No feedback about impact of Staging in the field	2	3
C) How Staging is Helpful to the International Installation Department		
Provide benefits to Installation Management	4	12
Cooperate; Absorb manpower; resource allocation	1	4
D) How Staging is Not so Helpful to the International Installation Department		
Drain on their manpower resources	2	3
Resist their demands to transfer manpower to the field	2	2

*A total of 9 people commented on this connection.

Table C.7.2
Samples of comments made about International Installation

Comment Category	Number of People	Number of Comments
A) How the International Installation Department is Helpful		
Information on manpower costs		
"They explain manpower charges every month."		
B) How the International Installation Department is Not so Helpful		
Poor coordination/relations		
"Staging and Installation have conflicting objectives."		
"Not keeping people we would like to stay here."		
"They don't really care what happens here. They're in the business of providing resources to Staging, and that's it."		
"They want to keep the best people in the field."		
No feedback about impact of Staging in the field		
"We don't get feedback from field installation. E.g., how many JIMs and IRs have to be put in by the field Installer on a staged job?"		
"No feedback from them about field installation."		
C) How Staging is Helpful to the International Installation Department		
Provide benefits to International Installation Management		
"We save them money in field installations, since we find problems and solve them here; it saves them time, effort, labour and costs."		
"They train Installers by cycling them through here."		
Cooperate; absorb manpower; resource allocation		
"Keep them up to date on future manpower releases."		
"Absorb available people for a week or two, while they wait for their next international installation job."		
D) How Staging is Not so Helpful to the International Installation Department		
Drain on their manpower resources		
"We drain their resources; we have some of their skilled people."		
Resist their demands to transfer manpower to the field		
"They want me in the field, but I don't want to go."		
"Sometime I'll try to resist the transfer of a very important person here."		

Table C.8.1
Comments made about Engineering by people in Engineering

Comment Category	Number of People	Number of Comments
A) How people in Engineering felt others in Engineering were Helpful		
Share knowledge and experience	2	4
Good team work	2	4
Process engineering changes	2	2
B) How people in Engineering felt others in Engineering were Not so Helpful		
Different opinions about process	1	1
Interruptions	1	1
C) How people in Engineering felt they were Helpful to others in Engineering		
Suggest changes to processes	3	3
Provide technical knowledge	1	2
D) How people in Engineering felt they were Not so Helpful to others in Engineering		
Late providing OPS information	1	1
Could reduce costs	1	1
Nothing	2	(2)

*A total of 4 people commented on this connection.

Table C.8.2
Samples of comments made about Engineering by people in Engineering

Comment Category	Sample Comments
A) How people in Engineering felt others in Engineering were Helpful	
Share knowledge and experience	"Let me know how they handled similar situations."
Good team work	"If the work load is too heavy, they help me."
Process engineering changes	"Make process changes if needed."
B) How people in Engineering felt others in Engineering were Not so Helpful	
Different opinions about process	"Disagreements over some of the ways we do things; could be faster, more efficient."
Interruptions	"Sometimes get interrupted too often with questions."
C) How people in Engineering felt they were Helpful to others in Engineering	
Process engineering changes	"Suggest changes to processes."
Provide technical knowledge	"Develop a computer tool to do reports."
D) How people in Engineering felt they were Not so Helpful to others in Engineering	
Late providing OPS information	"Late with charts for an OPS meeting."
Could reduce costs	"We could do more on cost reduction."
Nothing	"Nothing."

Table C.9.1
Comments made about Staging Engineering by Staging Installation

Comment Category	Number of People	Number of Comments
A) How Staging Engineering is Helpful to Staging Installation		
Provide information; communication	5	12
Help solve problems	4	6
Starting to work on Root Cause	2	2
Cooperation, support	2	2
B) How Staging Engineering is Not so Helpful to Staging Installation		
Don't seem busy; don't know what they do	6	10
Schedule fluctuations; time pressure	5	7
Not solving Root Cause	3	3
Not being realistic; oversell Staging	3	3
Not helping where they should; interfering	2	5
Lack of product technical knowledge	2	3
Lack of communication, feedback	2	2
C) How Staging Installation is Helpful to Staging Engineering		
Find problems; give information on problems	5	8
Follow up on orders; Get the job done	5	5
Cooperate	1	1
D) How Staging Installation is Not so Helpful to Staging Engineering		
Incomplete jobs or paperwork	2	2
Don't support all of Engineering's requests	1	3
Go to wrong person for help	1	1
Nothing	2	(2)

*A total of 8 people commented on this connection.

Table C.9.2
Samples of comments made about Staging Engineering by Staging Installation

Comment Category	Sample Comments
A) How Staging Engineering is Helpful to Staging Installation	
Provide information; communication	
	"Prepare binders; download specs; get engineering notes for us."
	"Talk to Project Managers about special requests; e.g., some customers want spare parts added to the order."
Help solve problems	
	"They track problems if we can't get cooperation; e.g., with Spec Writers."
	"Help solve staging problems."
Starting to work on Root Cause	
	"Starting to look into chronic problems."
Cooperation, support	
	"Very cooperative group."
B) How Staging Engineering is Not so Helpful to Staging Installation	
Don't seem busy; don't know what they do	
	"They not very busy; I don't see them working hard; they've got surplus staff."
	"Seem to spend a lot of time justifying their own existence."
	"No one tells us what their specific duties are."
Schedule fluctuations; time pressure	
	"They think we can work faster."
	"We always ask for firm forecasts and there are always changes; they really can't forecast the work."
Not solving Root Cause	
	"Not interested in being too aggressive on problem resolution since they're part of US Manufacturing Quality; they don't want to make their bosses look bad, so they don't report too much."
	"Most problems have not been solved at Root Cause."
Not being realistic; oversell Staging	
	"Oversell the job Staging does; as a final test; but cold staging is really just a second check."
	"Many jobs are not really worth staging since there's few problems. They should stick to large jobs, new unit designs, and certain market regions with special requests."
Not helping where they should; interfering	
	"They should be informing us on shortages by running IBS reports daily, but I tell them when there are shortages."
	"They could be helpful by locating the testing procedures we need for hot staging; we often have to modify the procedures for a new unit design."
	"The Installation Manager tells us to do one thing, then an engineer tells us to do something else."
Lack of product technical knowledge	
	"Most don't know how the product works."
	"Once I asked for their advice on a problem; they didn't know but still gave their opinion; it turned out to be the wrong advice; they overstepped their area of knowledge."

Lack of communication, feedback

"Lack of communication; lack of team work."

C) How Staging Installation is Helpful to Staging Engineering

Find problems; give information on problems

"Resolve all problems and get everything signed off so they only have to update IBS once."

"Explain problems to customers."

Follow up on orders; Get the job done

"We follow up on their orders."

"Get product in and out on time."

Cooperate

"Cooperate and back them on whatever they're doing."

D) How Staging Installation is Not so Helpful to Staging Engineering

Incomplete jobs or paperwork

"There have been cases where they get the problem summary and still have to deal with critical problems; leave them with a mess to clean up."

Don't support all of Engineering's requests

"If an order comes in late we don't always bend over backwards; they can't change their minds everyday."

Go to wrong person for help

"If I go to them with problems that are not their responsibility; but if I knew what their jobs were I wouldn't bother them."

Nothing

"Nothing."

Table C.10.1
Comments made about Staging Installation by Staging Engineering

Comment Category	Number of People	Number of Comments
A) How Staging Installation is Helpful to Staging Engineering		
Provide product and installation knowledge	6	13
Follow the process; provide feedback information	5	22
B) How Staging Installation is Not so Helpful to Staging Engineering		
Not following the process/Not enough feedback	3	3
Interruptions	2	3
Nothing	1	(1)
C) How Staging Engineering is Helpful to Staging Installation		
Provide information	4	5
Provide technical support	3	7
Solve Root Cause of chronic problems	1	1
D) How Staging Engineering is Not so Helpful to Staging Installation		
Not enough communication between Engineering and Installation	4	9
Schedule fluctuations	2	7
Lack of product/installation technical knowledge	1	1

*A total of 7 people commented on this connection.

