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A taxonomy of political processes in systems development

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Abstract. *Significant resources invested in information system development (ISD) are wasted due to political manoeuvres. Prior research on ISD politics has contributed mainly through theoretical development and case studies. This has enhanced understanding of relevant concepts, political tactics and conditions facilitating politics. However, there is limited understanding of the different processes through which politics unfold. This paper uses 89 ISD projects to develop a taxonomy of political processes in ISD. The taxonomy includes three distinct processes: Tug of War, wherein multiple parties strive to gain project control; Obstacle Race, which involves efforts to resist and pursue the project; and Empire Building, wherein the project is used as an instrument to enhance political or resource bases. The taxonomy is explained using the non-proponents' view of the project and the balance of power between system's proponents and non-proponents. We also discuss the emergent taxonomy's implications for how politics can be managed and studied.*

Keywords: politics, information systems development, taxonomy, power, event sequences

INTRODUCTION

Theoretical arguments, anecdotal evidence and empirical research support the belief that participants in information system development (ISD) projects often exhibit political behaviour (Markus, 1983; Orlikowski, 1989; Silva, 2007) that is affected by the organizational context, such as the organization's culture (Dube & Robey, 1999). Research on ISD politics (Hirschheim & Newman, 1988; Jasperson *et al.*, 2002) has helped in recognizing that not all actions in ISD projects are based on purely rational or technical considerations. Instead, participants in ISD projects are often motivated by material and career prospects, and take actions to protect or advance their self-interests (Grover *et al.*, 1988). For example, Orlikowski

(1989) describes patterns of coalition formation, rebellion, coercion, territorialism, resentment and stereotyping among teams implementing Computer-aided Software Engineering tools. Prior research has also recognized that despite often being presented as negative, politics also includes acts that are consistent with organizational goals (Knights & Murray, 1994).

Prior literature on organizational politics (Bardach, 1977), IS politics (Enns *et al.*, 2003) and politics associated specifically with ISD projects (Markus, 1983; Lapointe & Rivard, 2005) has produced a fairly good understanding of politics. A number of alternative theoretical perspectives have been employed to examine politics using interpretive methods (Sillince & Mouakket, 1997; Silva, 2007). Qualitative research has provided insights into the politics encountered in a variety of IS processes, including IS development (Myers & Young, 1997), software selection (Howcroft & Light, 2006), IS implementation (Markus, 1983; Doolin, 2004) and IS evaluation (Gwillim *et al.*, 2005).

The interpretive and qualitative studies have provided considerable insights into the nature of the political processes, and emphasized that each project differs from others in terms of the underlying political processes. However, the development of a theory of antecedents and consequences of ISD politics requires a parsimonious classification of the various ways in which politics *unfolds over time* during ISD projects. Such a classification of political processes in ISD can be developed theoretically (i.e. a typology) or empirically (i.e. a taxonomy) (Harrigan, 1985). But the complex nature of politics, with multiple participants and tactics, inhibits a deductive typology. In contrast, taxonomies better represent the complexities of the phenomenon although their development requires extensive data. This paper utilizes descriptions of 89 ISD projects, collected using full-time IS professionals participating in an on-site course, to develop an empirical taxonomy of political processes involved in ISD.

Each political tactic, as well as other events during the ISD process, might have different connotations, depending on what happens before or after it. For example, resistance immediately following project initiation might have a different rationale and effect than resistance after development and implementation. Therefore, this paper examines the dynamics of politics in each ISD project in terms of the sequences of events that occur over time (Abbott, 1990; Sabherwal & Robey, 1993; Pentland, 1999). This allows us to classify the processes based on the detailed events that constitute them, while also recognizing the history of events over time instead of viewing events in isolation. Moreover, examining politics in ISD processes using event sequences helps consider both the presence and absence of events, because a process with a particular kind of event within the sequence would be more distant from another process that does not include that event. This is important because prior research indicates that politics could lead to certain kinds of events (e.g. IS evaluation) not being performed (Doolin, 2004). An empirically derived and theoretically supported classification of political processes in ISD should provide a valuable starting point for the development of theory of ISD politics. Also, by understanding political sequences, it can also enable managerial interventions that improve ISD processes. In this paper we develop an empirical classification of political processes in ISD by using the process descriptions provided by participants in 89 ISD projects. We assume that the actions identified by these informants did occur, and that the informants were able to identify the political aspects of the process they described.

To establish the basis for the taxonomy, we first examine politics in ISD and develop a classification of events relevant to studying politics in ISD projects. The research methods are then explained, followed by a discussion of the taxonomy. The paper concludes by acknowledging some limitations of the study, examining the utility of the taxonomy and suggesting future research directions.

THEORETICAL BACKGROUND

Definitions of power and politics

The terms 'power' and 'politics' have both been utilized in several different ways in the prior literature. A detailed review of the various definitions of power (Sillince & Mouakket, 1997; Jasperson *et al.*, 2002) and politics (Drory & Romm, 1990) is beyond the scope of this paper. In this section, we draw upon some of the prior perspectives on power and politics to develop the definitions we use in this study.

Some prior definitions of power focus on the behaviour of individuals (Dahl, 1957; Tushman, 1977). Dahl (1957) defines power as the ability to get someone to do something against their own will. Tushman (1977, p. 207) defines power as 'the potential (or capacity) of an actor to influence the behavior of another actor in a particular issue area.' Some other authors focus on tasks (Knights & Murray, 1994; Robey & Sales, 1994). For example, Knights & Murray (1994) view power as the ability to influence not only others' decisions, but also the issues that are available to decide upon. Robey & Sales (1994, p. 269) define power as 'the ability to get things done the way one wants them to be done.' Combining the behavioural and the task-oriented views, we define *power as the ability of individuals to affect the behaviour of other individuals and the way things are done*.

Politics has also been defined in several different ways. Although some authors include politics within power (Jasperson *et al.*, 2002), most definitions consider politics as 'the action side of power' (Robey & Sales, 1994, p. 269). Adopting this approach, we use the terms 'politics' and 'political behaviour' interchangeably in this paper. Some authors view politics as the process of using power to influence the goals, directions and other aspects of the organization (Tushman, 1977). Similarly, Levine & Rossmoore (1994/1995) define political behaviour as *the use of power* to resolve conflict in one's own favour. In contrast to this focus on the use of power, some other authors define politics as *processes leading to power*. For example, Pinto (1998, p. i) defines political behaviour as 'any process by which individuals and groups seek, acquire, and maintain power.' Robey & Sales (1994, p. 269) combine these aspects in defining politics as 'actions taken within an organization to acquire, develop, and use power to get one's way.' However, since 'get one's way' could conceivably refer to rational tasks that benefit the organization, we adopt a more specific definition of politics, *as activities to acquire, develop, or maintain power or to use power or influence to resolve conflict in one's own favour*. This definition combines the acquisition, development, and maintenance of power (Pinto) and the use of power (Levine and Rossmoore). It also distinguishes politics, which is

viewed as a process, from power, which is viewed as one important tool for, or outcome of, politics. Like Levine and Rossmoore's definition, this definition focuses on the resolution of conflict in the actor's own favour, which may or may not be consistent with organizational goals or project goals. Moreover, the preferred outcomes may be related to gaining power relative to others or changing the way things are done in the organization (Howcroft & Light, 2006).

In ISD processes, individuals might engage in behaviours that facilitate accomplishment of the project *per se*, or they might use power and influence to get conflict resolved in ways that may or may not be aligned with the project goals or the goals of the organization. Moreover, individuals may pursue these goals by using means that are political in nature (such as means based on power or influence) or by using means that do not appear to be political in nature. We refer to the former as the rational perspective of ISD. In contrast, the political perspective refers to a situation where individuals either pursue parochial goals or use means that appear to be political. Rational and political perspectives co-exist in ISD projects.

A rational perspective of the information systems development process

ISD includes the entire process 'from the original suggestion through the feasibility study, systems analysis and design, programming, training, conversion, and installation of the system' (Lucas, 1981, p. 14). A rational approach to ISD assumes that the ISD project has an identifiable and agreed upon set of goals and that a specific process has been prescribed to achieve those goals (Markus & Robey, 1983). A rational model of ISD, such as the traditional system development lifecycle or Sabherwal & Robey's (1993) 'textbook life cycle' process, suggests that these activities proceed in a logical and sequential fashion (Franz & Robey, 1984), for example, from project initiation to analysis and design, and then to development and implementation. This perspective also recognizes that the personnel need to be assigned to the ISD project, that the project could encounter success or problems, and that it might lead to organizational change (Markus & Robey, 1983; Sabherwal & Robey, 1993).

The rational perspective of ISD resembles Van de Ven & Poole's (1995) 'life cycle' model – one of their four process models of organizational development and change, with 'evolution', 'teleology', and 'dialectic' models being the other three. Van de Ven & Poole (1995, p. 520) characterize the life cycle model as one that 'depicts the process of change in an entity as progressing through a necessary sequence of stages. An institutional, natural, or logical program prescribes the specific contents of these stages.' Such models view the unit of change as single rather than multiple and the sequence of tasks as prescribed rather than constructive or emergent.

