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Fit, Failure, and the House of Horrors: Toward a Configurational Theory of IS Project Failure

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Abstract

Intensive research on IS project risk and failure over three decades has not enabled practitioners to prevent a continuing high level of failures. The configurational theory of organizational performance is proposed as the starting point for an alternative account of IS risk and failure. A case study is used to demonstrate the theory's potential by showing the connections between weak configurational fit, project behaviors, and modes of failure. The core proposition of a configurational theory of IS failure is that weak configurational fit causes failure modes by encouraging behaviors conducive to failure and inhibiting better alternatives. The new theory provides a unifying account of the occurrence and persistence of apparently disparate risk factors by explaining them at the level of the organizational configuration. The theory shifts the focus for research and practice onto general management of the organizational configuration and away from project practices. It highlights the need for new roles for business managers and IS project managers in managing IS project risk.

Keywords: IS failure, configurational theory, organizational management, top management support, IS project management, clinical information systems.

1. INTRODUCTION

IS failure remains an important, unsolved problem. Failures have been (1) persistent, insofar as failure rates have not declined over the last 10 years (Johnson 1995), (2) pervasive, insofar as failures occur even in companies with a track record of successful IS, such as American Airlines (Oz 1994) and the Commonwealth Bank of Australia (Maiden 1996), and (3) pernicious, insofar as direct and consequential costs can be severely damaging as, for example, in Taurus (Drummond 1996), SOCRATE (Eglizeau et al. 1996; Mitev 1996), and DIA (Johnson 1995; Montealegre et al. 1996a, 1996b). The problem has been intensively researched over three decades. Many of the most common causes of risk and failure found in early studies recur in contemporary research (Barki et al. 1993; Schmidt et al. 1996). The idea that failures persist either because of incompetence or widespread disregard for both the research

findings and industry experience is implausible and counter to the evidence—for example, the Taurus project manager at the London Stock Exchange was viewed as highly competent and had a successful track record (Drummond 1996). More plausible is the idea that IS project managers are unable to satisfactorily manage many of the most common causes of failure. What is needed is a theoretical account of the forces which might lock an organization into decisions and behaviors that lead to failure.

This paper analyses an IS project that experienced several different types of failure (Lyytinen and Hirschheim 1987). It uses organizational analysis in terms of configurational fit (Miles and Snow 1984, 1994) to demonstrate that key behaviors were consistent with some parts of the configuration but that because of the configuration's weak fit, for example between its centralized strategy and decentralized structure, these behaviors were not consistent either with each other or with the task of advancing the technology project. It also shows that the organizational configuration provided reasons for not avoiding known risk factors.

The paper's contribution is to propose a theory of IS failure based at the level of the organizational configuration. It promises a unifying account of the occurrence and persistence of apparently disparate risk factors. The theory shifts the focus for research and practice onto general management of the organizational configuration and away from project practices. It highlights the need for business managers to see IS projects not merely as the isolated initiatives of a discrete technical function, but as organizational initiatives whose change implications have to be reconciled with their overall approach to managing the organization.

2. IS FAILURE AND CONFIGURATIONAL THEORY

IS failure comes in many forms, referred to here as modes of failure. These include correspondence failure (failure to meet system objectives); process failure (cost and schedule overruns, problematic development and implementation); interaction failure (non-use of the system) (Lyytinen and Hirschheim 1987); and escalation (unnecessarily aggravated overruns) (Keil 1995; Keil et al. 1995; Newman and Sabherwal 1996). The concern in this paper is with the fact that IS projects frequently experience these various modes of failure rather than with any one mode. The objective is to identify underlying conditions that make IS projects so problematic.

The dominant stream of research on IS failures has been devoted to discovering factors associated with failure. It has been predicated on the assumption that if causes of failure can be detected, management can straightforwardly eliminate them. Early studies focused on individual level explanation (Ackoff 1967; Dearden 1972; Morgan and Soden 1973) while subsequent studies have highlighted the importance of social and behavioral explanations (Boland and Hirschheim 1985; Colton 1972; Lucas 1975). Some researchers have moved beyond the identification of factors to developing more general implementation frameworks (Cooper and Zmud 1990; Davis 1989; Kwon and Zmud 1987; Lucas et al. 1990; Schultz and Slevin 1975; Swanson 1988).

Process research has sought to get beyond factors and has advanced various frameworks with different emphases including the interactionist perspective (Markus 1984), the interpretivist perspective (Davis et al. 1992; Myers 1994; Myers and Young 1995; Walsham 1993), and the exchange/dependence perspective (Sauer 1993). Studies have attempted partial tests of process frameworks (Beynon-Davies 1995; Myers and Young 1995), but none has received extensive, rigorous validation nor been widely accepted.

A strong focus of factor and process studies has been on organization. However, the role of organization in influencing the whole range of activities that can affect project outcomes is rarely elaborated. This paper uses the configurational theory of organization to illustrate how undesirable risk-related behaviors can be a logical outcome of a particular form of organization.