Table C.10.2
Samples of comments made about Staging Installation by Staging Engineering

Comment Category	Sample Comments
A) How Staging Installation is Helpful to Staging Engineering	
Provide product and installation knowledge	
	"Installers deal with Spec Writers directly."
	"Provide insight into problem causes and solutions."
Follow the process; provide feedback information	
	"They plan manpower resources to meet delivery requirements."
	"Provide information for problem database."
B) How Staging Installation is Not so Helpful to Staging Engineering	
Not following the process/Not enough feedback	
	"Need more feedback regarding issues on the floor."
	"They should be responsible for tracking orders; the Operations Engineer shouldn't have to baby-sit orders."
Interruptions	
	"Installers come with small problems; waste time."
Nothing	
	"Nothing really that's not helpful."
C) How Staging Engineering is Helpful to Staging Installation	
Provide information	
	"Provide schedule expectations for the week and longer term forecasts."
	"Do IBS changes and release forms on time so they can do their job."
Provide technical support	
	"Help identify and implement short-term fixes."
	"Available to help make right decisions."
Solve root cause of chronic problems	
	"Resolving chronic issues so they don't have to deal with the same problem over again."
D) How Staging Engineering is Not so Helpful to Staging Installation	
Not enough communication between Engineering and Installation	
	"We don't communicate enough with them in general. E.g., they're not involved with OPS; they get no feedback on whether they're doing a good job; how the financial side of the business is going."
	"They're not given the recognition they deserve."
Schedule fluctuations	
	"We cancel or add orders on short notice forcing them to off-load manpower or add overtime."
Lack of product/installation technical knowledge	
	"Most Operations Engineers lack technical knowledge on the product and installation process."

Table C.11.1
Comments made about Staging Installation by people in Staging Installation

Comment Category	Number of People	Number of Comments
A) How people in Installation felt others in Installation were Helpful		
Lower levels handling their job well; being motivated	7	31
Higher levels provide support; handle problems lower levels can't	6	23
Cooperation among the Helpers	2	7
B) How people in Installation felt others in Installation were Not so Helpful		
Helper morale, job and pay situation	6	15
ICs' management skills	4	8
Lack of knowledge; people not following process	3	4
C) How people in Installation felt they were Helpful to others in Installation		
Take the load off upper levels; handle the job	5	12
Helping, supporting lower levels	5	10
Improve/Make the best of the Helpers' job situation	2	6
Cooperation among the Helpers	1	2
D) How people in Installation felt they were Not so Helpful to others in Installation		
Helper morale, job and pay situation	2	6
Get angry, disrespectful towards lower levels	3	5
Inconsistent management/communication with Helpers	2	3
Misc	2	4

*A total of 9 people commented on this connection.

Table C.11.2
Samples of comments made about Staging Installation by people in Staging Installation

Comment Category	Sample Comments
A) How people in Installation felt others in Installation were Helpful	
Lower levels handling their job well; being motivated	
	"Taking the initiative to handle the work."
	"Installers are experienced. They don't just check against the specs or check sheets; they check against their experience with what they think should be required in the order."
Higher levels provide support; handle problems lower levels can't	
	"Provides guidance; has experience and training in areas I don't have."
	"ICs deal with people issues."
Cooperation among the Helpers	
	"Getting along with each other."
	"Keep going over the specs together with my partner until we get all of the problems."
B) How people in Installation felt others in Installation were Not so Helpful	
Helper morale, job/pay situation	
	"Some lack initiative for the job."
	"They feel shafted by the Company and the union. It's really a very limited place to get ahead in the job; no room for promotion."
ICs' management skills	
	"Poor relationship with the Helpers."
	"Difficulties setting priorities."
Lack of knowledge; people not following process	
	"The Installers' skill level is not always high enough for hot staging."
	"Logging of problems isn't always done properly."
C) How people in Installation felt they were Helpful to others in Installation	
Take the load off upper levels; handle the job	
	"As long as we're doing our job, things will go smoothly."
	"Look after the Helpers; keep them busy so the IC doesn't have to deal with it."
Helping, supporting lower levels	
	"Share knowledge and insights."
	"Give them a hand with their work; we solve problems together."
Improve/Make the best of the Helpers' job situation	
	"Try to keep the Helpers' morale up."
	"Make sure they're getting proper treatment; overtime opportunities, etc."
Cooperation among the Helpers	
	"If someone asks me a question, I tell them what I know, relate my past experience."
D) How people in Installation felt they were Not so Helpful to others in Installation	
Helper morale, job/pay situation	
	"Some Helpers have a poor attitude. They feel it's unfair; that they're likely the lowest paid people in the Company at a time when the Company is doing very well."

Get angry, disrespectful towards lower levels

"I get 'excited' when they're not doing the simple things right."

"If I give 'commands'; we're not in the army, people have dignity; we have to treat them respectfully, not put them down."

Inconsistent management/communication with Helpers

"Can't always keep them on the same job from beginning to end. Sometimes have to move them due to schedule fluctuations."

Misc

"Sometimes we disagree on the process. E.g., I want to check IBS shortages at the start of the job, but the IC doesn't want to do it until mid-week."

Table C.12.1
Comments made about the Root Cause Team by others in Engineering

Comment Category	Number of People	Number of Comments
A) How others in Engineering felt the Root Cause Team was Helpful		
Solve chronic problems	3	3
Product and technical information; contacts	1	2
B) How others in Engineering felt the Root Cause Team was Not so Helpful		
Takes too long	1	1
Extra work	1	1
C) How others in Engineering felt they were Helpful to the Root Cause Team		
Provide information about problems	3	8
D) How people in Engineering felt they were Not so Helpful to the Root Cause Team		
Misc	3	5

*A total of 3 people commented on this connection.

Table C.12.2
Samples of comments made about the Root Cause Team by others in Engineering

Comment Category	Sample Comments
A) How others in Engineering felt the Root Cause Team was Helpful	
Solve chronic problems	"Used to try to solve problems myself informally; now they do it formally; it takes some of the load off."
Product and technical information; contacts	"They're a source for information and technical knowledge, contacts; a source for questions."
B) How others in Engineering felt the Root Cause Team was Not so Helpful	
Takes too long; extra work	"It takes too long to solve Root Cause problems."
	"Giving them problems and priorities is a bit of extra work for us."
C) How others in Engineering felt they were Helpful to the Root Cause Team	
Provide information about problems	"Provide them with information on all problems and put the problems into the database."
	"Give contact names for solving problems."
D) How people in Engineering felt they were Not so Helpful to the Root Cause Team	
Misc	"Maybe if I give vague problem information, give them nothing to go on, etc."

Table C.13.1
Comments made about the Root Cause Team by Root Cause members

Comment Category	Number of People	Number of Comments
A) How Root Cause members felt the Root Cause Team was Helpful		
Knowledge; contacts to solve problems	2	4
Cooperation within the group	3	6
B) How Root Cause members felt the Root Cause Team was Not so Helpful		
Different perspectives on Root Cause activities	2	2
Busy with other work priorities	1	1
Nothing	1	(1)
C) How Root Cause members felt they were Helpful to the Root Cause Team		
Share information and knowledge	3	3
Cooperation; perform role in the group	2	6
D) How Root Cause members felt they were Not so Helpful to the Root Cause Team		
Different perspectives on Root Cause activities	1	4
Busy with other work priorities	1	1
Nothing	1	(1)

*A total of 3 people commented on this connection.