A political perspective of the information systems development process

If the underlying assumptions of shared goals and well-understood sequences of tasks can be supported, such a rational, life cycle process may be appropriate. However, the ISD projects are usually conducted under uncertainty and involve multiple participants with different goals. Under such circumstances, the sequence of tasks cannot be prescribed *a priori* but instead it

emerges as ISD progresses, thereby making a 'dialectic' model more appropriate (Van de Ven & Poole, 1995). The dialectic model highlights the role of pluralism, and confrontation and conflict among different entities.

Such a dialectic view is useful to study politics in ISD. ISD projects usually involve two or more entities (individuals or groups), including users from various departments, IS staff, vendors and managers, that may have differing interests but need to work together (Newman & Noble, 1990). Ensues from the 'confrontation', 'conflict' and 'struggle' among these parties, politics could be in the form of overt resistance or more covert, such as through claimed 'confusion' (Doolin, 2004). Politics could be encountered during software selection (Howcroft & Light, 2006), development (Myers & Young, 1997), implementation (Markus, 1983; Doolin, 2004) or evaluation (Gwillim *et al.*, 2005). The ISD project serves as the context, or the 'venue,' especially when the system's potential impacts are considerable, due to expected changes in processes, evaluation systems, decision-making structures or power.

From individual behaviours to political processes

Studies on politics in ISD have generally taken two paths: study of individual political behaviour or broad evaluations of organizational or process classifications. At the behavioural level, Bardach (1977) considers implementation to include assembling the elements needed to produce a particular outcome, wherein individual actors engage in political behaviour by playing political games to divert resources from the project, deflect goals and dissipate energies. Some games do not involve overt resistance, but are subtle moves to withhold support, delay, provide token contributions, act confused or add personal goals (Doolin, 2004; Lapointe & Rivard, 2005). Grover *et al.* (1988) examine game playing as a form of resistance to IS implementation. Similarly, Pinto (1998) describes tactics used in projects to further political ends. These include gaining support from a higher authority, coalition building, deceit, control, use of power, etc. Myers & Young (1997) interpret political actions during ISD in a mental health organization to examine how hidden agendas and power constrain projects.

The second research path uses broader classifications to examine politics and its consequences. For example, Enns *et al.* (2003) examined the process of how Chief Information Officers used rational persuasion, consultation, ingratiation, personal appeals, exchange, coalition tactics and pressure to influence peers in favour of a project. Similarly, Sabherwal & King (1995), in studying strategic IS decision-making processes, viewed politics as a variable and found political decision-making process to be one of several alternative processes. Markus (1983) studied resistance to an ISD project from three perspectives, considering resistance as being determined by the people, the system or their interaction.

We contend that while the individual behaviour and the broader perspectives can offer useful insights into the politics of ISD, each perspective is incomplete. We have useful descriptions of politics in action at the level of individual actions, but not how these actions manifest themselves in ISD processes. The broader perspectives, in contrast, provide insight into the overall characteristics of politics, but without incorporating the specifics of the actions. Do these political actions form any broader pattern that gives us insight into political processes?

In this paper, we examine politics at the individual behaviour level and then 'derive' broader patterns of political processes. By evaluating the process of politics as a sequence of 'events' during ISD projects, we gain insight into how politics unfolds and manifests itself. We then classify the sequences of activities into categories of political processes and then explain the taxonomy using prior literature. Our quest is to discover generalizable patterns of political processes that could be refined and framed with antecedents and consequences in future research – thereby enhancing theory building in this important area.

EVENTS IN ISD PROJECTS

Prior literature suggests that politics can best be studied by examining their dynamics. Cyert & March (1963) emphasize sequential attention to goals, and Katz & Kahn (1966) view conflict as regulated through accommodation and compromise. The importance of history and path-dependence in politics is also evident in research on ISD politics (Markus, 1983; Newman & Noble, 1990).

Events, the basic elements of an ISD project, *are instances of social action relating to the project* (Hirschheim *et al.*, 1991). Considering an event as a social action is consistent with our view of politics as behaviour or actions, as presented earlier. The value of studying the dynamics of politics using events has been recognized. Cobb (1984) proposes an 'episodic model' to examine the progression over time of events related to IS politics. Similarly, Pinto (1998, p. i) views a political process as 'an *emotionally charged sequence of events* with important personal and corporate ramifications' [emphasis added]. Event sequences incorporate the effects of history and path dependence by including information about all events that precede any given event (Abbott, 1990).

The use of event sequences to compare a large number of projects requires the development of a parsimonious scheme for classifying events. Moreover, to capture the dynamics of politics within the context of the overall ISD process, it is essential to also incorporate seemingly rational events that occur during the project, as briefly examined in the earlier discussion of the rational perspective of ISD.

Political events in ISD

We conducted a detailed review of prior literature on politics (Tushman, 1977; Drory & Romm, 1990; Myers & Young, 1997; Pinto, 1998) in an attempt to identify a set of distinct, albeit inter-related, and cumulatively exhaustive political events. We categorized political ISD events into eight types as summarized in Table 1, which also provides illustrative examples from the projects examined in this study.

Some actions during an ISD project may be seen as clearly political in nature, whereas some other political actions are better disguised (Markus & Robey, 1983; Franz & Robey, 1984). Overly political actions in ISD or other projects may be viewed in terms of the actors' relationship to either the other participants or the goals and outcomes of the project (Tushman,

Table 1. Typology of political events

Event type	Related terms from literature	Illustrative references	Examples from interviews
Events focusing on the relationships among participants			
Deception	Concealing motives	Drory & Romm (1990)	'In an effort to make the project look as good as possible, the Division director insisted that some programs be moved from the development stage to the testing phase.'
	Deceit/deception (secrecy, surprise, all things to all people); information (censorship/ withholding, distortion)	Pinto (1998)	
	Ingratiation	Enns *et al.* (2003)	
	Hidden agenda	Myers & Young (1997)	
Competition	Maintaining alternatives	Tushman (1977)	'OR stated that the IT group was crying wolf because the IT group had not developed the system.'
	Divide and rule, whistle blowing	Pinto (1998)	
	Competition	Knights & Murray (1994)	
Bargaining	Bargaining	Tushman (1977)	'Instead of elevating training to their own section (As it had been before being absorbed into the Technical Services Group), the Help Desk Manager offered to take the trainers under her wings.'
	Negotiation, compromise	Pinto (1995)	
	Exchange, consultation	Enns *et al.* (2003)	
Coalition	Cooption, alliance	Tushman (1977)	'This same team member then began a crusade to seek buy-in from other offices.'
	Coalition building	Enns *et al.* (2003)	
	Informal behavior (social interactions)	Drory & Romm (1990)	
Events focusing on the orientation towards the project			
Resistance	Resistance (disagreeing with system requirements, ISD process, etc.)	Hirschheim & Newman (1988)	'Many of them were openly hostile in the training sessions and continually undercut the instructors' lessons with snide remarks and argumentative questions, making learning next to impossible.'
	Counter-implementation	Keen (1981)	
	Rebellion	Orlikowski (1989)	
Hierarchical authority	Power tactics	Drory & Romm (1990)	'The Director ordered members of each of the resistant sections to attend training to learn about converting the databases.'
	Hierarchical authority	Jasperson *et al.* (2002)	
	Coercion	Pinto (1998)	
	Seeking power	Tushman (1977)	
Influence	Influence (not based on power)	Drory & Romm (1990)	'As the new standard database had scalability issues, the database manager began to press for a "hub and spoke" architecture, with a centralized data warehouse feeding many smaller data marts.'
	Use of the scientific element	Pinto (1998)	
	Seeking prestige	Tushman (1977)	
	Rational persuasion	Enns *et al.* (2003)	
Control	Controlling a critical resource (money, people, information, expertise)	Pinto (1998)	'They threatened to quit if they weren't given what they wanted, and basically held the division hostage to their demands.'
	Controlling decisions ('short list,' criteria)	Pinto (1998)	
	Dilemmas of administration	Bardach (1977)	

OR, operations research; IT, information technology.

1977; Keen, 1981; Pinto, 1998). This is consistent with our view of politics as actions that can lead to advantages relative to other individuals or produce changes in the way things are done within the organization.

Political events focusing on relationships among participants

Some political actions are intended to gain advantage, usually in terms of power or access to resources, relative to other members of the organization, including other participants in the ISD project, with the ISD project only providing the context for such political actions (Keen, 1981; Grover *et al.*, 1988). In viewing such political actions, it is important to distinguish between competitive and cooperative actions (Tushman, 1977). Competitive actions include subtle deception and more overt competition, whereas cooperative actions include bargaining with the other participants and the formation of a coalition or alliance with them.

Four actions – deception, competition, bargaining and coalition – represent the nature of the action relative to other participants. Disguising or concealing motives, withholding, censoring or distorting information and portraying contradictory stances to different individuals are examples of using *deception* (Myers & Young, 1997). Due to their potential effects on the distribution of organizational resources, ISD projects frequently face *competition* among participants. Events characterized as competition include efforts to 'divide and rule' the project's opponents (or supporters), attempts to maintain alternatives, whistle blowing (Tushman, 1977) and blaming others (Hirschheim & Newman, 1988). One cooperative event focuses on *bargaining* among participants (Tushman, 1977). It includes making compromises or deals with others (Pinto, 1998) and providing incentives for behaving in a certain fashion (Keen, 1981). The second cooperative action is forming a *coalition* or alliance with others (Tushman, 1977). Although these four actions are different from each other, one kind of event may often lead to another kind of event. For example, bargaining may lead to the formation of a coalition, whereas competition may lead to deception. The use of event sequences enables us to keep these four types of events distinct while identifying such ordering relationships.