Configurational theory of organizational performance (Miles and Snow 1984, 1994; Miller 1996) provides an account of organizational relationships that has already been applied to parts of the IS domain (Henderson and Venkatraman 1992), though not widely (Iivari 1992) and not specifically to projects. Applying it to IS failure is consistent with the view that failure is organizationally rooted.

The concept of a configuration can be explained by starting with the more familiar concept of the fit between an IS and its organizational context. An IS is said to fit its organizational context if it is consistent with it. For example, a system that gives a doctor access from anywhere in a hospital or in her consulting rooms to the combined results of the clinical tests for a patient and permits immediate ordering of therapy or further tests fits the way hospital doctors work. However, if the results can only be accessed from a single location in the hospital, the system does not fit the task. This is a simple, bivariate fit between system and organization. By contrast, an organizational configuration involves a multivariate fit among the principal components of an organization such as its strategy, structure and technology (Doty and Glick 1994). In this case, it is not just consistency between two components (technology and organization) that is required but consistency among the multiple components that constitute an organization. This consistency is often characterized in terms of organizing themes (Miller 1996) or logic (Miles and Snow 1984). When there is consistency (tight fit) among these different components, for example when a diversification strategy is combined with a decentralized structure and a distributed technology, the organization achieves high performance. Conversely, the fit will be weaker and the performance will suffer if the diversification strategy and decentralized structure are combined with centralized technology because logic is hard to discern in the configuration.

A particular strength of configurational theory is that it provides a behavioral explanation of performance. The logic apparent in tight fit makes it easy to understand how the organization works. This simplifies decision-making and promotes consistent behaviors, leading to sustained high performance and candidacy for a "Management Hall of Fame" (Miles and Snow 1984, 1994). By contrast, a weak fit lacks this logic and hence does not encourage a consistent set of behaviors.

Weak fit can affect an IS project in two ways. First, the organization may be in weak fit prior to the IS project. In this case, poor decisions may be taken because behaviors are not driven by a single dominant configurational logic. For example in an organization with a decentralized structure but highly centralized human resource processes for IT, it may prove difficult for business units to obtain and manage IT staff. Problems with their IT projects caused by staffing difficulties can be put down to the weakness of their existing organizational fit. Second, the IS project may not fit the existing configuration in which case stakeholders may be expected to pursue behaviors that are driven by the organization's dominant logic but are incompatible with advancing the project. Sauer and Burn (1997) give the example of ResourceCo which selected a system for its old configuration but by the time it was implemented the organization was in transition to a different configuration. ResourceCo wrote down the asset value of the system by 50% in the first year.

The objective in the following case study is to demonstrate how the incompatibilities that constitute weak fit affect IS projects. The purpose is not to provide a full causal explanation of why this particular project was abandoned (see Southon et al. 1997). Rather, the purpose is to explore the relationship between the fit of the organizational configuration and certain problems experienced in this project which are more or less common in IS projects and are referred to here as failure modes.

3. CASE STUDY

3.1 Research Method

Case studies are an appropriate method for developing theory where a fresh approach is required (Benbasat et al. 1987; Eisenhardt 1989). In this instance, the research started with a hunch that configurational theory provides useful constructs. A single case is sufficient to permit exploration of the connection between weak fit, dysfunctional behavior, and modes of failure. Once the connection is demonstrated, the basis of the analysis in an existing theory justifies proposing a theory with potential application beyond the one case. The ability to demonstrate within the case the connection with a range of common failure modes gives ground for confidence that configurational analysis can explain the generally problematic nature of IS projects.

3.2 Data Collection And Analysis

The research was conducted at NSW Health between February and June 1996 by three researchers. Data collection involved interviews and document review. All relevant files were made permanently available allowing iterative reading of key documents so as to triangulate data emerging from the interview process (Eisenhardt 1989) and validate interpretations.

A total of 64 people were interviewed including staff from all relevant organizational locations within NSW Health (the corporate center and five pilot sites), former employees, and vendor staff. Interviewees included current and former directors and deputy directors of central and area IT, area CEOs, hospital general managers, administrators, senior clinicians, site project managers, and staff, and the vendor's senior and middle managers. Because interviewees had varied involvements and experience with the case, sets of questions were tailored from a bank devised at the start of the study and continually revised to ensure coverage of all potentially relevant data. Interviews were tape recorded and transcribed where possible. Detailed field notes were taken. Many interviews were conducted by two researchers as this was found to improve comprehensiveness and provide a validity check on interpretations. There were some group interviews, and some by telephone. Interview duration varied between 45 minutes and three hours.

Analysis commenced during data collection. The researchers maintained a consistent discipline of sharing data and interpretations by regular e-mail communication and fortnightly meetings. This enabled continuing critical assessment of progress, permitted follow-up where necessary, and led to appropriate closure when a stable balance developed between convergent and divergent perceptions (Eisenhardt 1989).