Table C.13.2
Samples of comments made about the Root Cause Team by Root Cause members

Comment Category	Sample Comments
A) How Root Cause members felt the Root Cause Team was Helpful	
Knowledge; contacts to solve problems	"We've made connections with many people and other engineers."
Cooperation within the group	"Support of others within the group for procedures to solve problems."
B) How Root Cause members felt the Root Cause Team was Not so Helpful	
Different perspectives on Root Cause activities	"Vague goals and purpose of Root Cause. We know in a general sense that we want to solve problems, but how to go about doing it systematically and what criteria we're measured against is not well defined."
Busy with other work priorities	"We all have other responsibilities, so we're not always available for working on projects; busy doing other things."
Nothing	"The root cause team is helpful."
C) How Root Cause members felt they were Helpful to the Root Cause Team	
Share information and knowledge	"Support with technical aspects of the problem."
Cooperation; perform role in the group	"Doing the work you commit to."
D) How Root Cause members felt they were Not so Helpful to the Root Cause Team	
Different perspectives on Root Cause activities	"There's some uncertainty over how seriously Root Cause should be taken. It may be a bit of a game; it's great to talk about and get some mileage; management seems to have an urgency to get results; so there's a right way to do it, versus giving fast results. And there are some differences over which approach to take."
Busy with other work priorities	"May not get the work done on time if I don't know the priorities of requests."
Nothing	"Nothing."

Table C.14.1
Comments made about US Root Cause by Staging Root Cause

Comment Category	Number of People	Number of Comments
A) How US Root Cause is Helpful		
Contacts and technical support	3	5
B) How US Root Cause is Not so Helpful		
"Politics"	1	2
Focus on manufacturing rather than whole system	1	2
Coordination difficult due to distance	1	1
C) How Staging is Helpful to US Root Cause		
Provide problem data; technical knowledge	3	5
System level scope and network of contacts	3	4
D) How Staging is Not so Helpful to US Root Cause		
Different perception of problems	1	2
Expose their quality problems	1	1
Extra work for them	1	1
Nothing	1	(1)

*A total of 3 people commented on this connection.

Table C.14.2
Samples of comments made about US Root Cause by Staging Root Cause

Comment Category	Sample Comments
A) How US Root Cause is Helpful	
Contacts and technical support	"They can take over and solve manufacturing problems that we identify."
B) How US Root Cause is Not so Helpful	
"Politics"	"We have to filter what they are really doing from what they say they are doing."
	"E.g., calling themselves 'Staging' now instead of WIN/WIN; arguing they are the same as us; at the executive level they don't know the difference."
Focus on manufacturing rather than whole system	"Their view is local; our view is system level. E.g., they look at a single label, we look at the whole system."
Coordination difficult due to distance	"Difficult to coordinate with them due to distance."
C) How Staging is Helpful to US Root Cause	
Provide problem data; technical knowledge	"We have the factual data on why the Staging activity is needed."
	"We have Installers here with customer knowledge."
System level scope and network of contacts	"We have a set of people and contacts in Manufacturing, Customer Service, Installation, Engineering, Spec Writing, Market Regions."
D) How Staging is Not so Helpful to US Root Cause	
Different perception of problems	"We are often discussing different problems; we have different ways of categorizing problems."
Expose their quality problems	"We expose their product quality problems."
Extra work for them	"Root cause broadened their mandate, complicated their work."
Nothing	"Nothing."

Appendix D

"Good" and "Not so Good" Reporting Categories by Reporting Level

Tables D.1 - D.8 provide the following information:

- "Good" and "Not so Good" reporting categories by reporting level

- Reporting clusters (macro categories) for each reporting category, designated as follows:

  - Generic reporting (G)
  - Root Cause (RC)
  - Staging Problems/Cost Avoidance (SPCA)
  - Manpower (M)
  - Misc Content Specific (MCS)

- Number of people making comments; number of text units; and number of weighted text units:
  - Within each category
  - Totaled across all "good" and "not so good" categories
  - Totaled across all categories

Table D.1
"Good" and "Not so Good" things to report to Installers and ICs.

Reporting Category	No. of People	No. of Text Units	Weighted Text Units	Cluster(s)
Installer/ICs Total	3	152	456	
A) Good to Report	3	116	348	
Staging Problems; Logbook	3	86	258	SPCA
Big Staging Problems	1	13	13	SPCA
No job evaluation; do the job right	2	6	12	M
Discipline	2	5	10	M
Escalation if Having Problems	1	10	10	SPCA,G
Look Busy	1	9	9	M
Work Status	1	8	8	SPCA,G
Manpower Scheduling	1	3	3	M
Things that must be reported	1	2	2	G
B) Not So Good to Report	3	65	195	
By-pass chain of command	1	24	24	SPCA,G
Error that you catch yourself; in time	1	15	15	SPCA,G
Things you should handle yourself	2	7	14	SPCA,G
Manpower Scheduling	1	7	7	M
Errors, Problems	1	4	4	SPCA,G
Stealing	1	4	4	M
Late; Incomplete work	1	3	3	SPCA,G
Small details; trivia	1	3	3	SPCA,G

*A total of 3 people commented on this reporting level.

Table D.2
"Good" and "Not so Good" things to report to the Installation Manager.

Reporting Category	No. of People	No. of Text Units	Weighted Text Units	Cluster(s)
IM Total	4	212	848	
A) Good to Report	4	153	612	
Installation Skills; Learning	2	53	106	M
No job evaluation; do the job right	2	53	106	M
Things running smoothly	2	14	28	G
Manpower	2	12	24	M
Work Status; Workload	1	22	22	G
Discipline	1	12	12	M
Big problems on the job	1	9	9	G
Process Improvements	1	7	7	MCS
Administrative Problems	1	4	4	MCS
Finance	1	1	1	MCS
Safety Issues	1	1	1	MCS
B) Not So Good to Report	4	71	284	
Personal Issues; Conflicts	2	26	52	M
Discipline	1	17	17	M
Lack of Manpower in Staging	1	9	9	M
Helper Training; Careers	1	8	8	M
Staging's Impact in Field; Staging's Future	1	7	7	SPCA,G
Staging Problems	1	4	4	SPCA

*A total of 4 people commented on this reporting level.

Table D.3
"Good" and "Not so Good" things to report to the Installation Director.

Reporting Category	No. of People	No. of Text Units	Weighted Text Units	Cluster(s)
ID Total	3	209	627	
A) Good to Report	3	126	378	
Manpower	3	57	171	M
Overview of Staging	2	68	136	SPCA,G
Discipline	1	17	17	M
Promote Int'l Installation	1	13	13	SPCA,G
What the ID wants	1	5	5	G
B) Not So Good to Report	3	99	297	
Lack of Manpower in Staging	3	39	117	M
Staging is Good for the Company	2	46	92	SPCA,G
Staging Activities	3	20	60	SPCA,G
Manpower Issues Related to the Helpers	1	21	21	M

*A total of 3 people commented on this reporting level.

Table D.4
"Good" and "Not so Good" things to report to the Installation Vice-President.

Reporting Category	No. of People	No. of Text Units	Weighted Text Units	Cluster(s)
IVP Total	1	66	66	
A) Good to Report	1	61	61	
Is Staging Worth the Manpower?	1	58	58	SPCA,M
Manpower	1	3	3	M
B) Not So Good to Report	1	6	6	
Staging Activities	1	6	6	SPCA,G
Discipline	1	1	1	M

*A total of 1 person commented on this reporting level.

Table D.5
"Good" and "Not so Good" things to report to the Operations Engineers.

Reporting Category	No. of People	No. of Text Units	Weighted Text Units	Cluster(s)
OE Total	5	88	440	
A) Good to Report	5	80	400	
Staging Problems; Logbooks	5	47	235	SPCA
Status of Staging Orders	2	15	30	SPCA
Quality of Work in Staging	1	14	14	SPCA
Staging is Good for the Company	1	13	13	SPCA,G
B) Not So Good to Report	1	9	9	
Installer skill level; careers	1	9	9	M

*A total of 5 people commented on this reporting level.

Table D.6
"Good" and "Not so Good" things to report to the Staging Manager.