Political events focusing on the orientation towards the project

Political actions might also be aimed at obstructing the project or supporting it, with the intention of achieving preferred outcomes (Keen, 1981). Although these actions also involve other individuals, they focus on the goals and objectives of the project rather than gaining advantages relative to others. Prior literature has focused on four actions – resistance, authority, influence and control – related to this aspect. One of these, *resistance*, represents actions taken to oppose the project, for example, by disagreeing with the IS requirements (Hirschheim & Newman, 1988). Keen (1981) views resistance as 'counter-implementation', including relying on organizational inertia, minimizing the project leader's legitimacy, keeping the project vague, etc. Resistance often arises from concerns that the project might alter the distribution of power or organizational resources (Markus, 1983; Franz & Robey, 1984).

Three other overtly political actions represent efforts to affect the outcome of the project through the use of authority, influence or control. These actions could be intended to oppose the project, overcome the opposition or produce a favourable shift in project goals (Bardach, 1977). Even when these actions are intended to oppose the project, they differ from resistance, which focuses on actions taken to oppose the project, but is not so evidently based on hierarchical authority, influence or control over resources (Grover *et al.*, 1988). *The use of hierarchical authority* might be to either support or oppose the project (Jasperson *et al.*, 2002), through either rewards or coercion (Orlikowski, 1989). Moreover, it might involve the use of one's own authority within the organization, or the support of senior executives (Drory & Romm, 1990). Another event is the use of means other than hierarchical authority to *influence* the nature of the project. Individuals might try to influence the project based on their own expertise or reputation (Drory & Romm, 1990) or by using ideology, logic or scientific principles (Pinto, 1998). Finally, efforts intended to shape the nature of the project may be based on the *control* of critical resources (e.g. money, people), decision processes (e.g. the perceived options or the decision criteria) or the project task force (e.g. membership, agendas) (Pinto, 1998). Like authority and influence, control may be used to oppose or support the project, sometimes with the intention of favourably shifting its goals.

Seemingly rational events in ISD

The above eight events are political in nature. However, studies of politics in ISD recognize that all aspects of ISD are not clearly political. Political actions occur in the context of other actions (Hirschheim *et al.*, 1991) and some actions may at least appear to be rational (Markus & Robey, 1983).

The remaining types of ISD events, which are summarized in Table 2 along with examples, are based on our earlier discussion of the rational model of ISD and a prior study of ISD projects using event sequences (Sabherwal & Robey, 1993). Three event types – *project initiation*; *analysis and design*; and *development and implementation* – focus directly on the system development life cycle. In these events, we only included seemingly rational events related to ISD, with clearly political events related to these tasks being included in the above eight types of political events. These three events also serve as markers for the ISD process by examining whether the political events were early or late in relation to these tasks.

Two event types, the *assignment* of personnel and the *organizational change* involved during the ISD project, whereas two other event types – focus on *success* and *problems* – relate to performance outcomes. Finally, one event type – *external* events – depicts any event that was not directly related to the project. These five types of events may also involve politics and may appear to be rational only because the politics is effectively disguised (Markus & Robey, 1983; Franz & Robey, 1984). For example, an individual may identify problems with the IS, and provide evidence indicating the problems, but this may be motivated by a desire to either delay the project or get it modified to suit personal preferences.

Table 2. Seemingly rational ISD events

Category	Event type	Related components	Examples from interviews
Organizational events	Assignment	Assignment of personnel (includes assignment of personnel by vendors and creation of a project steering committee or task force)	'While numerous issues were reviewed, a sub-committee was formed to implement a "common" change management system across all IT areas.'
	Organizational change	Reassignment of organizational roles (Includes redesigning user and IS departments, hiring/firing/resignation, etc., but excludes assigning personnel to IS project)	'The new IT director was hired, in part, to integrate all of the IT functions within the office.'
Success	Successes	Successful performance, including acceptance by the users and the system's functionality, speed, benefits, etc. being up to, or exceeding, expectations	'Company Z now had real time access to Plant 1's production information and could easily communicate with Plant 1 personnel via e-mail.'
Problems	Problems	Performance problems (Includes complaints about system speed, errors, etc.)	'Nothing has really changed, the programs still have bugs to be worked out before the actual conversion and reconciliation can be done.'
External events	Others	Events in the external environment, including events external to the project as well as pertinent events external to the organization	'The stock price rose 48% the day he was announced to have joined the company.'
Technical ISD events	Project initiation	Submission of proposal (Includes requests for new system, enhancements, manpower, etc., and vendor proposals/presentations); Approval or authorization (Includes approval of the ISD process and the authorization of a specific hardware/software purchase decision); and Seeking technical knowledge/equipment (Includes sending request for proposals to vendors and acquiring technical knowledge but excludes ordering equipment)	'The state contracted with a large software company to implement a new accounting, payroll and human resource system.'
	Analysis and design	Project definition (Includes definition of system scope, user needs, and broad definition of the ISD process); System design; and Selection of a specific vendor (Includes ordering and the selection of specific hardware/software vendors)	'The computer operations team identified a few additional "unique" requirements that had to be added to the system to allow them to perform their functions.'
	Development and implementation	Development, hardware/software installation, and maintenance; Training (Includes preparing training material and procedures, and system documentation); and Assessment of performance (Includes feasibility study, system testing and assessment of vendor products)	'The financial modules were installed over a 5-month period at the corporate campus and the local pharmacy.'

IT, information technology.

METHODS AND RESULTS

Data collection

Pentland (1999) distinguishes among fibula, or an objective description of the events and characters that uniquely identify the specific process; focalization, or one individual's narrative description of the events; text; and generative mechanisms, or the underlying structures that facilitate or constrain the fibula. As Pentland notes, each individual's focalization involves subjective interpretation. The ability to identify the fibula would improve with the inclusion of multiple perspectives, but each perspective involves its own individual biases, making it difficult to integrate them. It is also overly demanding for any single research group to incorporate multiple perspectives on the large number of projects needed to develop an empirical taxonomy. Moreover, traditional means of conducting large-sample studies, such as a survey, may not be useful in identifying political and other actions involved in an ISD project, especially given the sensitive nature of politics. *We therefore focused on one informant's focalization of each project and used the narrative text provided by each individual to represent the events during that project, while recognizing the limitation of including only one perspective of each project*.

All the informants were working full-time in IS, had considerable work experience and had participated in numerous IS projects. We took several measures to ensure consistency across informants in how they perceive political behavior and to facilitate completeness and reliability of their narratives.

For *consistency*, we provided a definition of politics similar to the one presented above. We used the framework of games (Bardach, 1977) to enable recognition and elucidation of political descriptions. Games are consistent with our notion of political behavior, and have been found effective in framing political thinking and facilitating recall of projects (Grover *et al.*, 1988). We also provided illustrative stories of politics in ISD, but emphasized that the games and examples were simply used to enable recognition of politics. We did not want these instructions to bias or constrain the informants, and therefore asked them to – if they considered appropriate – add new games they had seen or even repudiate the framework.

In order to facilitate *completeness* and *reliability*, we asked the informants to write their responses instead of speaking about them. Due to our interest in events related to politics, with a varying number of events in each project, we let each informant describe the story of the project. Prior IS research (Ein-Dor & Segev, 1982; Sabherwal & Robey, 1993) supports asking the informant to recollect events and describe them in an open-ended fashion. Informants were asked to provide enough information for the instructor to understand how the project unfolded. This included the events leading up to the game playing and the description of political behaviour and its impact on the project, the project context, and the nature of the organization. We carefully evaluated the project narratives provided by the informants, and erred on the side of caution when deciding to include a project in our analysis. Given the informants' experience with ISD, the fact that they were encouraged to seek clarification, and the lack of incentive to provide anything but complete information, we feel comfortable that the narratives are *reliable*, albeit from one perspective.

Data were collected from three classes of full-time executive IS students in a graduate programme ranked among the top 10 in the USA in *Computer World*'s list of top techno-MBA schools during Spring of 2000, 2001 and 2002. About 28% of the informants were in IS management, about 26% were analysts and the rest were in network administration or user support. Over 53% of them had more than 10 years of experience. Manufacturing and academia were their most frequent employers, each represented by 20% of the informants. The informants provided descriptions of 123 projects. Of these, 22 were not usable: they were hypothetical, did not relate to ISD or were in very early stages. The remaining 101 projects were used to identify the event sequences.

From project descriptions to event sequences

The 101 project descriptions included information on the events during the project as well as some other information. We classified each project description into pieces of text pertaining to: events; the organization; the project; the informant; and the informant's perceptions. Only the events were used for the empirical analyses but all five aspects were used to interpret the clusters.

We treated each event as a separate social action, focusing on specific actions rather than thoughts, emotions or perceptions. An explicit homogenous action clause, and not one sentence, was the unit of analysis. A sentence containing two verbs representing different actions in our classification scheme was therefore broken into two parts, one related to each action. For instance, a sentence like 'The new system was designed and implemented' would be coded as two action clauses – 'the system was designed' and 'and implemented' – representing two different events. But a sentence such as 'They complained to top management and refused to discuss revising their current manual scheduling process using the new system' was kept as a single action clause because both 'complained' and 'refused' represent resistance.