The initial analytical objective was causal explanation of the problems NSW Health experienced with its clinical system and its final abandonment of the system. Problematic outcomes were identified as they were uncovered and causal chains posited (Miles and Huberman 1984). These were reviewed against different sources of data and accepted, rejected, or judgement was reserved pending collection of further relevant data. Iteration of this process led to a satisfactory explanatory account of which behaviors led to which outcomes. However, it did not explain why such behaviors occurred in the first place. For this paper, therefore, the researchers identified a number of behaviors that are commonly associated with IS risk, somewhat as Davis et al. identified anomalies to be explained. This was followed by iterative explanation building (Yin 1994) with configurational theory as the theoretical starting point, using the constituents of the MIT90s schema as the principal components, of an organizational configuration, viz strategy, structure, technology, management processes, roles and skills (Scott Morton 1991). Relationships between decisions or behaviors, failure modes, configurational components and incompatibilities among them were compiled into an explanatory effects matrix (Miles and Huberman 1984)—see Table 2 in the analysis section.

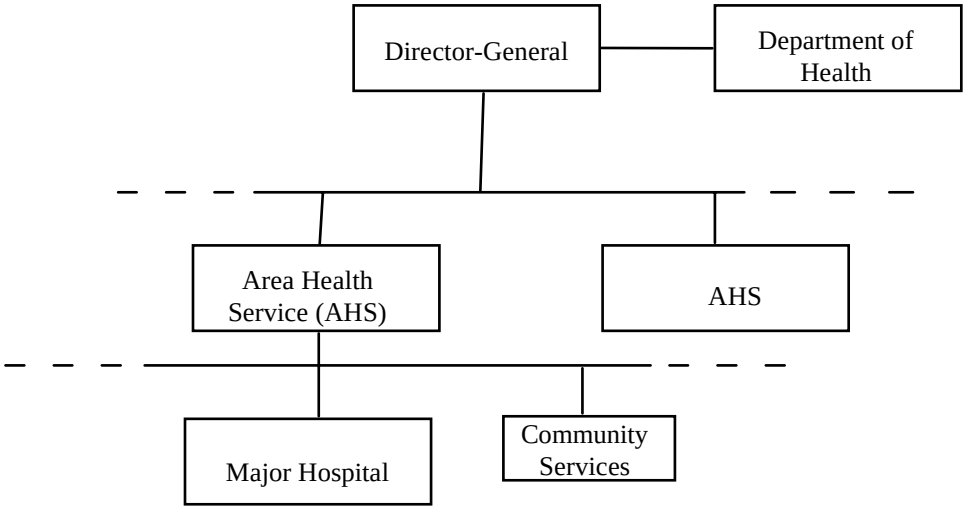

Figure 1. NSW Health's Geographically Divisionalized Structure

Data and interpretations have been checked with NSW Health through an interim report, a detailed final report, and two formal presentations.

3.3 Case Description

3.3.1 Background

New South Wales (NSW) is the most populous state in Australia, with over 7 million people in an area larger than Texas. Integrated hospital and community services are provided by the state-administered, A$6 billion, public health service (NSW Health).

In 1989, a key NSW Health strategy was "containment of activity within budget." The organization had a geographically divisionalized structure (Figure 1). The Department of Health was the corporate center responsible for statewide funding and policy.

In NSW, hospital-based care is provided by the Area and District Health Services (referred to here as Areas) whose CEOs have significant independence. Areas typically include one major hospital and several smaller community care units. The hospitals are a mixture of machine and professional bureaucracies, with the management hierarchy responsible for managing funds and performance while health professionals, especially doctors, have substantial autonomy in patient treatment (Yetton and Johnston 1997; Yetton et al. 1994).

NSW Health manages IT according to a federal structure (Zmud et al. 1986) (Figure 2). The department has an information management group (central IT) which establishes technical and information standards and manages the state's IT strategy. Areas have IT staff who maintain local operations, support software, develop applications, and provide policy support for their own administrations. Major hospitals either have IT units or use Area IT as their own.