Reporting Category	No. of People	No. of Text Units	Weighted Text Units	Cluster(s)
SM Total	11	1370	15070	
A) Good to Report	11	1065	11715	
Cost Avoidance	7	199	1393	SPCA
Achievements	6	191	1146	G
SM's Objectives	6	163	978	G
Root Cause	7	115	805	RC
Big; Significant; Important	7	92	644	G
Good; Positive	4	158	632	G
Problems & Concerns	6	77	462	G
Highlights	6	73	438	G
#, % Orders/Units Staged	5	87	435	SPCA
Complete; On Time	5	60	300	SPCA
Finance	3	64	192	MCS
Special Projects	3	59	177	MCS
Information SM Needs; Asks for	4	38	152	G
Status; Activities	4	34	136	G
Tours	4	33	132	MCS
Make SM Look Good	3	28	84	G
Escalation	4	41	82	G
Metrics; Indicators	2	40	80	G
# Staging Problems Solved	2	34	68	SPCA
Problem Handled Well	2	34	68	G
Process Improvements	3	21	63	MCS
Problem Summary done on time	2	30	60	SPCA
Staging Problems	3	20	60	SPCA
Self Promotion	2	23	46	G
Strengthen the Business	2	18	36	MCS
Environment; Health; Safety	1	32	32	MCS
Filtered information for Upper Mgmt	1	31	31	G
Special Recognition from Outsiders	2	14	28	G
Extra Private Project (if successful)	1	22	22	MCS
OE/PE Training	2	11	22	M
Installation Manpower; Manload	1	17	17	M
Staging Schedule Info; Market Requests	1	16	16	MCS,M
Promote Staging	1	13	13	G
Misc	2	6	12	MCS
Meetings Attended; Presentations Given	1	11	11	MCS
Plans	2	5	10	G
Deadline Performance	1	10	10	G
Advice; Opinions	1	3	3	G

B) Not So Good to Report	9	404	3636	
Details; Trivia; Not Important	3	90	270	G
Problem Solved Yourself; On time	4	36	144	G
Problem Not Handled Well	2	69	138	G
Late Manufacturing Delivery	2	45	90	SPCA
Building; Maintenance	1	51	51	MCS
Bad; Negative; Dirty Laundry	2	24	48	G
Low #, % Orders Staged	2	18	36	SPCA
Highlight the Negative	2	17	34	G
Learned from Mistakes	1	32	32	G
Doesn't Want to Hear Concerns	1	29	29	G
Incomplete; Late	2	14	28	SPCA
Make Manufacturing Look Bad	1	23	23	SPCA
Extra Private Project (if not successful)	1	22	22	MCS
Spec Writer Tracking	1	20	20	SPCA
Not Achieving	2	9	18	G
Information Not Needed; Not Asked For	1	18	18	G
Low Cost Avoidance	1	16	16	SPCA
Staging Problems	2	6	12	SPCA
"Bad Number" Justification	2	4	8	SPCA
Helper Related Issues	1	8	8	M
Low Staging Capacity Utilization	1	3	3	MCS

*A total of 11 people commented on this reporting level.

Table D.7
"Good" and "Not so Good" things to report to the US Director of Manufacturing Quality.

Reporting Category	No. of People	No. of Text Units	Weighted Text Units	Cluster(s)
D Total	9	1456	13104	
A) Good to Report	9	896	8064	
Root Cause	7	217	1519	RC
Change in Staging's Mandate; Focus	4	177	708	SPCA,RC
Information Related to SM's Objectives	5	113	565	G
Achievements; Accomplishments	7	76	532	G
Filtered Info for Upper Management	4	132	528	G
Good; Positive	5	105	525	G
Big; Significant; Important	6	83	498	G
Highlights	7	63	441	G
Finance; Staging Costs versus Budget	4	48	192	MCS
Root Cause problems solved	3	43	129	RC
Tours	4	30	120	MCS
Customer Satisfaction Related	3	48	144	MCS
Sample staging; Not 100% staging	2	46	92	SPCA
Reduce Staging's Budget	2	32	64	SPCA
Significant Special Projects	2	27	54	MCS
Metrics	1	47	47	G
Information D Needs; Asks for	2	23	46	G
Escalate if a problem may impact D	3	14	42	G
Reduced Market Need for Staging	1	35	35	SPCA
Improvements	2	15	30	G
Root Cause analysis	1	20	20	RC
Extra work that brings in money	2	10	20	MCS
Concerns	1	15	15	G
Make D look good	1	13	13	G
Environment; Health; Safety Incidents	1	10	10	MCS
Staging working itself out of a job	1	9	9	RC
(Old D) Aggregate Cost Avoidance	6	96	576	SPCA
(Old D) Agg. #, % Orders/Units Staged	4	29	116	SPCA
(Old D) Staging Problems	3	27	81	SPCA
(Old D) Staging Costs versus Savings	2	29	58	SPCA
(Old D) High Cost Avoidance	1	21	21	SPCA
(Old D) # Staging Problems Solved	2	6	12	SPCA

B) Not So Good to Report	9	915	8235	
Cost Avoidance	5	192	960	SPCA
Problems; Concerns	5	86	430	G
Highlight the Negative	5	70	350	G
Make Manufacturing Look Bad	2	160	320	SPCA
Late Manufacturing Delivery	3	104	312	SPCA
Details; Trivia; Not Important	4	69	276	G
Promote Staging	3	65	195	G
Anything you should handle yourself	3	64	192	G
Cost of Staging	3	57	171	SPCA
Low Staging Capacity Utilization	4	29	116	MCS
Make Other Company Groups Look Bad	1	52	104	SPCA
Excellence Day Presentation	2	51	102	MCS
Staging Installation Manpower	3	28	84	M
Detailed Cost Avoidance	3	24	72	SPCA
Env't; Health; Safety; Building; Processes	1	62	62	MCS
Filter out Bad Information	1	60	60	G
Information Not Needed; Not Asked for	2	21	42	G
Make Company Look Bad to Customer	1	39	39	SPCA
Few Problems Solved at Root Cause	1	38	38	RC
Staging Problems	1	32	32	SPCA
Low Level Tours	2	11	22	MCS
By-pass chain of command	1	22	22	G
System Level Check of Orders	1	18	18	SPCA
Staging is Good for the Company	1	16	16	SPCA,G
Root Cause Cost Avoidance	1	14	14	SPCA,RC
Staging Costs versus Savings	1	13	13	SPCA
Misc	1	13	13	MCS
Contract Research Project	1	12	12	MCS
Personal Highlights; Achievements	1	12	12	G
"Band-aid" Staging	1	11	11	SPCA
Aggregate #, % Orders/Units Staged	1	9	9	SPCA
Market Need for Staging Not Reduced	1	8	8	SPCA
Staging Interval	1	6	6	MCS
# Staging Problems per Unit	1	4	4	SPCA
(Old D) Low #, % Orders/Units Staged	3	32	96	SPCA
(Old D) Low Cost Avoidance	2	19	38	SPCA

*A total of 9 people commented on this reporting level.

Table D.8
"Good" and "Not so Good" things to report to the US Vice-President of Manufacturing.

Reporting Category	No. of People	No. of Text Units	Weighted Text Units	Cluster(s)
VP Total	2	360	720	
A) Good to Report	2	343	686	
Filtered Info for Upper Management	2	155	310	G
Root Cause	2	138	276	RC
Change in Staging's Mandate; Focus	2	131	262	SPCA,RC
Reduce Staging's Budget	2	43	86	SPCA,MCS
Information Related to D's Objectives	1	73	73	G
Root Cause Success	2	34	68	RC
Achievements	1	64	64	G
Information VP Needs; Asks for	1	33	33	G
Good; Positive	1	19	19	G
Customer Satisfaction Related	1	18	18	MCS
Almost Nothing Formally	1	14	14	SPCA
Big; Significant; Important	1	13	13	G
Concerns	1	12	12	G
High level Tours	1	10	10	MCS
Aggregate Finance Information	1	8	8	MCS
Highlights	1	4	4	G
(Old VP) Almost Everything	1	25	25	SPCA
(Old VP) Cost Avoidance	1	33	33	SPCA
B) Not So Good to Report	2	146	292	
Cost of Staging	2	23	46	SPCA
Cost Avoidance	1	45	45	SPCA
Make Manufacturing Look Bad	1	34	34	SPCA
Few Problems Solved at Root Cause	1	26	26	RC
Details; Trivia; Not Important	1	25	25	G
Staging Problems	1	23	23	SPCA
Bad; Negative	1	19	19	G
Information Not Needed; Not Asked for	1	18	18	G
# Staging Problems	1	17	17	SPCA
"Band-aid" Staging	1	12	12	SPCA
Contract Research Project	1	11	11	MCS

*A total of 2 people commented on this reporting level.