The information on each event, with a unique identifier, was moved to a spreadsheet, which was used to classify events. To enhance the reliability of identification of event sequences, we first concentrated on specific actions related to the project, while excluding comments about the organization, the project or the informant, as well as the informant's perceptions about others' motivations, emotions or thoughts. This approach, which was also used by Sabherwal & Robey (1993), may have excluded some events that actually occurred, but it helped preclude any events that did not occur. This step produced, for each project, chronologically ordered textual descriptions of events occurring during the project.

Classification of Events

The 101 projects included a total of 1428 events. Prior to computing inter-sequence distances, it was necessary to classify these events into the 16 event types discussed earlier. After an initial attempt to classify events into these 16 types resulted in difficulty, this classification was split into two different categorization schemes that were recombined after the coding. One categorization scheme included 13 types of events: the eight types of political events (Table 1)

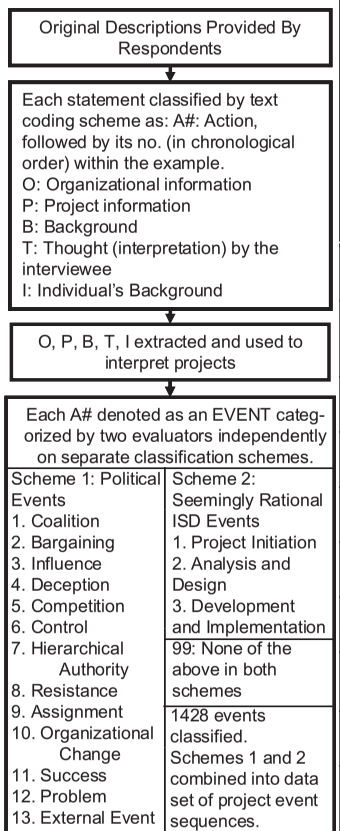
and the five seeming rational ISD events other than the three technical events (Table 2). The other categorization included the three types of technical ISD events, i.e. project initiation; analysis and design; and development and implementation, which temporally spanned all stages of ISD and served as process markers, i.e. to indicate the project stage during which the events were occurring. Each event was categorized according to both schemes. Each scheme also included a miscellaneous, 'none of the above', category. The two categorizations were recombined using the following steps:

- Any political underpinning of a technical ISD event was given precedence. Events that were categorized into types 1–8 according to the first classification were eventually classified as 1–8 regardless of their nature in terms of the second classification.
- Events that were categorized into types 9–13 (according to the first classification (i.e. external events and events related to problems, successes, assignment and organizational change) were eventually classified as 9–13. We did not find instances of overt political behaviour related to these events, although if such an event had been clearly political, it would have been classified into the appropriate political event. Any political underpinning was not inferred here unless explicit.
- Technical ISD events that were categorized as 'none of the above' according to the first classification scheme, and were classified into one of the three types of ISD events in the second classification, were used as process markers by eventually classifying them as 14, 15 and 16 within the final combined scheme.
- Events that were categorized as 'none of the above' according to both classification schemes were eventually classified as 'missing' and excluded from empirical analysis.

Events that were eventually classified into one of the three broad steps in ISD (project initiation; analysis and design; and development and implementation) are not the only events related to these steps. In addition, some events related to these steps were eventually classified as one of the eight types of political events. For example, the eighth event in the illustrative example Figure 1 ('the lab managers refused to convert to the new system during the pilot testing (A8))' was classified as 'development and implementation' and also as 'resistance.' In combining the two categorizations, this event would be classified as 'resistance', according the first bulleted point above. Thus, events other than the eight political events are seemingly rational, i.e. at least they did not appear political to the informant. For simplicity, we do not use the modifier 'seemingly rational' to characterize these eight events in the rest of the paper.

The two authors independently classified the 85 events in a test sample using both categorization schemes. Excellent inter-rater reliabilities were obtained for both schemes (agreement on 74 and 79 events, with kappa of 0.85 and 0.89, respectively, for the first and second scheme; $P < 0.0001$ for both).

We next classified the 1428 events across all projects, with each author categorizing events in about half the projects. Based on this classification of events, the sequence of events for each project was converted into a sequence of numbers, with each number representing the appropriate event type. In doing so, we excluded 81 events that were classified as 'missing.' Moreover, 12 projects were dropped because, after excluding 'missing' events, they included



Example: A hospital with approximately 3,000 employees (O) initiated an automated time and attendance project (A3). Years ago, the hospital laboratory department had purchased a laboratory information system that included a time and attendance module but not a scheduling module (A1). They used this module for years, but complained heavily about its lack of user-friendliness (A2). I don't think it was a very good system (T). In addition to automating the time collection process, the purchased system included a scheduling tool (P). In addition to simplifying the managers' approval of time, utilizing the schedule module over time would provide historical data on tardiness, call-offs, and overtime worked, data that is in great demand to enable trending and analysis of employee usage and productivity by department (P). Anxious to convert from their old system, they volunteered to be in the pilot group for the new system (A4). The new system was designed (A5) and implemented (on a pilot scale) (A6). Upon learning that entering schedules might become mandatory (A7), the lab managers refused to convert to the new system during pilot testing (A8) until they were told either that they did not have to enter the schedules or that they could hire additional staff to enter them (A9).

… (continued)

Evaluator 1's Classification	Schemes 1/2	Resulting Coding	Rationale for Coding
Years ago, the hospital laboratory department bought a laboratory information system that included a time and attendance module but not a scheduling module (A1).	99/1	14	No politics manifest here. Purchase initiates process.
They used this module for years, but complained heavily about its lack of user-friendliness (A2).	12/99	12	This indicates a problem with the system.
initiated an automated time and attendance project (A3).	99/1	14	No politics evident but development is initiated.
Anxious to convert from old system, they volunteered to be in the pilot group for the new system (A4).	9/1	9	Assignment of a team, but on a volunteer basis.
The new system was designed (A5)	99/2	15	The broad analysis and design marker.
and implemented (on a pilot scale) (A6)	99/3	16	Reflects implementation marker.
Upon learning that entering schedules might become mandatory (A7),	13/99	13	An event outside the project (company need).
the lab managers refused to convert to the new system during pilot testing (A8)	8/3	8	Overt resistance; managers refuse to comply.
until they were told either that they did not have to enter the schedules or that they could hire additional staff to enter them (A9).	2/3	2	Two options offered, reflecting bargaining.

Figure 1. Illustration of coding.

five or fewer events, and may be more sensitive to informant's errors in ordering and omission. The remaining 89 projects were used for further analysis.

Figure 1 illustrates the final coding approach, and associated rationale, using an example.

Data analysis

The data analysis consisted of three stages: computation of inter-sequence distances, cluster analysis and interpretation of clusters. We first computed the inter-sequence distances using optimal matching. Second, we used the resulting matrix of inter-sequence distances as input for cluster analysis. Thus, two sequences that are close to each other in terms of the distance computed using optimal matching are likely to be within the same cluster, whereas two sequences that have high inter-sequence distance between them are likely to be in different clusters. Finally, the clusters were interpreted using several considerations (including an empirically observed centroid sequence) to develop the hypothetical ideal sequence that best represents each cluster. These steps are discussed in detail below.

To *compute inter-sequence distances*, we used optimal matching, which is considered a useful way of measuring sequence resemblance, especially for a large number of complex sequences (Abbott, 1990). It is a dynamic programming technique that measures resemblance among sequences, each of which is represented by a string of well-defined elements, drawn from a relatively small total set (Abbott & Hrycak, 1990). In this study, each sequence is represented using a string of numbers indicating the event types. For example, a project sequence PRJ1 comprised of influence (#3), project initiation (#14), assignment of personnel (#9), resistance (#8), power (#7), analysis and design (#15), development and implementation (#16) and organizational redesign (#10), would be represented by the string 3, 14, 9, 8, 7, 15, 16, 10. The 'distance' between PRJ1 and another project sequence (PRJ2) may be computed using the number of insertions, deletions and substitutions needed to transform PRJ1 into PRJ2, with a certain pre-specified 'cost' for each insertion, deletion or substitution. To compute the lowest distance between PRJ1 and PRJ2, the costs of all possible procedures for transforming PRJ1 into PRJ2 are computed and the lowest cost identified. This can be done using an optimal matching algorithm, which is available in the Optimize program we used and most commercial DNA-sequencing programs.

Three issues are important in optimal matching. First, it is necessary to assign values for the substitution costs. The cost of substituting one type of event for another type of event reflects the dissimilarity between those types (Sabherwal & Robey, 1993). We grouped the 16 event types into the six categories: political actions; organizational actions; success; problems; external events; and technical ISD events. We computed inter-sequence distances using three different sets of substitution costs. In cost set 1, all substitution costs were 1.0. In cost sets 2 and 3, substitution costs within each category were lower than across categories: substitution cost was highest (1.0 in both cost sets) when one event type was external to the project but the other event was not; moderate (0.8 and 0.9 in cost sets 2 and 3, respectively) when both event types were internal to the project but belonged to different broad categories; and lowest

(0.6 and 0.8 in sets 2 and 3, respectively) when both event types belonged to the same broad category.

The second issue is the assignment of insertion and deletion costs. For the distance between two sequences to be the same irrespective of the starting point, the cost of inserting any given event type should equal the cost of deleting it. We set insertion and deletion costs to 0.5, i.e. half the largest substitution cost (Sabherwal & Robey, 1993).