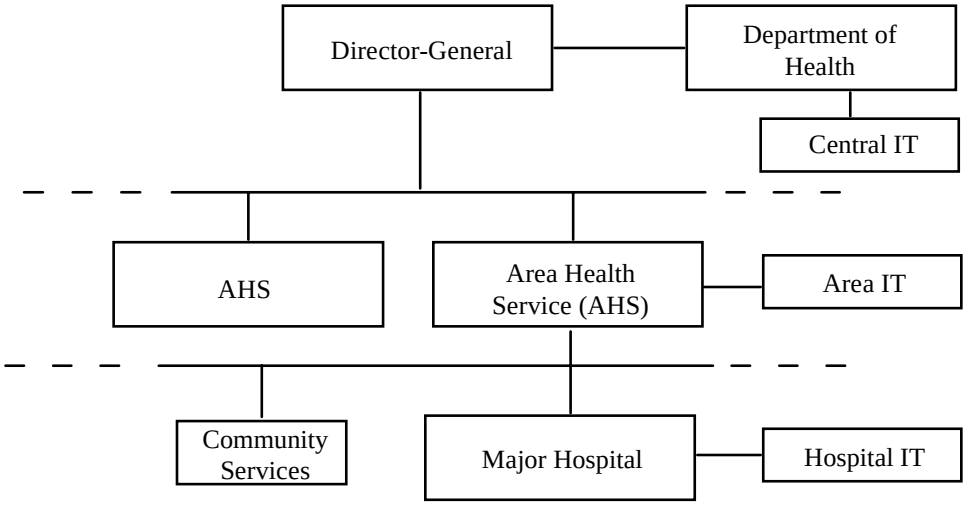

Figure 2. NSW Health's Federal Structure for IT

3.2.2 IT Strategy

In 1989, NSW Health initiated an IT strategy aimed at more efficient resource management through better information. More than A$140 million was earmarked by the NSW Treasury. The strategy was overseen by an information services steering committee (ISSC) including policy makers and IT specialists but dominated by Area CEOs.

The core of the strategy was the purchase of a new suite of systems, starting with financial, pathology, and clinical applications. The focus of this case is the clinical system comprising the patient administration system (PAS), which handled patient record-keeping, registration, admission and transfer, and the order communication system (OCS). PAS was not expected to provide significant new functionality, but was the foundation for OCS to provide benefits.

In the old ordering process, doctors scribbled orders for pathology and radiology tests on a form at the bedside, signed it, and gave it to ward staff to complete and send to the laboratory. Results became available on visual display unit direct from laboratory systems but were not aggregated for each patient. By contrast, OCS included a clinician order entry sub-system (OES), for ordering services from a ward terminal, and a results reporting sub-system (RRS), by which clinicians would access test results linked to the patient record. Clinical, laboratory, and financial data could then be combined to provide management with profiles of resource use and their costs. It was believed that the technology would streamline clinical, laboratory, and administrative services.

A "best of breed" policy was adopted for the strategy, with an integration strategy to link the applications. The policy for each application was to select one product for the state, identify a range of hospital sites to pilot it, tailor it to "localize" it if it came from overseas, and let a project team in each site implement it. The internal stakeholders in the clinical project were NSW Health's central IT, Area and hospital managers and administrators, site project teams, and clinicians.

3.3.3 System Selection

There was an active search for a clinical system—tenders were called in Australia with overseas suppliers able to respond. Selection was coordinated by central IT. There was not substantial user participation although the selection team included Area IT specialists and people with medical backgrounds. Tenders were screened to form a short list and product trials were run with set-piece scenarios. No system met the specifications. However, feasibility of the strategy required a product be found. Having been implemented in more than 100 sites worldwide, the system finally selected was believed to be the best available.

3.3.4 Pilot Site Identification

Areas were invited to bid for their hospitals to become pilot sites. Funding was to be shared (one-third from earmarked funds and two thirds from the Area) so as to give Areas sufficient incentive to become pilots but not so much that it would discourage their pursuing business payback. In any event, Areas proved reluctant to make this commitment until the contribution from Treasury funds was increased to 80%. This enabled them to renew their IT infrastructure at little cost. It was essentially free capital. Thus, "After the 80% subsidy, [the pilot sites took the view] we'd better get this money."

Sites bidding to become pilots were required to develop independent business justifications. However, because the strategy was justified in terms of intangible benefits, sites were able to bid successfully with loosely defined business objectives. Initially, three sites were chosen to pilot PAS/OCS. To demonstrate the viability of integrating it with laboratory and financial systems, two further pilot sites were subsequently approved.

3.3.5 Localization

Prior to implementation, which was to be conducted under three-way contracts (vendor, site and Department), the product had to be localized for conditions in NSW. Central IT wanted sites to adapt their operations to the system thereby minimizing changes and enabling rapid implementation. However, the priority of the sites was to ensure that the system would serve them effectively. They had not been party to the development of the strategy, had little involvement in the selection of the system, and had little other than sales presentations on which to base their expectations: "I didn't get to see it until four months into the implementation process." When users saw the system, they considered it seriously deficient: "We all managed to go over...and see the product and it was there right at the beginning where [name deleted] and I nearly fell on the floor...there were so many fundamental problems." They argued for many more changes than central IT wanted. Because of the three-way contracts, the supplier was unsure whether its "real" customer was central IT or the sites. The result was a period of site-center conflict for the resolution of which there were initially no adequate operational mechanisms. An unsatisfactory compromise was negotiated, leaving substantial deficiencies in the product but requiring changes that delayed the project by a year and added costs in the order of A$1 million.

3.3.6 Implementation

Site project teams encountered numerous difficulties in preparing for implementation. There had been little consultation at the operational level prior to their approval as pilots. There was little horizontal sharing of information across the sites: "The pilot hospitals were isolated from each other." Likewise vertical communication and overall coordination suffered from inadequate mechanisms that would allow substantive issues to surface at a level at which they could be effectively acknowledged and addressed. A consultant's report, dated April 1995, implicitly made this point in discussing beneficial changes introduced in the second half of 1994:

> The steps taken to develop a structure to support this project over the last six months have had some success. The management process has begun to draw out many complex issues which face the implementation of a clinical solution. It is due to this focused effort, particularly by the user groups, that the extent of the "usability" concerns have begun to be defined. It has also highlighted many practical difficulties....It cannot be stressed enough that a great deal has been learned about the true complexity of this project.