Appendix E

Reporting Category "Clusters," by Reporting Level

Tables E.1 - E.4 summarize the reporting category cluster set structure for the Staging Problems/Cost Avoidance (SPCA), Manpower (M), Misc Content Specific (MCS), and Generic (G) reporting clusters respectively.

Table E.1
Reporting categories for the Staging Problems/Cost Avoidance (SPCA) cluster, by reporting level.

Reporting Category	Relative Category Rank Weighting (1-5) *	Given Cat. Valence (G = +; NG = -)	Implied Within Cat. Valence	Consistent Valences?
Installer/IC Level				
Good				
Staging Problems; Logbook	5	+	0	n/a
Big Staging Problems	5	+	+	y
Escalation if Having Problems	4	+	-	n
Work Status	2	+	0	n/a
Not so Good				
By-pass chain of command	5	-	-	y
Error that you catch yourself; in time	5	-	-	y
Things you should handle yourself	5	-	0	n/a
Errors, Problems	3	-	-	y
Late; Incomplete work	2	-	-	y
Small details; trivia	1	-	-	y
IM Level				
Not so Good				
Staging's Impact in Field; Staging's Future	2	-	0	n/a
Staging Problems	1	-	0	n/a
ID Level				
Good				
Overview of Staging	4	+	0	n/a
Promote Int'l Installation	2	+	+	y
Not so Good				
Staging is Good for the Company	4	-	-	y
Staging Activities	3	-	0	n/a
IVP Level				
Good				
Is Staging Worth the Manpower?	5	+	0	n/a
Not so Good				
Staging Activities	5	-	0	n/a
OE Level				
Good				
Staging Problems; Logbooks	5	+	0	n/a
Status of Staging Orders	4	+	0	n/a
Quality of Work in Staging	3	+	+	y
Staging is Good for the Company	2	+	+	y

SM Level				
Good				
Cost Avoidance	5	+	+	y
#, % Orders/Units Staged	4	+	+	y
Complete; On Time	4	+	+	y
# Staging Problems Solved	3	+	+	y
Problem Summary done on time	3	+	+	y
Staging Problems	3	+	0	n/a
Not so Good				
Late Manufacturing Delivery	5	-	-	y
Low #, % Orders Staged	4	-	-	y
Incomplete; Late	3	-	-	y
Make Manufacturing Look Bad	3	-	-	y
Spec Writer Tracking	2	-	0	n/a
Low Cost Avoidance	2	-	-	y
Staging Problems	1	-	0	n/a
"Bad Number" Justification	1	-	-	y
D Level				
Good				
Change in Staging's Mandate; Focus	5	+	+	y
Sample staging; Not 100% staging	3	+	+	y
Reduce Staging's Budget	3	+	+	y
Reduced Market Need for Staging	2	+	+	y
(Old D) Aggregate Cost Avoidance	5	+	+	y
(Old D) Agg. #, % Orders/Units Staged	3	+	+	y
(Old D) Staging Problems	3	+	0	n/a
(Old D) Staging Costs versus Savings	3	+	+	y
(Old D) High Cost Avoidance	2	+	+	y
(Old D) # Staging Problems Solved	1	+	+	y
Not so Good				
Cost Avoidance	5	-	0	n/a
Make Manufacturing Look Bad	5	-	-	y
Late Manufacturing Delivery	5	-	-	y
Cost of Staging	4	-	-	y
Make Other Company Groups Look Bad	4	-	-	y
Detailed Cost Avoidance	4	-	0	n/a
Make Company Look Bad to Customer	3	-	-	y
Staging Problems	3	-	-	y
System Level Check of Orders	2	-	0	n/a
Staging is Good for the Company	2	-	-	y
Root Cause Cost Avoidance	2	-	0	n/a
Staging Costs versus Savings	2	-	-	y
"Band-aid" Staging	1	-	-	y
Aggregate #, % Orders/Units Staged	1	-	0	n/a
Market Need for Staging Not Reduced	1	-	-	y
# Staging Problems per Unit	1	-	-	y
(Old D) Low #, % Orders/Units Staged	4	-	-	y
(Old D) Low Cost Avoidance	3	-	-	y

VP Level				
Good				
Change in Staging's Mandate; Focus	5	+	+	y
Reduce Staging's Budget	5	+	+	y
Almost Nothing Formally	2	+	0	n/a
(Old VP) Almost Everything	3	+	0	n/a
(Old VP) Cost Avoidance	3	+	+	y
Not so Good				
Cost of Staging	5	-	-	y
Cost Avoidance	5	-	0	n/a
Make Manufacturing Look Bad	5	-	-	y
Staging Problems	3	-	-	y
# Staging Problems	2	-	-	y
"Band-aid" Staging	1	-	-	y

* See Section 5.4.3 - A for an explanation of the weighting scheme.

Table E.2
Reporting categories for the Manpower (M) cluster, by reporting level.

Reporting Category	Relative Category Rank Weighting (1-5) *	Given Cat. Valence (G = +; NG = -)	Implied Within Cat. Valence	Consistent Valences?
Installer/IC Level				
Good				
No job evaluation; do the job right	4	+	+	y
Discipline	4	+	-	n
Look Busy	3	+	+	y
Manpower Scheduling	2	+	0	n/a
Not so Good				
Manpower Scheduling	4	-	0	n/a
Stealing	2	-	-	y
IM Level				
Good				
Installation Skills; Learning	5	+	+	y
No job evaluation; do the job right	5	+	+	y
Manpower	4	+	0	n/a
Discipline	3	+	-	n
Not so Good				
Personal Issues; Conflicts	5	-	-	y
Discipline	5	-	-	y
Lack of Manpower in Staging	4	-	-	y
Helper Training; Careers	3	-	0	n/a
ID Level				
Good				
Manpower	5	+	0	n/a
Discipline	3	+	-	n
Not so Good				
Lack of Manpower in Staging	5	-	-	y
Manpower Issues Related to the Helpers	2	-	0	n/a
IVP Level				
Good				
Is Staging Worth the Manpower?	5	+	0	n/a
Manpower	3	+	0	n/a
Not so Good				
Discipline	3	-	-	y
OE Level				
Not so Good				
Installer skill level; careers	5	-	0	n/a

SM Level				
Good				
OE/PE Training	2	+	+	y
Installation Manpower; Manload	2	+	0	n/a
Staging Schedule Info; Market Requests	1	+	0	n/a
Not so Good				
Helper Related Issues	1	-	0	n/a
D Level				
Not so Good				
Staging Installation Manpower	4	-	0	n/a
VP Level	n/a			

* See Section 5.4.3 - A for an explanation of the weighting scheme.

Table E.3
Reporting categories for the Misc Content Specific (MCS) cluster, by reporting level.

Reporting Category	Relative Category Rank Weighting (1-5) *	Given Cat. Valence (G = +; NG = -)	Implied Within Cat. Valence	Consistent Valences?
Installer/IC Level	n/a			
IM Level				
Good				
Process Improvements	2	+	+	y
Administrative Problems	2	+	-	n
Finance	1	+	0	n/a
Safety Issues	1	+	-	n
ID Level	n/a			
IVP Level	n/a			
OE Level	n/a			
SM Level				
Good				
Finance	4	+	0	n/a
Special Projects	4	+	0	n/a
Tours	4	+	+	y
Process Improvements	3	+	+	y
Strengthen the Business	2	+	+	y
Environment; Health; Safety	2	+	0	n/a
Extra Private Project (if successful)	2	+	+	y
Staging Schedule Info; Market Requests	1	+	0	n/a
Misc	1	+	0	n/a
Meetings Attended; Presentations Given	1	+	0	n/a
Not so Good				
Building; Maintenance	5	-	0	n/a
Extra Private Project (if not successful)	3	-	-	y
Low Staging Capacity Utilization	1	-	-	y

D Level				
Good				
Finance; Staging Costs versus Budget	4	+	0	n/a
Tours	4	+	+	y
Customer Satisfaction Related	4	+	+	y
Significant Special Projects	3	+	+	y
Extra work that brings in money	2	+	+	y
Environment; Health; Safety Incidents	1	+	-	n
Not so Good				
Low Staging Capacity Utilization	4	-	-	y
Excellence Day Presentation	4	-	-	y
Env't; Health; Safety; Building; Processes	3	-	0	n/a
Low Level Tours	2	-	-	y
Misc	2	-	0	n/a
Contract Research Project	1	-	0	n/a
Staging Interval	1	-	0	n/a
VP Level				
Good				
Reduce Staging's Budget	5	+	+	y
Customer Satisfaction Related	2	+	+	y
High level Tours	1	+	+	y
Aggregate Finance Information	1	+	0	n/a
Not so Good				
Contract Research Project	1	-	0	n/a

* See Section 5.4.3 - A for an explanation of the weighting scheme.