The third issue in computing inter-sequence distances is reducing the effect of different sequence lengths, because a greater number of transformations are needed to convert longer sequences into each other. Therefore, we standardized by dividing the number of transformations required by the length of the longer sequence (Abbott & Hrycak, 1990).

In conducting *cluster analysis* to develop the taxonomy, we used the pairwise distances among event sequences, as computed above, as the input. Thus, two event sequences that are close to each other in terms of the above distance are likely to be within the same cluster, whereas two distant sequences are likely to be in different clusters. To construct the clusters, we applied the two most popular linkage techniques: average linkage and Ward's (1963) methods (Ulrich & McKelvey, 1990). We used PROC CLUSTER in SAS for Windows, with the three inter-sequence distance matrices, for the three cost sets, as inputs. We conducted cluster analysis using the three different sets of inter-sequence distances and the above two linkage techniques in order to identify the most interpretable cluster solution. Of the six cluster solutions, the three-cluster solution based on average linkage and cost set 3 produced the best results, in terms of pseudo F and pseudo t^2 statistics, interpretation of clusters and absence of small clusters.

Interpretation of clusters

The clusters were interpreted using several steps. Within each cluster, the centroid sequence is an actual sequence that has lower mean distance to the other sequences within its cluster than any other sequence. In contrast, the ideal sequence is a hypothetical sequence that best represents the equivalent of the mean for the cluster.[1] However, the mean represents the group better than the centroid. The situation is similar in event sequence analysis, with the centroid sequence being an actual sequence and the ideal sequence, which is similar to the mean, being hypothetical. Moreover, like the group mean, the ideal sequence is more useful for interpretation than the centroid. However, whereas the mean can be directly computed in the case of variables, the ideal sequence needs to be identified using the centroid sequence as explained below.

[1]This distinction in the context of event sequences parallels the situation when using variables to represent objects. Consider an example of three objects, measured using two variables, X and Y, which have scores of [1, 1], [2, 2] and [6, 6] for the three objects. Object 2 is the group centroid since it lies between objects 1 and 3 if the objects are shown on a graph using X and Y. The group mean, however, would be represented by [(1 + 2 + 6) / 3, (1 + 2 + 6) / 3], i.e. [3, 3]. Thus, the centroid is an actual object, whereas the mean is hypothetical because none of the actual objects has scores [3, 3].

We first identified the sequence approximating each cluster's centroid. We computed the mean distance of each sequence from the other sequences in its cluster. Each cluster's centroid is then approximated by the sequence with the least mean distance from the other sequences in that cluster. Each sequence's distance from its own cluster's centroid (mean = 0.60) was significantly ($t = 31.35$, degrees of freedom = 82, $P \leq 0.001$) less than its mean distance from the other clusters' centroids (mean = 0.71). The results were similar within each individual cluster ($P \leq 0.001$).

Next, we inspected the sequences in each cluster (Sabherwal & Robey, 1993). The visual examination benefits from spreading each sequence horizontally and then vertically aligning similar events across sequences. For each cluster, we also examined the frequency of each event type, and the number of projects including each event type.

Based on the sequences approximating cluster centroids and the visual inspection of cluster members, we prepared an 'ideal type' for each cluster. As discussed above, unlike the actual centroid sequences, these ideal sequences are hypothetical. The distance of each sequence from the ideal type for its cluster (mean = 0.53) was significantly ($t = 12.38$, $P < 0.001$) below the average distance from the ideal types for the other clusters (mean = 0.64), showing that the ideal types do represent the clusters. Moreover, the average distance from the cluster's own ideal sequence ranged from 0.51 to 0.55 for the three clusters, whereas the average distance from the other groups' ideal sequences ranged from 0.64 to 0.65, indicating that the three ideal sequences are almost equally effective in representing the corresponding cluster. Again, the results were similar within each individual cluster ($P \leq 0.001$).

Finally, we went through the original narrative descriptions (including information that was excluded when generating the event sequences) of the projects within each cluster to understand the processes.

The emergent taxonomy of political processes in ISD projects

Figure 2 depicts the 'ideal' event sequences of the three types of perceived political processes in ISD projects. Table 3 provides additional information about each type of process. Each type is described below, using the empirical results and an illustrative example.

Cluster 1 – 'Tug of War'

This process is typified by an ideal sequence that begins with project initiation, followed by the assignment of personnel. Considerable politics then ensues, involving efforts to control the project, resistance and then competition, followed by influence. These events are followed by another instance of project initiation, and then another series of political events, including efforts to gain control, use of authority, bargaining, further efforts to control and more resistance. The ideal sequence does not involve analysis and design or development and implementation (also, such events occur in only 23% and 19%, respectively, of these projects), indicating that these activities may be integrally immersed in politics. Thus, this process gets bogged down during the initial stages as the participants struggle for project control, offer

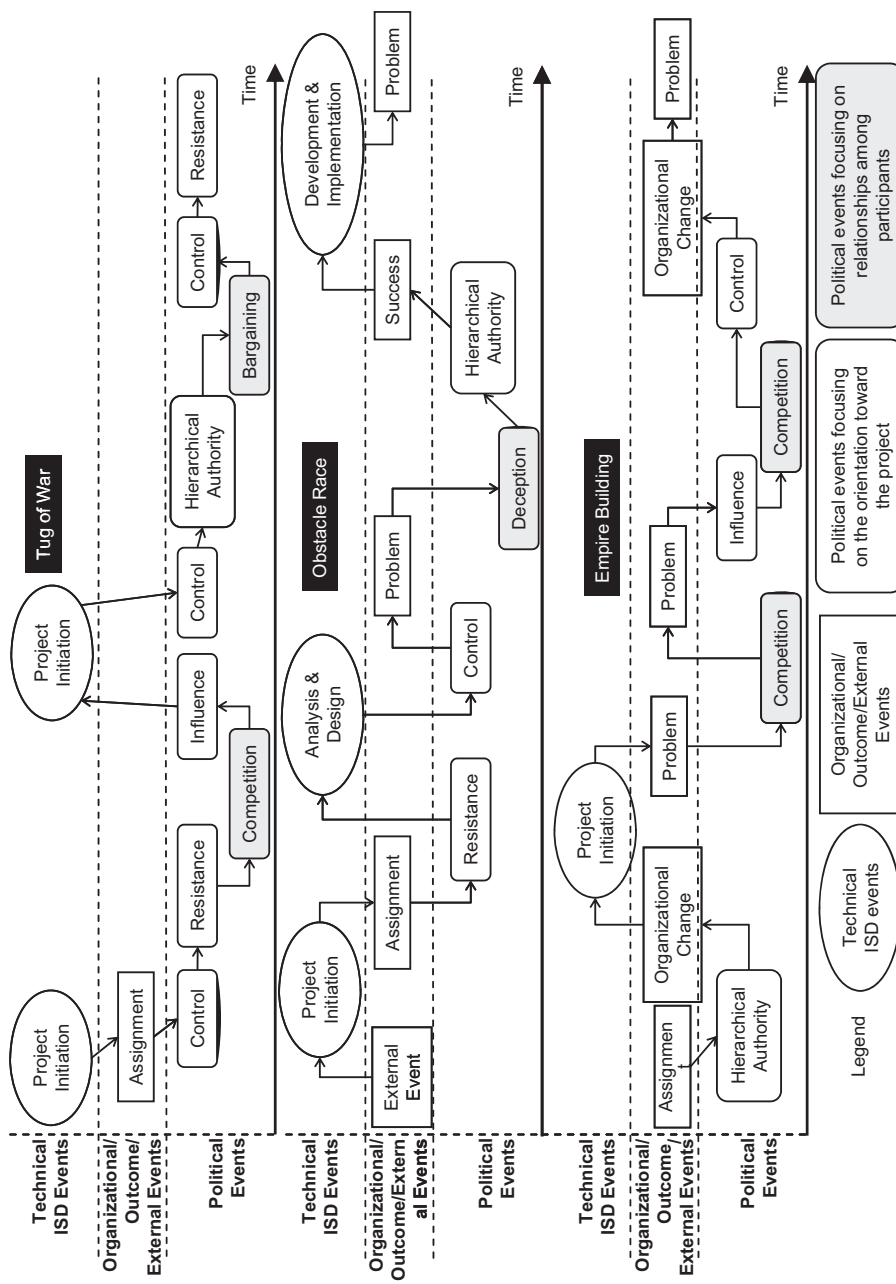


Figure 2. The three ISD political processes as event sequences.