Staged implementation was planned: PAS , then OES, then RRS. PAS was implemented with some success in four sites but was indefinitely delayed in the fifth. There were, however, significant problems relating to training, acceptance by some nurses, data quality, and the performance of the report generator.

OCS was more problematic. System use involved clinicians passing through four levels of log-in, some with obscure passwords, entering each test directly into the computer using a complex screen navigation system, requiring access to up to 11 screens and using up to 43 key strokes for a single test. A task that previously took 20 seconds now took several minutes. The system did not have a windows-based interface and was found to be user unfriendly by the clinicians. It took a lot of time to learn for those who used it consistently, and was difficult to master for those who didn't. Clinicians incurred costs but gained little benefit: results reporting was unavailable because of interfacing problems when order entry was implemented. If there was any gain it was in enabling management to monitor clinical activity. There were strong complaints by clinicians leading to collective protest in several cases, and at one site outright refusal to use OCS. Clinicians had mostly not been consulted until close to implementation, partly because they would be unlikely to sacrifice health care activities for a consultative process and partly because project teams for the sites had limited understanding of clinicians' needs and likely responses. (In the one site where extensive consultation occurred, implementation was never started.)

Of the four sites that implemented PAS from 1993 onward, the rural hospital implemented OCS for a period of 15 months. A smaller urban hospital implemented it for just six weeks. One major hospital implemented it for orders for minor services only. The rural hospital was publicized as a success. However, a post-implementation review conducted by central IT was more qualified in its evaluation.

Reports subsequently commissioned by NSW Health from an independent consultant concerned the ongoing organizational difficulties and the poor functional fit of the product. This report, and evaluation of monitoring set up by the report process, led to a decision to withdraw PAS/OCS.

3.4 Case Analysis

The unit of analysis (Yin 1994) is NSW Health's effort to select, diffuse, and implement PAS/OCS. The focus is on some of the problems it experienced in this effort. The analysis (1) identifies the incompatibilities which constituted weak fit in NSW Health's organizational configuration, (2) shows how the configuration provided reasons for behaviors that, because of weak fit, led to certain failure modes, and (3) shows that the configuration's weak fit militated against "better" alternatives. This leads to the conclusion that the configuration was the source of those failure modes discussed here. The lack of fit between the technology and NSW Health's requirements which ultimately led to the cancellation of the project is discussed elsewhere (Southon et al. 1997).

3.4.1 Configurational Incompatibilities

Table 1 lists incompatibilities which contributed to weak fit in NSW Health's configuration.

Table 1. Configurational Incompatibilities at NSW Health

Incompatibility	Description
1 Strategy-structure	Centralized cost focus of strategy vs. decentralized divisional structure.
2. Structure-roles (in hospitals)	Machine bureaucratic administrative structure vs. autonomous clinical roles.
3. Management process-strategy-structure	(a) The funding process was outside the normal budget process. The center was deprived of the ability to use funding decisions to influence strategy implementation. For the sites, the funds were free capital. (b) Tripartite contracts required a juggling act. They only partly supported pursuit of the strategy because they gave sites a say with the vendor. They only partly supported pursuit of site interests because they gave the center a say. Progress required time-consuming negotiation and compromise.
4. Strategy-structure-skills	Centralized strategy and decentralized structure vs. lack of IT and organizational change skills in central IT and sites.
5. Technology-roles	The implemented OCS proved incompatible with clinical roles oriented to health care rather than routinized clerical duties.

3.4.2 System Selection

The decision to select a PAS/OCS, which did not meet the requirements of the sites, led to a correspondence failure. Three incompatibilities militated in favor of the decision. First, the centralized strategy required a system to ensure its viability while the decentralized structure meant that the selection team felt that it was not responsible for the interests of the sites—sites were not forced to pilot. Second, the inclusion of sites in the contracting process reinforced this feeling. Third, the fact that the funding was externally sourced and hence that the selection team would not bear any financial cost of an adverse outcome may have encouraged the selection team to take more of a risk than had they been directly accountable.

The configuration created a difficult situation for central IT. The strategy was driven by the ISSC consisting of Area and site managers, yet central IT remained a part of the Department of Health. The possibility of acknowledging that the system did not meet requirements and aborting the tender was made particularly difficult because this would have undermined the strategy. The incompatibility between strategy and structure also militated against a more consultative selection process because it implied a high time-cost for a negotiated settlement between central and site interests.

3.4.3 Funding Ratio

The decision to offer sites an 80-20 funding deal eliminated most of the incentive for sites to secure a business payback. It therefore increased the direct cost of the system (i.e., the cost not met from site budgets) from 33% of system costs to 80% without offsetting productivity gains, thereby creating a process failure in the form of a cost blow-out. The decentralized structure encouraged sites to pursue their own interests in respect of 80-20 funding. The funding was linked to the strategy but not in a way that encouraged accountability. Central IT was not in a position to effectively initiate corrective action.