Table E.4
Reporting categories for the Generic reporting (G) cluster, by reporting level.

Reporting Category	Relative Category Rank Weighting (1-5) *	Given Cat. Valence (G = +; NG = -)	Implied Within Cat. Valence	Consistent Valences?
Installer/IC Level				
Good				
Escalation if Having Problems	4	+	-	n
Work Status	2	+	0	n/a
Things that must be reported	1	+	0	n/a
Not so Good				
By-pass chain of command	5	-	-	y
Error that you catch yourself; in time	5	-	-	y
Things you should handle yourself	5	-	0	n/a
Errors, Problems	3	-	-	y
Late; Incomplete work	2	-	-	y
Small details; trivia	1	-	-	y
IM Level				
Good				
Things running smoothly	5	+	+	y
Work Status; Workload	4	+	0	n/a
Big problems on the job	3	+	-	n
Not so Good				
Staging's Impact in Field; Staging's Future	2	-	0	n/a
ID Level				
Good				
Overview of Staging	4	+	0	n/a
Promote Int'l Installation	2	+	+	y
What the ID wants	1	+	+	y
Not so Good				
Staging is Good for the Company	4	-	-	y
Staging Activities	3	-	0	n/a
IVP Level				
Not so Good				
Staging Activities	5	-	0	n/a
OE Level				
Good				
Staging is Good for the Company	2	+	+	y

SM Level				
Good				
Achievements	5	+	+	y
SM's Objectives	5	+	+	y
Big; Significant; Important	5	+	+	y
Good; Positive	5	+	+	y
Problems & Concerns	5	+	-	n
Highlights	5	+	+	y
Information SM Needs; Asks for	4	+	0	n/a
Status; Activities	4	+	0	n/a
Make SM Look Good	4	+	+	y
Escalation	3	+	-	n
Metrics; Indicators	3	+	0	n/a
Problem Handled Well	3	+	+	y
Self Promotion	2	+	+	y
Filtered information for Upper Mgmt	2	+	+	y
Special Recognition from Outsiders	2	+	+	y
Promote Staging	1	+	+	y
Plans	1	+	0	n/a
Deadline Performance	1	+	+	y
Advice; Opinions	1	+	0	n/a
Not so Good				
Details; Trivia; Not Important	5	-	-	y
Problem Solved Yourself; On time	5	-	-	y
Problem Not Handled Well	5	-	-	y
Bad; Negative; Dirty Laundry	4	-	-	y
Highlight the Negative	4	-	-	y
Learned from Mistakes	4	-	+	n
Doesn't Want to Hear Concerns	3	-	-	y
Not Achieving	2	-	-	y
Information Not Needed; Not Asked For	2	-	0	n/a
D Level				
Good				
Information Related to SM's Objectives	5	+	+	y
Achievements; Accomplishments	5	+	+	y
Filtered Info for Upper Management	5	+	+	y
Good; Positive	5	+	+	y
Big; Significant; Important	4	+	+	y
Highlights	4	+	+	y
Metrics	3	+	0	n/a
Information D Needs; Asks for	2	+	0	n/a
Escalate if a problem may impact D	2	+	-	n
Improvements	2	+	+	y
Concerns	1	+	-	n
Make D look good	1	+	+	y

Not so Good				
Problems; Concerns	5	-	-	y
Highlight the Negative	5	-	-	y
Details; Trivia; Not Important	5	-	-	y
Promote Staging	5	-	-	y
Anything you should handle yourself	5	-	0	n/a
Filter out Bad Information	3	-	-	y
Information Not Needed; Not Asked for	3	-	0	n/a
By-pass chain of command	2	-	-	y
Staging is Good for the Company	2	-	-	y
Personal Highlights; Achievements	1	-	+	n
VP Level				
Good				
Filtered Info for Upper Management	5	+	+	y
Information Related to D's Objectives	4	+	+	y
Achievements	4	+	+	y
Information VP Needs; Asks for	3	+	0	n/a
Good; Positive	3	+	+	y
Big; Significant; Important	2	+	+	y
Concerns	2	+	-	n
Highlights	1	+	+	y
Not so Good				
Details; Trivia; Not Important	4	-	-	y
Bad; Negative	3	-	-	y
Information Not Needed; Not Asked for	2	-	0	n/a

* See Section 5.4.3 - A for an explanation of the weighting scheme.

Appendix F

Word Association Method: Category Internal Set Structure

To illustrate the word or concept association method, Tables F.1 summarizes the detailed feature coding for the category "tour", and is followed by the actual comments upon which the codes were based . Tables F.2 - F.4 summarize the internal set structure for the reporting categories "highlight", "problem" and "Root Cause".

Table F.1
Feature coding for the reporting category "tour".

Reporting Features and Levels	Instance of "tour" from interview transcripts 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	n per feature
Features																	
External/Customer		x					x			x	x			x	x		6
Customer Satisfaction							x							x	x		3
Very High Level														x	x		2
Significant Highlight			x														1
Highlight		x						x	x	x	x						5
Significant/High Level		x	x	x			x	x	x		x						7
Staging Achievement							x			x							2
SM's Objectives		x								x							2
Internal					x	x						x					3
Not Staging Achievement	x				x	x											3
Personal Achievement	x																1
Low Level	x				x	x											3
Someone (unspecified)										x		x	x				3
Engineering Objectives																x	1
Avg Instances/Feature																	3
Avg % Instances/Feature																	18.75 %
Reporting Levels																	
Good to Report to SM	x			x	x	x		x	x	x	x	x	x			x	11
Avg Instances/Feature																	2.3
Avg % Instances/Feature																	21.5 %
Good to Report to D		x	x				x							x	x		5
Avg Instances/Feature																	2
Avg % Instances/Feature																	40 %
Not so Good to Report to D	x				x	x											3
Avg Instances/Feature																	2.25
Avg % Instances/Feature																	75 %
Good to Report to VP														x	x		2
Avg Instances/Feature																	2
Avg % Instances/Feature																	100 %

Keyword search on "**tour**".

The following are all instances of "**tour**" mentioned in response to Q7a-f. (n=16).

1 "That 30% of what I give <the SM> that he's not reporting would be like little small level personal achievements or **tours** that I have given here, which are good and go towards my MFA achievement at the end of the year."

2 "If there's a highlight for the week he's having it in his objectives, like the highlights for every week, and the month OPS as well, the highlights for the month. Which are like, for instance, there might be some **tours** for visitors, or customers, like high level visitors or end-customers visit. [And these are good things to report for him?] Yes, they're good things.

3 "And if there are any significant highlights, I'm sure that would get reported. [What would be a significant highlight?] Well again as I stated before, if we had high-level **tours** in here, you want to make, I'm sure <the SM> would want to make his manager aware of that fact."

4 "I get more involved with you know 'We had a **tour**, by this dignitary, or whoever' and that's totally appropriate to report."

5,6,7 "I mean, we run that around staff, 'What's the achievement for last week?' Someone will say, 'Well, we gave a **tour**(5) to somebody out of <the Canadian Manufacturing Plant>' Doesn't count. It's not good enough. Why does my boss care that we gave somebody a **tour**(6) from <the Canadian Manufacturing Plant>? 'What, did they have nothing to do, so they came out here?' Or: 'We gave a **tour**(7) to the Director of Manufacturing from <the China Customer Operations>.' Interesting. How did that line up with our 'Customer Satisfaction' objective? It does. It gets reported."