Table 3. A summary of the three types of political processes

Code	Event type	Tug of war (26 projects)	Obstacle race (37 projects)	Empire building (21 projects)
		Mean frequencies		
1	Coalition	**0.42** (0.27)	0.35 (0.22)	0.21 (0.19)
2	Bargaining	**0.39** (0.35)	0.30 (0.19)	0.14 (0.14)
3	Influence	**0.85** (0.54)	0.59 (0.41)	0.76 (0.48)
4	Deception	0.54 (0.27)	**1.30** (0.65)	0.62 (0.33)
5	Competition	0.73 (0.42)	0.24 (0.19)	**1.38** (0.67)
6	Control	**2.96** (0.96)	0.76 (0.51)	0.71 (0.43)
7	Hierarchical authority	0.65 (0.50)	**1.16** (0.68)	0.95 (0.62)
8	Resistance	**1.38** (0.58)	0.97 (0.46)	0.48 (0.29)
9	Assignment	**1.35** (0.54)	0.86 (0.59)	1.24 (0.57)
10	Organizational change	0.69 (0.35)	0.46 (0.32)	**1.86** (0.71)
11	Success	0.23 (0.19)	**0.62** (0.49)	0.24 (0.14)
12	Problem	0.54 (0.38)	1.73 (0.75)	**2.90** (0.95)
13	External event	0.42 (0.31)	**1.00** (0.51)	0.24 (0.24)
14	Project initiation	**2.31** (0.81)	1.73 (0.81)	1.14 (0.52)
15	Analysis and design	0.27 (0.23)	**1.35** (0.59)	0.52 (0.33)
16	Development and implementation	0.23 (0.19)	**1.16** (0.49)	0.76 (0.33)
Total events		13.96	14.59	14.24
Major themes		• Struggle for control • Overcoming resistance • Some scope for negotiation	• Pushing the project through • Combines seemingly rational forward progress, subtle moves, and use of hierarchical authority	• Building or preserving reputation or resource base • Organizational changes amidst competition • Considerable problems but not resistance
Links to literature		• Zero-sum power (Sillince & Mouakket, 1997) • IS as prize (Sillince & Mouakket, 1997) • Dissipation of energies (Bardach, 1977)	• Positive-sum power (Sillince & Mouakket, 1997) • Counterimplementation (Keen, 1981) • Resistance (Lapointe & Rivard, 2005) • ISD as negotiation focus (Sillince & Mouakket, 1997) • Change as a threat (Pichault, 1995) • Dilemmas of administration (Bardach, 1977)	• Positive-sum power (Sillince & Mouakket, 1997) • Change as a stake (Pichault, 1995) • IS as instrument (Sillince & Mouakket, 1997) • Seeking prestige (Tushman, 1977) • Deflection of goals (Bardach, 1977)

The mean frequency per sequence is followed in parentheses by the proportion of sequences in which the event was present. The latter number counts multiple occurrences of the same event type within the same sequence as 1. For each cluster, one important link to prior literature, which captures the essence of the process, is underlined. The highest value in the row is indicated in bold.

resistance when they cannot gain control and utilize power or other means to exert influence. Efforts to gain project control are seen during early, middle and later stages of this process. An average of about three control events occur in '*Tug of War*', compared to an average of less than one such events in the other two processes.

An illustrative project, which we label as *ProjTOW*, was at a large state government agency, with a complex financial information system and involved a major conversion to a dedicated computing platform. As was the agency's convention, the project manager was selected from the internal IS staff (event type #9). Event types, given in parentheses in the examples, are as indicated in Table 3. The project manager was an expert programmer with a reputation for customer service, but apparently a need for greater recognition. The assigned team members included key users, a user coordinator and programmers (#9). The user coordinator, who had previously worked as user support manager at a consulting firm, felt she knew a lot about both IS and business. She did not cooperate with the project manager (#8) and did not allow the users to talk directly to the IS staff, including the project manager (#7). Having support from the user management, she assigned tasks to users (#7). She scheduled meetings separate from those arranged by the project manager (#6) and performed her own analysis of the system, often ignoring the project manager's recommendations (#6). When the project manager complained about this behavior to the agency's senior management (#7), the user coordinator initially disagreed with the project manager's interpretation that she had tried to take over the project (#8), and then argued that it was needed to prevent the project from failing due to the project manager's incompetence (#5). This tussle for project control led to both these individuals being replaced (#9), following which the project was completed (#16).

ProjTOW illustrates the sequence of rational project initiation, followed by assignment of personnel. Consistent with the 'ideal' sequence for this process, these initial steps were followed by efforts to control the project, and resistance and competition. Competing for dominance, the parties used influence tactics like separate meetings and separate development efforts, which led to dissipation of resources. This struggle for control necessitated reassignment of key individuals.

Cluster 2 – 'Obstacle Race'

This process is typified by the use of political means, including deception, authority and control to address resistance or problems. The ideal sequence includes project initiation, analysis and design and development and implementation, but with substantial political manoeuvring between them. In this process, an external event usually leads to project initiation. Parties are then assigned to the project, but resistance follows, possibly due to frustration with the external event or personnel assignment. Analysis and design proceeds without politics, but the process then turns political, encountering the use of control and deception to try to derail the project. Intervention by individuals with hierarchical authority enables development and implementation, but the effects of prior politics become apparent in problems, which may reflect politically motivated views of those opposing the system.

The illustrative project, *ProjOR*, was at a Midwest power company, which had a long-term relationship with a billing intermediary for doing enrolment and paper billing. In response to a perceived customer need for electronic billing, the senior management initiated a new project by soliciting bids from several vendors (#14). The Director of Billing wanted to use the current paper provider, which was a new player in the e-billing arena, but the e-billing industry leader obtained the contract by offering a better deal (#14). The Director of Billing opposed this selection (#8) and then started creating problems by giving the e-bill provider incomplete information (#4). For example, he would never provide a sample of bills that included all the test cases. He delayed on reviewing bills, missing deadlines for 'more important projects' (#4). He also encouraged IS managers to reduce the priority of this project (#6). He then complained about the incompetence of the e-billing company (#5). Meanwhile, he was working with his paper provider, getting them to produce a proof of concept design (#15). His tactics seemed to be working, leading to delays and frustration among the e-billing vendor's staff (#12). The e-billing company considered dropping the project, and re-evaluated its project details (#14). Moreover, its project manager initiated new project control measures (#14). The vendor's Director of Implementation and Sales called the client's vice president (IS) to discuss the problems (#7), after which the deadline to complete the project was relaxed and there seemed to be greater cooperation from the Director of Billing (#11). The project was delayed by 6 months (#12), leading some other senior executives to criticize the Director of Billing for his earlier actions (#5). The system was then implemented and the project succeeded in accomplishing the goal of getting the utility online (#11).

Thus, project initiation was followed in ProjOR by resistance and efforts to derail the project through deception, followed by analysis and design and then problems. Caused by dissatisfaction with project assignment (to the external vendor), this resistance continued until it was suppressed through hierarchical authority. This support enabled eventual project success, but the outcome was tarnished by the politics and it took time to get the system to succeed.

Cluster 3 – 'Empire Building'

This process is characterized by initial thrust through authority, which leads to competition among groups striving to enhance their reputation and control. Organizational changes through reassignment of roles often occur in these projects as problems and dissatisfaction escalate. This process typically begins with the assignment of personnel, who try to wield authority, followed by organizational change, project initiation and competition. The competition is usually unhealthy as participants try to impose their preferences on others. The sequence of influence, competition and control leads to organizational change, and the systems exhibit a variety of problems. 'Empire building' is characterized by a greater incidence of events involving organizational change (almost two per project, compared to about half per project in the other two clusters).

The illustrative project, *ProjEB*, was at a large petroleum company. Its operations research (OR) group demonstrated to corporate management the prototype of a Geographic Information Mapping System (GIMS) for improving exploration processes (#3) and sought their support for

developing a complete system (#7). After the top management approved the project (#14), a senior IS manager expressed surprise that the IS group had not been involved (#5). The IS group argued that the complete system would not meet the capacity requirements indicated by the OR group (#12) and would fail if implemented in the requested timeframe (#2). The OR group argued that the system had met senior management's expectations and should be implemented immediately (#7). Using their prior relationships with senior management, the OR group turned over the prototype system to the IS group (#5). The IS group raised reliability and capacity issues with the senior management (#5), but the OR group persuaded the senior managers to ask the IS group to modify the design without compromising the schedule (#3). The IS group decided they could not bring it up to the needed specifications within the allotted timeframe (#12). Instead, they created a new prototype by purchasing and modifying a package from another vendor which was a direct competitor of the GIMS vendor used by OR (#16). After releasing this GIMS application (#16), the IS group used it to lobby with the senior management to institute this new GIMS vendor's products as the organization-wide standard for all GIMS systems (#3), and then asked the OR group to use it for another system they had under development (#6). They pointed out the advantages of the corporate standard software over the software currently used by OR (#3). The senior management agreed with the IS group, and asked the OR group to switch to the corporate standard software (#7). This decision significantly diminished the OR group's ability to develop other GIMS prototypes, at least in the short run, as its experience was in the now disallowed GIMS software environments (#12). A few months later, the responsibility for GIMS development was transferred from OR to IS (#10).

ProjEB highlights *Empire Building* efforts by the OR and IS groups. The ISD project provided the context for the efforts by these groups to enhance their influence in the organization. It started with OR trying to impose its GIMS standards. However, IS used its influence to emphasize its approach as the 'right' way to build the system. IS also fostered greater competition by bringing in an external vendor. This sequence of influence, competition and control eventually resulted in organizational change, as IS successfully extended its control over software development to the arena of GIMS development. Consequently, in ProjEB, it was not the original proponents of the system (OR) but the non-proponents (IS) who succeeded in *Empire Building*!