3.4.4 Localization Changes

Insistence by the sites on substantial changes to the system and central IT's resistance caused conflict and process failure in the form of delay. The number of changes resulted in process failure in the form of a cost blow-out. The

decentralized structure encouraged sites to minimize innovation risk by making the system as like their old system and practices as possible. On the other hand, the centralized nature of the strategy meant that central IT had to fight to retain uniformity or risk loss of corporate benefits. It had to pursue rapid implementation because the strategy required widespread adoption after completion of the pilots if the strategic benefits were to be realized. Furthermore, the contracting arrangements reinforced both central IT and site behaviors while funding encouraged sites.

The configuration militated against alternative behaviors. For the center to have conceded all of the changes required by the sites would have increased the costs and added to the delay while the supplier implemented them. For the sites to have accepted the system without change would have been to incur all of the costs of the system's deficiencies—increased degree of correspondence failure and likely interaction failure for both PAS and OCS—without offsetting benefit. The configuration contained no structure or process to motivate sites to act for the good of the central strategy when it did not also serve their interests.

3.4.5 Site Implementation

There was considerable local variation in implementation leading to problems and delays, resulting in varying degrees of process failure. Decentralized management of implementation was consistent with the structure but not with the need to expedite the central strategy nor with the lack of site IT and organizational change skills. The lack of encouragement for inter-site communication followed from the need to expedite the central strategy but further limited the ability of the sites to implement successfully.

There were alternatives for implementation but none was certainly better. A centrally managed implementation would have been problematic in a decentralized structure. Moreover, central IT did not have the skills. The alternative of acquiring the skills either centrally or at the sites had the disadvantage of being time consuming—one site that employed a consultant project manager and attempted a fully professional implementation process suffered a complete process failure, being the only site to implement nothing.

3.4.6 Rejection of OCS

The OCS was an interaction failure because of the failure of selection and localization to produce a system that helped clinicians, and because of the clinicians' freedom to reject it. The technology, selected to advance the strategy to achieve overall cost containment ("containment of activity within budget"), was incompatible with clinicians' roles, which were oriented to effective delivery of health care.

There were few alternatives to prevent rejection. The sites' professional bureaucratic structure meant that project teams had limited knowledge of clinical practice, and the professional autonomy of doctors meant that few would get involved in a technology adaptation exercise early enough to permit adequate tailoring of OCS. Projections were unable to insist on clinician compliance because of the professional autonomy of the doctors. Thus the incompatibility between the machine bureaucratic administrative side of the hospitals and the professional clinical side worked against a management alternative to reduce the risk of rejection. The solution of employing ward clerks to perform order entry was counter to the strategy's focus on more efficient deployment of resources.

Table 2. Summary of Connections Between Weak Configurational Fit and Failure Modes

Decision/Behavior	Failure Mode	Configurational Factors	Incompatibility
System selected which did not meet requirements	Correspondence (poor match with requirements)	Central strategy demands selection but divisional structure suggests sites will look after their own interests	Strategy-structure
		Central belief in sites' responsibility reinforced by inclusion in contracts	Management process-strategy-structure
		External funding means central selection team does not bear direct financial cost of risky selection	Management process-strategy-structure
Funding ratio changed to 80-20	Process (cost overrun)	Decentralized structure encourages sites; accountability for funding not linked to strategy or sites	Management process-strategy-structure
Conflict over extent of localization changes	Process (cost and schedule overrun)	Decentralized sites pursue local self-interest in maximizing changes, central IT pursues strategic interest in minimizing change	Strategy-structure
		Contracts enable both stakeholders to pursue own interest, funding encourages sites	management process-strategy-structure
Site implementation difficulties	Process (cost and schedule overruns)	Decentralized implementation inconsistent with needs of strategy and available central and site skills	Strategy-structure-skills
		Lack of encouragement of inter-site communication	Strategy-structure
Clinicians reject OCS	Interaction (resistance)	Technology incompatible with clinician roles	Technology-roles
		Site teams have no structural authority over autonomous clinicians	Structure-roles
Communication breakdowns	Escalation	Inter-site communication not encouraged to avoid slowing strategy implementation	Strategy-structure
		Funding incentive for sites to escalate, not exit	Management-process-strategy-structure