8,9 "A big one is any **tours**(8) that go through the facility. Any significant visitors I guess you could say. And any **tours**(9) or presentations that result from that. Those are things you want to highlight, right."

10 "Any personal highlights or achievements that happen in the month or the week. So when he goes to his OPS with his higher-ups, he wants to sell Staging as having all these accomplishments and achievements. [What would be considered 'personal highlights'?] Giving of a **tour** to someone from another plant or someone who wanted to know more about Staging."

11 "I think the highlights that we report are kind of good too. It gives an overview of the major things that happen in the month in a particular area. [What would be some of those highlights?] It could be if you have a high-level **tour,** like if a customer came in, if you had the VP of an actual customer in. Like I've had a number, like myself in <W-Tech>, I've had probably about 4 customers actually come and visit the site and their orders, right. [These would be external customers?] Correct, external customers, like <customer name> was here and things like that. So the actual companies that buy equipment from us that end up coming to see their equipment. That's good as a highlight."

12 "Any **tours** or visits to the building or. [Who would be touring or visiting?] We often get requests from different people who want to know what Staging is. Or oftentimes people just want to see what a whole order looks like. Like internal people to <the Company> right."

13 "**Tours**"

14,15 "Often information I think that clearly gets passed up the line <from D to VP> is information that's specific to 'customer satisfaction'. It is a major 'key thrust' for '95 and through '96. So a lot of our activities are around improving 'customer satisfaction'. Very high level **tours**(14), visiting customers, often impress the next level of management. We have a relatively high level **tour**(15) for the beginning of March <1996>, in which <customer> delegates from China are coming over, going to <another Company site>, going to <US Manufacturing>, and they'll also be visiting this site, which we're very very proud to be involved in that loop. So that they can understand how Staging fits into the order process flow, and how it drives quality improvements. So that ultimately the customer is pleased with the product that they're paying for."

16 "There is also other objectives, like we're supposed to get in whatever, two **tours** a year."

Table F.2
Set structure of the "highlights" reporting category, by reporting level.

Reporting Features (by Reporting Level)	Number of Instances per Feature	Average % Instances per Feature
Across All Levels (n=47 instances)		8.2 %
Good to Report to SM (n=23 instances)		12.6 %
Achievements	7	
Big; Significant; Important	7	
Good; Positive	7	
Make SM Look Good	4	
Tours	4	
Complete; On time	3	
Process Improvements	3	
SE's Objectives	3	
Customer Satisfaction related	2	
Personal Highlight; Achievement	2	
Problems; Concerns	2	
Problems Handled Well	2	
Average Instances/Feature	2.9	
Not so Good to Report to SM (n=6 instances)		66.7 %
Highlight the Negative	6	
Learn From Mistakes	4	
Problems; Concerns	4	
Problems Not Handled Well	4	
Problem That's Under Control	2	
Average Instances/Feature	4	
Good to Report to D (n=19 instances)		15.8 %
Big; Significant; Important	9	
Customer Satisfaction related	6	
Good; Positive	5	
Tours	5	
SM's Objectives	4	
Make SM Look Good	3	
Achievements	2	
Strengthen the Business	2	
(Old) Cost Avoidance	2	
(Old) High Profile Orders	2	
Average Instances/Feature	3	

Not so Good to Report to D (n=8 instances)		29.7 %
Problems; Concerns	5	
Problem Not Handled Well	4	
Personal Highlights; Achievements	2	
Learn From Mistakes	2	
Process Improvements	1	
Things You Should Handle Yourself	1	
Average Instances/Feature	2.4	
Good to Report to VP (n=2 instances)		50 %
Achievements	1	
Big; Significant; Important	1	
Good; Positive	1	
D's Objectives	1	
Problems; Concerns	1	
Average Instances/Feature	1	
Not so Good to Report to VP (n=1 instance)		100 %
Highlight the Negative	1	
Average Instances/Feature	1	

Note: Features with less than 5% of instances for a level have been deleted for the sake of simplicity. They have, however, been included in the average and percentage calculations.

Table F.3
Set structure of the "problem" reporting category, by reporting level.

Reporting Features (by Reporting Level)	Number of Instances per Feature	Average % Instances per Feature
Across All Levels (n=286 instances)		5.5 %
Good to Report to Installer/IC (n=12 instances)		41.7 %
Staging Problems (s)	11	
Escalation (ns)	3	
Discipline (ns)	1	
Average Instances/Feature	5	
Not so Good to Report to Installer/IC (n=2 instances)		100 %
Internal Problem/Dirty Laundry/Solve Yourself (ns)	2	
Average Instances/Feature	2	
Good to Report to IM (n=15 instances)		35 %
Escalation (ns)	9	
There are no Problems (s)	8	
Discipline (ns)	2	
Problem Need to be Solved (ns)	2	
Average Instances/Feature	5.25	
Not so Good to Report to IM (n=6 instances)		25.7 %
Discipline (ns)	3	
Problem Needs to be Solved (ns)	2	
Internal Problem/Dirty Laundry/Solve Yourself (ns)	1	
Staging Good for Customer/Solves Problems (s)	1	
Average Instances/Feature	1.8	
Good to Report to ID (n=13 instances)		24.7 %
Is Staging Worth the Manpower? (m)	10	
Mostly Repeat Staging Problems (s)	4	
Staging Problems (s)	3	
#Problems per Frame (s)	2	
Root Cause (s)	2	
Cost of Staging (m)	2	
Sample not 100% Stage (m)	2	
RC Few Solved (ns)	2	
Make ID Look Good (s)	2	
Average Instances/Feature	3.2	

Not so Good to Report to ID (n=5 instances)		23.3 %
Problem Needs to be Solved (ns)	2	
Company Look Bad to Customer (ns)	1	
Internal Problem/Dirty Laundry/Solve Yourself (ns)	1	
Personal Conflicts (ns)	1	
Field Problems since Staging has Manpower (ns)	1	
Discipline (ns)	1	
	1.2	
Good to Report to OE (n=13 instances)		42.5 %
Staging Problems (s)	29	
Escalation (ns)	6	
Problem Needs to be Solved (ns)	2	
Average Instances/Feature	12.3	
Good to Report to SM (n=23 instances)		14.0 %
Staging Problems (s)	34	
#Problems per Frame (s)	20	
Cost Avoidance (s)	18	
Root Cause (s)	15	
Problems Handled Well (s)	8	
Problem Needs to be Solved (ns)	7	
Escalation (ns)	6	
RC Chronic Problem to Solve (ns)	6	
Staging Good for Customer/Solves Problems (s)	5	
RC Solved; Working on; Analysis (s)	4	
Sample not 100% Stage (s)	3	
Average Instances/Feature	11.5	
Not so Good to Report to SM (n=23 instances)		21.7 %
Internal Problem/Dirty Laundry/Solve Yourself (ns)	11	
Problems Not Handled Well (ns)	10	
Problem Needs to be Solved (ns)	5	
Learn From Mistakes (ns)	3	
Manufacturing Late Delivery (ns)	2	
Make Manufacturing Look Bad (ns)	2	
Spec Writer Tracking (ns)	2	
Average Instances/Feature	5	
Good to Report to D (n=48 instances)		20.8 %
Root Cause (s)	31	
RC Solved; Working on; Analysis (s)	18	
Sample Not 100% Stage (s)	7	
There are no Problems (m)	6	
Work Self Out of a Job (s)	5	
Make D Look Good (s)	2	
(Old) Staging Problems (s)	9	
(Old) Cost Avoidance (s)	7	
(Old) Staging Good for Customer/Solves Problems (s)	5	
Average Instances/Feature	10	