Testing for context independence

The use of an individual informant's narrative to identify the perceived ISD processes suggest caution in linking these processes to the organizational context. However, we conducted some simple analysis to explore such effects. We used the narrative provided by each informant to obtain the following information about each project: the type of organization (i.e. business, healthcare, or academic); size of the organization; and the outsourced or insourced nature of the project. None of these factors had a significant effect ($P \leq 0.10$) on the likelihood of use of the three processes. The processes also did not significantly ($P \leq 0.10$) differ in the length of the event sequence or the proportion of events performed by IS personnel. These findings, while preliminary, provide confidence in the generic nature of the taxonomy of processes.

IMPLICATIONS FOR RESEARCH

Each of the three processes finds support in the prior literature. Moreover, considering the nature of the three processes in light of the prior literature helps us provide one possible explanation for why *three* processes, and *these three* processes, were observed.

Based on the dialectical perspective (Van de Ven & Poole, 1995), two important aspects in ISD politics are the balance of power between the opposing parties and their stances relative to the ISD project. If, adopting a simplified view, the parties are characterized as the proponents, who initiate and promote the system, and non-proponents, these two aspects can be depicted as shown in Figure 3. The horizontal axis shows the non-proponents' view of the ISD project and the vertical axis shows the balance of power between the proponents and the non-proponents. However, we should note that the balance of power and the non-proponents' (or the proponents') view of the system might change during the course of the project.

The *Tug of War* process involves competition among participants as they strive to gain control of the project. The tussle for control, through influence and later bargaining (often induced through fiat), in this process resembles the 'zero sum' view of power (Fincham, 1992), where each party desires control or ownership of resources at the cost of the other party. Not only the system's proponents, but also its non-proponents, consider it as an opportunity. The system thus seems to be the prize for which participants compete (Sillince & Mouakket, 1997). The balance of power between proponents and non-proponents does not seem to affect the likelihood of *Tug of War* being used, although it might affect how it is resolved. ProjTOW was characterized by attempts to control the project and influence its goals. Competing for domi-

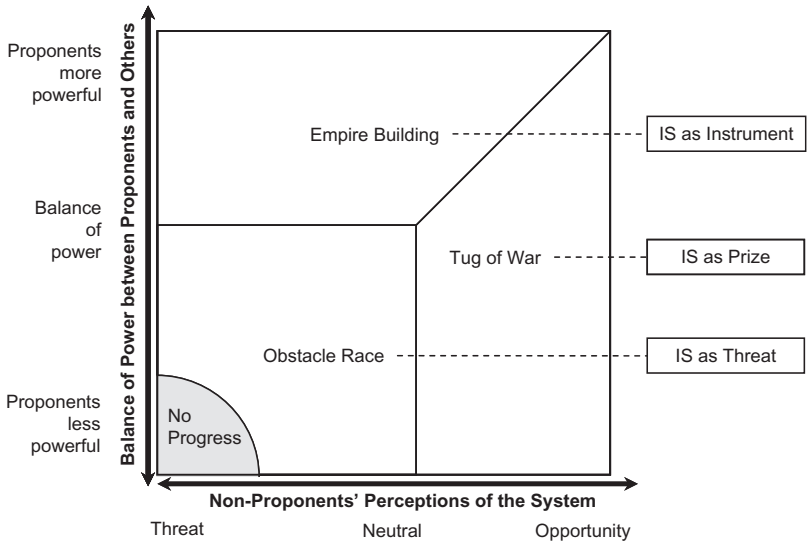


Figure 3. The emerging taxonomy of perceived ISD political processes.

nance, the parties used influence tactics like separate meetings and separate development efforts. Prior IS research has also surfaced such a *Tug of War*. For example, Newman & Noble (1990) characterized the conflict between users and analysts as one in which one side won.

The *Obstacle Race* focuses more on efforts to pursue or oppose the ISD project. Having considerable power, and viewing the system – or at least some aspects of it – to be a threat, the non-proponents create obstacles during ISD (Grover *et al.*, 1988). This process is closely related to the prior discussion of counter-implementation (Keen, 1981) and resistance (Hirschheim & Newman, 1988). For example, in a study of the implementation of a financial information system that would tighten control in a highly divisionalized company, the divisions tried to sabotage the system (Markus, 1983). Gwillim *et al.* (2005) found that in two global companies there was a reluctance to do project evaluation due to loss of power or resources. Similarly, Willcocks & Mason (1987) found a medical information system was resisted by doctors who were afraid that it would reduce their power relative to other medical staff. However, the doctors' resistance subsided when they realized that this potential threat would be nullified by continuing medical advances that only they could keep up with. In this study, in ProjOR, the sequence of initiation, resistance and analysis and design was followed by efforts to derail the project through deception. The resistance continued until it was suppressed through hierarchical authority.

The *Empire Building* process focuses on the participants' efforts to obtain parochial benefits through the ISD project. One reason for the high stakes in IS politics is that ISD projects potentially redistribute data (Keen, 1981) and other valuable organizational resources (Hirschheim & Newman, 1988). *Empire Building* resembles the kind of organizational change processes Pichault (1995) labels 'change as stake'. IS is an instrument here, having 'value only to the extent that it furthers some organizational goals, rather than having meaning or value outside that focus' (Sillince & Mouakket, 1997, p. 385). ProjEB highlights *Empire Building* efforts by both OR and IS. The ISD project provided the context for the efforts by the OR and IS groups to enhance their influence in the organization. It started with OR trying to impose its GIMS standards, but ended up with the IS group's standards for software being imposed on OR and the GIMS development being moved to IS. Although the non-proponents (IS) were in a less powerful position than the proponents (OR) at the start of the process, towards the end they had increased their power, partly by developing another successful prototype. This highlights that the balance of power, shown along the vertical axis in Figure 3, might itself change during the project. Consequently, in ProjEB, it was not the proponents but the non-proponents who succeeded in *Empire Building*!

The three political processes differ in several ways, in addition to the differences in the underlying circumstances, as shown in Figure 3. First, unlike *Tug of War* where the parties are vying for control of the project possibly to modify its goals, *Obstacle Race* involves political actions intended to hinder the project, such as through withholding support. In contrast to these processes, the project itself is secondary in *Empire Building*, where the objective is usually to redistribute organizational resources or enhance some intellectual property or reputation as a means for organizational influence and control. Second, these processes differ in their rela-

tionship to IS and ISD. In *Tug of War*, the IS is the prize for which the parties compete; in *Obstacle Race*, the ISD project is a threat (at least to the non-proponents); and in *Empire Building*, the IS is the instrument (at least for the proponents). Finally, unlike *Tug of War*, which takes a zero-sum view of power, *Obstacle Race* and *Empire Building* both imply a positive sum view; all parties may benefit from the political process (Fincham, 1992; Sillince & Mouakket, 1997; Doolin, 2004). Despite these distinctions among the three processes, further research is needed to better understand and validate the taxonomy using additional samples and alternative methodologies.

Further research is needed to build a theory of ISD politics. This paper has identified – and offered a possible explanation for – three types of political processes that may be encountered in ISD projects. As discussed above, these processes seem distinct. However, as seen in ProjEB, the balance of power or the participants' perceptions of the system may change during the project. An ISD project may also start as one kind of political process (e.g. *Obstacle Race*), but then shift to another form (e.g. *Tug of War*), as the participants' perceptions change (e.g. non-proponents who were opposing the project may recognize that it offers opportunities they had previously not recognized). Thus, ISD projects may encounter combinations of the three processes identified here.

Future research can contribute to a theory of ISD politics by connecting the three political processes to contextual factors. Such future research can examine whether the two aspects depicted in Figure 3 influence the process as we have argued. We have proposed that when the proponents of the ISD project are highly powerful, the *Empire Building* process is likely; when the proponents of the ISD project are less powerful, and the non-proponents view the project as a threat, the *Obstacle Race* process is likely; and when the proponents of the ISD project are less powerful, and the non-proponents view the project as an opportunity, the *Tug of War* process is likely.

Future research could also examine other conditions (e.g. organizational resources, norms and values) that might affect the likelihood of a particular process being used. The use of these processes may also be influenced by organizational structures, and by historical factors, including the level of success of previous ISD projects. Future research can also help understand ISD politics by examining the performance implications of the three processes. Together, relating the three political processes to the context and to performance would help develop a more comprehensive theory of ISD politics.

In addition, this study also uses a novel approach by taking a positivist stance on data that reflect perceptions of the stakeholder, and integrating qualitative and quantitative analysis to seek patterns. We propose that analysis of event sequences is useful in studying the dynamics of processes and compute a quantitative measure of the dissimilarity between each pair of processes. This also enables bridging across the micro and macro perspectives, the importance of which has been recognized in the prior literature (Howcroft & Light, 2006). Future research on ISD processes in general, and ISD politics in particular, can benefit from this analytical approach.

Finally, as with other classifications or 'mid-range theories' (Harrigan, 1985), this taxonomy of politics in ISD projects should facilitate contingency research. For example, the effects of

user participation and top-management support on the eventual project success might vary across the three political processes.

IMPLICATIONS FOR PRACTICE

This paper provides a description and explanation of politics in ISD projects and is not prescriptive in nature. However, it has three potentially important implications for practice.

First, the dynamics of the three processes and the illustrative examples highlight the importance of developing the political skills of IS personnel. By becoming politically sensitive to the real or imaginary concerns of other project participants, IS personnel can influence opinion leaders, build coalitions and persuade obstinate or reluctant individuals.