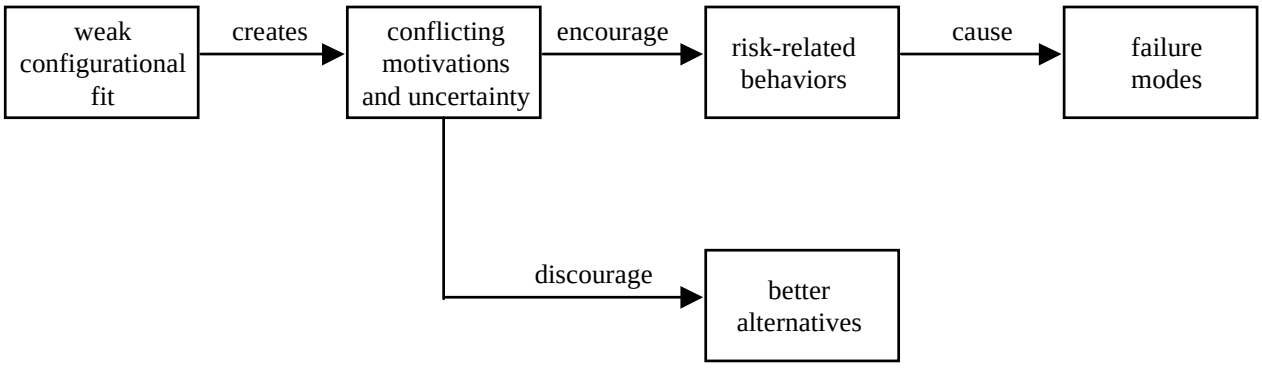

Figure 3. Core of Proposed Configurational Theory of IS Failure

3.4.7 Communication Breakdowns

There were several episodes in which communication of negative information was ineffective. Breakdowns of this type meant that the project continued longer and in more sites than it might have had the overall picture been transparent. The result was an escalation both of costs and duration. Sites were initially not encouraged to communicate because of legitimate concerns that this would lead to delays in progressing the strategy. At the same time, it deprived them of a source of information and ideas. This was a result of the tension between the centralist objectives of the strategy and the decentralized implementation and a cause of continuing tension between the sites and the center. Area executives' reluctance to voice complaints can be partly attributed to the funding incentive to pursue implementation despite severe difficulties. The concept of free capital further accentuated a lack of accountability and discouraged open communication.

3.4.8 Summary

The analysis has demonstrated the application of configurational analysis to IS project failure modes by showing, in the case of NSW Health, that the organizational configuration provided rational grounds for certain decisions and behaviors; that because of weak fit in the configuration those decisions and behaviors led to failure modes (Table 2); and that the configuration provided rational grounds for not adopting better alternative decisions and behaviors. In effect, therefore, the weak configurational fit was the deep cause of the failure modes described. Moreover, weak fit encouraged stakeholders to incur, rather than avoid, classic risks such as not involving users and not defining clear business benefits.

4. DISCUSSION

Configurational theory conceptualizes IS projects as part of a management choice about the way it organizes. IS projects and their outcomes are influenced by the way the whole organization is managed. The core proposition of the extension of configurational theory to IS projects is that weak configurational fit causes failure modes by encouraging behaviors conducive to failure and inhibiting better alternatives (Figure 3).

Weak fit is problematic in two ways. First, it may create competing motivations for different people in different parts of the organization as with the tension between strategy and structure at NSW Health. Second, in the absence of a

unifying theme or logic arising from tight fit, organizational players may be confused as to the appropriate decisions and behaviors in respect to achieving existing operational performance targets. Such confusion will be all the more problematic in relation to IS projects since these constitute a change in the way the organization achieves performance. Thus, a steering committee composed of business unit managers may have a coordination role for a new cross-divisional system, but within their business unit have responsibility only for that business. If there is no divisional management decision about how benefits and costs will be shared and resources allocated under the new system, it is unlikely that the steering committee will be able to give the IS project manager appropriate guidance.

Configurational theory of IS failure is pitched at the organizational level. It has not been used in this paper to explain the minutiae of individual behavior. This would be as inappropriate as expecting an organizational restructure to determine every individual's behavior. Rather, it spells out in general terms how underlying organizational conditions and dynamics may result in a range of behaviors associated with risk and failure modes. For example, lack of clear objectives is a known risk factor. At NSW Health, the lack of clear objectives for the site implementation projects was a logical outcome of a configuration where strategic benefits were principally corporate but implementation was decentralized.

In the past, there has been a tendency to divide risks as to whether or not they are apparently controllable by the IS project manager and to concentrate on project practices to manage the controllable risks. If configurational theory of failure is correct, it has two important implications. First, it suggests that some of the apparently controllable risks may have deeper roots which have prevented project managers from controlling them—hence the persistence of failures from familiar causes. Second, it suggests that many of the risks not directly controllable by the project manager in an organization in weak fit may be less likely to occur or become more manageable by IS project managers through appropriate adjustments by senior management to its management of the organization as a whole.

The configurational approach is important and valuable not merely because it shows that IS failure is rooted in the organization—this is well recognized—but because it presents this in a managerially accessible way. It makes the problem of IS failure and its causes comprehensible to general managers because it uses the very constructs they typically employ to manage. For this reason, it has the potential to result in more successful managerial interventions. Indeed, it throws new light on the role of top management support, which has been so commonly recommended in the past as an antidote to uncontrollable risks.