Not so Good to Report to D (n=70 instances)		17.2 %
Staging Problems (ns)	56	
Make Manufacturing Look Bad (ns)	39	
Cost Avoidance (ns)	20	
Manufacturing Late Delivery (ns)	15	
Cost of Staging (ns)	15	
Internal Problem/Dirty Laundry/Solve Yourself (ns)	10	
#Problems per Frame (ns)	10	
RC Few Solved (ns)	7	
Staging Good for Customer/Solves Problems (ns)	5	
RC Cost Avoidance (ns)	4	
Average Instances/Feature	12.1	
Good to Report to VP (n=11 instances)		45.5 %
Root Cause (s)	11	
RC Solved; Working on; Analysis (s)	5	
Sample Not 100% Stage (s)	2	
Make D Look Good (s)	2	
Average Instances/Feature	5	
Not so Good to Report to VP (n=23 instances)		36.7 %
Staging Problems (ns)	21	
Make Manufacturing Look Bad (ns)	17	
Cost of Staging (ns)	9	
Cost Avoidance (ns)	7	
Internal Problem/Dirty Laundry/Solve Yourself (ns)	7	
RC Few Solved (ns)	6	
#Problems per Frame (ns)	4	
Manufacturing Late Delivery (ns)	3	
Staging Good for Customer/Solves Problems (ns)	2	
Average Instances/Feature	8.4	

Note: Features with less than 5% of instances for a level have been deleted for the sake of simplicity. They have, however, been included in the average and percentage calculations.

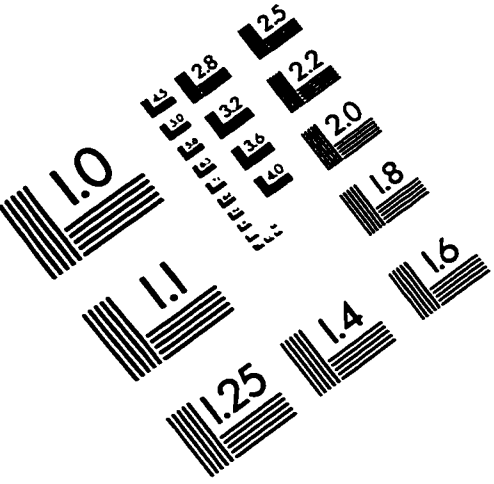
Table F.4
Set structure of the "Root Cause" reporting category, by reporting level.

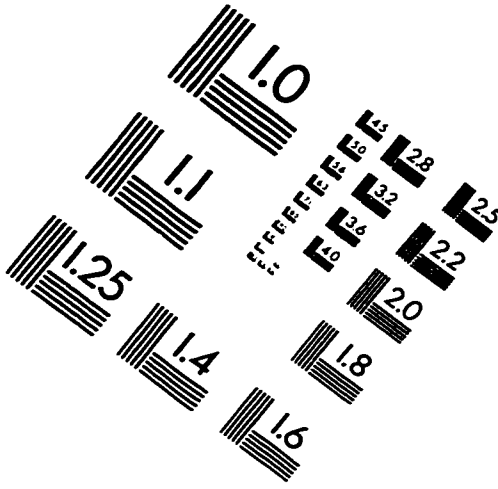
Reporting Features (by Reporting Level)	Number of Instances per Feature	Average % Instances per Feature
Across All Levels (n=137 instances)		8.3 %
Good to Report to SM (n=46 instances)		13.2 %
Objective	11	
RC Analysis; Working on	11	
RC Solved	10	
RC Process; Procedures	10	
Success	9	
Hard to Define; Quantify Success	7	
Root Cause	6	
RC Chronic Problem to Solve	4	
Average Instances/Feature	6.1	
Good to Report to D (n=60 instances)		15.5 %
Root Cause	33	
RC Solved	16	
RC Analysis; Working on	16	
Objective	11	
Work Self Out of a Job	10	
Make D/VP Look Good	4	
Success	4	
Sample Not 100% Stage	4	
Average Instances/Feature	9.3	
Not so Good to Report to D (n=31 instances)		25.2 %
Cost Avoidance	19	
Cost of Staging	11	
Staging Problems	11	
RC Few Solved	10	
Make Manufacturing Look Bad	9	
RC Cost Avoidance	5	
Impact of Staging Problems on Company	5	
Band-aid Staging	4	
Manufacturing Late Delivery	3	
Average Instances/Feature	7.8	

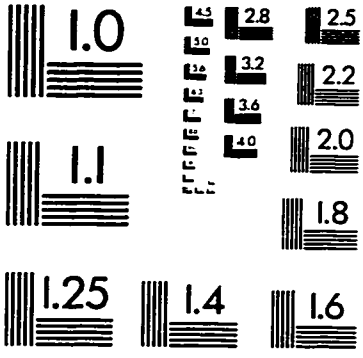
Good to Report to VP (n=30 instances)		20.5 %
Root Cause	15	
RC Solved	12	
RC Analysis; Working on	10	
Work Self Out of a Job	8	
Objective	6	
Success	3	
Sample Not 100% Stage	2	
Make D/VP Look Good	2	
Average Instances/Feature	6.6	
Not so Good to Report to VP (n=15 instances)		35.8 %
Cost Avoidance	9	
Staging Problems	7	
Cost of Staging	7	
RC Few Solved	6	
Make Manufacturing Look Bad	5	
Band-aid Staging	5	
Manufacturing Late Delivery	3	
Average Instances/Feature	5.4	

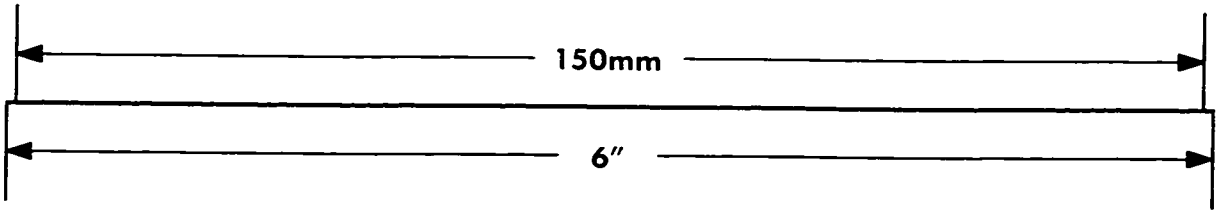
Note: Features with less than 5% of instances for a level have been deleted for the sake of simplicity. They have, however, been included in the average and percentage calculations.

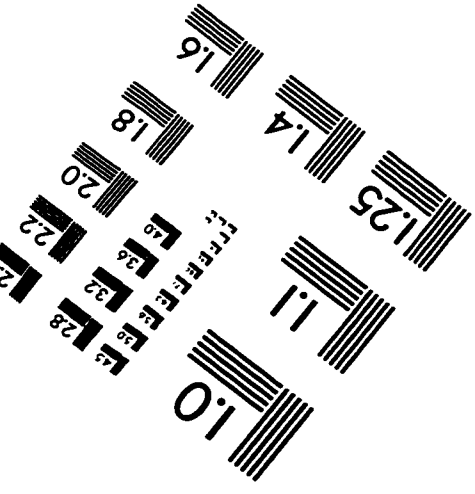
IMAGE EVALUATION TEST TARGET (QA-3)

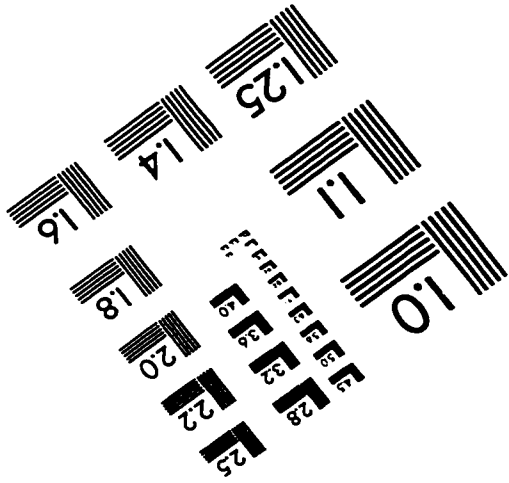












APPLIED IMAGE, Inc
1653 East Main Street
Rochester, NY 14609 USA
Phone: 716/482-0300
Fax: 716/288-5989