The implications for practice are considerable. Project risk management is not just a back-covering exercise by the project manager. It requires management at the level of the organizational configuration. Business managers, therefore, have a role to set the organizational conditions under which IS projects will be conducted. Managers who understand this will have to determine what they are prepared to change to facilitate the IS project. Some parts of the organizational configuration will be too competitively important to change. Others will be too costly. Yet others will not be changeable in the short to medium term. At NSW Health, for example, it would not have been possible to change the hospitals from professional to machine bureaucracies merely to mandate clinical acceptance of the system. It is also unlikely that NSW Health would have contemplated recentralizing its structure to support the new system even though it would have created a tighter fit with the strategy. However, if the organization is already in tight fit and a new IS project is compatible with it, the organizing logic can be expected to encourage normatively sanctioned systems development practice and discourage risk-related behaviors, or it will provide means for managing those risks incurred.

There will continue to be a role for project managers. The organizational configuration does not determine individual level behaviors. There is still much room for free action by the organizational players. What the theory suggests is that the project manager will be better supported by organizational structures and processes and more free of

constraint so as to be able to manage more effectively toward a successful outcome. There should be less need for top management to make project interventions to ensure success.

Where business managers are not prepared or able to make major configurational change and there is weak fit, the emphasis in IS project management shifts to managing around known incompatibilities. It will no longer be possible to satisfy all stakeholders because weak fit will promote the kinds of difficulty experienced by NSW Health. The project management task will become far more political, requiring communication, coordination, negotiation, conflict resolution, and the like. Top management intervention may be required to break down the barriers created by weak fit.

The alternative to this life of fighting brush fires is to concentrate on technology projects that fit some part or parts of the organization where existing incompatibility is least in evidence. This implies an IS policy of "small is beautiful" so as to minimize the number of organizational parts affected and hence reduce the scope for undesirable behavioral outcomes. For example, NSW Health's new approach to introducing a PAS is to reduce central involvement to the point where a single Area is acting as the lead site, the contract is between the Area and the supplier, and other Areas are watching with a view to subsequent adoption. Another variant of this approach has been applied in a different application area involving Area-based innovation within a consortium of Areas wishing to adopt (Southon and Yetton 1995). The approach proves successful where the technology fits the configuration, but, consistent with this research, innovation/diffusion is impeded by weak fit (Sharma and Yetton 1996).

Configurational theory is preferable to the risk factor approach alone because it provides a deeper level of explanation, which in turn helps explain why risk factors have often not been directly manageable by project managers and why many classic risk-related causes of IS failure modes have persisted despite their being well-known. It also suggests a different, more managerially familiar, level of intervention to reduce the likelihood of failure. However, the traditional risk factors are likely to be a more easily recognized symptom than degrees of configurational fit. There may, therefore, be benefit in trying to identify consistently occurring links between known risks and configurational incompatibilities so as to lead managers more rapidly to the source of problems.

Configurational theory is also preferable to simple bivariate models of IS-organizational fit because it provides a more encompassing and dynamic model of organization that demonstrates that there may be many different pressures affecting the organizational response to an IS project. It is also preferable to conflict theories. These tend to concentrate on structural sources of conflict (Pfeffer 1981) and be presented in an adversarial light. Configurational theory recognizes that conflict may result from structural conditions, but also recognizes that dysfunctional behaviors may arise from confusion at the mixed messages emerging from a configuration in weak fit. For example, correspondence failure because the user doesn't know what she wants will often be because of uncertainty and confusion on the part of the user rather than a conflict of IS-user interests. Thus, configurational theory offers more diverse and plausible explanations.

The application of configurational theory in this paper could be regarded as a special form of socio-technical theory where the focus is at the level of the business unit, division or corporation rather than, say, the department. It does not purport to explain individual-level behavior. It is thus complementary to individual level applications of socio-technical theory (Davis et al. 1992), and there may be benefits in merging elements of both approaches.

Much needs to be done to explore and develop the theory. This can be done through cases. For example, it would be beneficial to explore more successful projects at NSW Health to determine what elements of the configuration were different and what difference they made. Likewise, research at other similarly configured state health organiza-

tions would test the theory. Such further case explorations will help operationalize the theory for testing on large samples.

5. CONCLUSIONS

This paper has proposed a connection between configurational fit and IS project performance such that incompatibilities in organizational configuration appear to underlie many of the decisions and behaviors that result in classic failure modes. It has proposed the core proposition of a theory of IS failure that can explain negative outcomes in individual projects. The theory's appeal is manifold. It has a basis in an existing organizational theory. It is consistent with established belief in the importance of organizational and behavioral issues. It is consistent with previous factor research, but in addition helps explain the persistently problematic nature of IS projects, and hence why research has not led to better practice. Ideally, the role of business managers will be to create a configuration that permits the project manager to get on with development and implementation with the minimum of risk. Where this is not possible, the project manager's role is transformed into one of counteracting the effects of weak fit. Since these roles have not previously been well recognized, it is hardly surprising that rather than aspiring to a place in Management's Hall of Fame, so many organizations have found themselves candidates for the IS House of Horrors.

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