Second, the paper identifies, and differentiates among, three political ISD processes. By recognizing the likelihood of these processes through consideration of the other participants' views of the system, the perceived balance of power and the ongoing events in the project, senior executives and IS managers can try to anticipate later political process. For example, if a project encounters early attempts to make organizational changes, it might lead to *Empire Building*. If a project encounters early resistance, it might lead to *Tug of War* if the resistance is accompanied by competition and efforts to gain control of the project, and otherwise to *Obstacle Race*.

Third, the paper indicates that although project managers and IS developers play important roles in all three processes, their specific roles differ. It should help these individuals to employ 'appropriate politics' (Pinto, 1995, p. 9) in each of the processes. In *Tug of War*, these individuals should try to identify why the project is proceeding as a zero-sum process. They should try to alter the perceptions about the project, for example, by highlighting common benefits, to make it appear to be a positive-sum process. Moreover, they should seek ways of shifting the project to make it a positive-sum process, for example, through negotiation and incentives. In *Obstacle Race*, project managers and developers should accept their responsibility as change agents. They should look out for subtle and disguised resistance, and recognize the residual effects of using brute force to push the project through. Furthermore, they should consider altering the design of the system to alleviate perceived threat to those creating obstacles, and consider offering incentives and educating reluctant users (Hirschheim *et al.*, 1991). Finally, in *Empire Building*, project managers and developers should understand the project's role in organizational change. They should utilize their influence and help in managing the ISD process such that organizational benefits accompany, and are not inhibited by, *Empire Building* efforts.

LIMITATIONS

It is important to note some limitations of this study. First, the use of executive students to collect data has precedent, but its limitations must be acknowledged as students have interests other than providing data for research.

Second, each project was examined from a single perspective, thereby excluding alternative views. Given the subjective nature of politics, two individuals may perceive the same event differently (e.g. as resistance or as problems with the system). The use of a single informant was necessitated by the impracticality of incorporating the perspectives of all or most participants on each of the large number of projects that were needed for the empirical taxonomy. However, we took steps to try and ensure that the narratives were objective versions of reality.

Third, the three types of processes identified in this paper are not the only three possible ISD political processes that can occur. Some processes could be at the boundary between two or more processes, and some processes could be a hybrid of two or more of the three types described here. In addition, the empirical taxonomy is intrinsically based on the data itself, and might not include certain types of political processes that could not have been identified due to our choice of data collection methods. For example, projects in which the use of power early on in the process precludes conflict and overt politics later (Howcroft & Light, 2006) might not be seen as political.

Fourth, our results may depend on the event classification scheme and the way in which we classified the events. We took several precautions, such as using prior literature to develop the event classification scheme, assessing inter-rater reliabilities and excluding very short sequences and outliers, but researchers using another event classification scheme may have obtained different results.

Fifth, some of our simplifications might have affected the nature of the emergent taxonomy. For instance, we classified development and implementation events together. Also, we needed to place boundaries on the process, because requests for describing a longer process might have led to missing or inaccurate information. We therefore requested the informants to describe how the project unfolded until it came to a logical conclusion, and did not explicitly consider post-implementation processes.

Finally, event sequence analysis requires focusing on events, while excluding other information, for example, about possible motivations for various actors, the informant's feelings about participants and organizational history. This simplification is needed in sequence analysis to facilitate the representation of ISD projects using a parsimonious classification of events, and we tried to reduce this problem by considering the additional information when interpreting the clusters.

CONCLUSION

ISD projects often exhibit political behaviour that lead to dissipation of energy and jeopardize success. In this study, we have examined political actions at the individual level and aggregated them into broader sequences that detail how politics evolves. The resulting taxonomy includes three distinct processes: *Tug of War*, wherein multiple parties strive to gain control of the project; *Obstacle Race*, which involves efforts to resist and pursue the project; and *Empire Building*, which involves using the ISD project as an instrument to enhance political or resource base. While the derived processes are complex, we believe that they can be explained using

the balance of power between the system's proponents and non-proponents and the non-proponents' view of the project.

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REFERENCES

Abbott, A. (1990) A primer on sequence methods. *Organization Science*, **1**, 375–392.

Abbott, A. & Hrycak, A. (1990) Measuring resemblance in sequential data: an optimal matching analysis of musicians' careers. *American Journal of Sociology*, **96**, 144–185.

Bardach, E. (1977) *The Implementation Game: What Happens After a Bill Becomes a Law*. MIT Press, Cambridge, MA, USA.

Cobb, A. (1984) An episodic model of power: toward an integration of theory and research. *Academy of Management Review*, **9**, 482–493.

Cyert, R.M. & March, J.G. (1963) *A Behavioral Theory of the Firm*. Prentice Hall, Englewood Cliffs, NJ, USA.

Dahl, R. (1957) The concept of power. *Behavioral Science*, **2**, 201–215.

Doolin, B. (2004) Power and resistance in the implementation of a medical management information system. *Information Systems Journal*, **14**, 343–362.

Drory, A. & Romm, T. (1990) The definition of organizational politics: a review. *Human Relations*, **43**, 1133–1154.

Dube, L. & Robey, D. (1999) Software stories: three cultural perspectives on the organizational practices of software development. *Accounting, Management and Information Technologies*, **9**, 223–259.

Ein-Dor, P. & Segev, E. (1982) Organizational context and MIS structure: some empirical evidence. *MIS Quarterly*, **6**, 55–68.

Enns, H.G., Huff, S.L. & Higgins, C.A. (2003) CIO lateral influence behaviors: gaining peers' commitment to strategic information systems. *MIS Quarterly*, **27**, 155–176.

Fincham, R. (1992) Perspectives on power: processual, institutional, and 'internal' forms of organizational power. *Journal of Management Studies*, **29**, 741–759.

Franz, C. & Robey, D. (1984) An investigation of user-led system design: rational and political perspectives. *Communications of the ACM*, **27**, 1202–1209.

Grover, V., Lederer, A.L. & Sabherwal, R. (1988) Recognizing the politics of MIS. *Information and Management*, **14**, 145–156.

Gwillim, D., Dovey, K. & Wieder, B. (2005) The politics of post-implementation reviews. *Information Systems Journal*, **15**, 307–319.

Harrigan, K.R. (1985) An application of clustering for strategic group analysis. *Strategic Management Journal*, **6**, 55–73.

Hirschheim, R. & Newman, M. (1988) Information systems and user resistance: theory and practice. *The Computer Journal*, **31**, 398–408.

Hirschheim, R., Klein, H.K. & Newman, M. (1991) Information systems development as social action: theoretical perspective and practice. *Omega*, **19**, 587–608.

Howcroft, D. & Light, B. (2006) Reflections on issues of power in packaged software selection. *Information Systems Journal*, **16**, 215–235.

Jasperson, J., Carte, T.A., Saunders, C.S., Butler, B.S., Croes, H.J.P. & Zheng, W. (2002) Power and information technology research: a metatriangulation review. *MIS Quarterly*, **26**, 397–459.

Katz, D. & Kahn, R. (1966) *The Social Psychology of Organizations*. Wiley, New York, USA.

Keen, P.G.W. (1981) Information systems and organizational change. *Communications of the ACM*, **24**, 24–33.

Knights, D. & Murray, F. (1994) *Managers Divided: Organization Politics and Information Technology Management*. Wiley, New York, USA.

Lapointe, L. & Rivard, S. (2005) A multilevel model of resistance to information technology implementation. *MIS Quarterly*, **29**, 461–491.

Levine, H.G. & Rossmoore, D. (1994/95) Politics and the function of power in a case study of IT implementation. *Journal of MIS*, **11**, 115–129.

Lucas, H.C. (1981) *Implementation: the Key to Successful Information Systems*. Columbia University Press, New York, USA.

Markus, M.L. (1983) Power, politics, and MIS implementation. *Communications of the ACM*, **26**, 430–444.

Markus, M.L. & Robey, D. (1983) Information technology and organizational change: causal structure in theory and research. *Management Science*, **34**, 583–599.

Myers, M.D. & Young, L.W. (1997) Hidden agendas, power and managerial assumptions in information systems development: an ethnographic study. *Information Technology and People*, **10**, 224–240.

Newman, M. & Noble, F. (1990) User involvement as an interaction process: a case study. *Information Systems Research*, **1**, 89–113.

Orlikowski, W. (1989) Division among the ranks: the social implications of CASE tools for systems developers. In: *Proceedings of the Tenth International Conference on Information Systems*, Boston, MA, USA, DeGross, J. & Henderson, J. (eds), pp. 199–210. Association for Information Systems, Atlanta, GA, USA.

Pentland, B.T. (1999) Building process theory with narrative: from description to explanation. *Academy of Management Review*, **24**, 711–724.

Pichault, F. (1995) The management of politics in technically related organizational change. *Organization Studies*, **16**, 449–471.

Pinto, J.K. (1995) Make politics work for you. *Research Technology Management*, **40**, 9–10.

Pinto, J.K. (1998) *Power and Politics in Project Management*. Project Management Institute, Newtown Square, PA, USA.

Robey, D. & Sales, C.A. (1994) *Designing Organizations*, 4th edn. Irwin, Burr Ridge, IL, USA.

Sabherwal, R. & King, W.R. (1995) An empirical taxonomy of the strategic decision-making processes concerning strategic applications of information systems. *Journal of MIS*, **11**, 177–214.

Sabherwal, R. & Robey, D. (1993) An empirical taxonomy of implementation processes based on sequences of events in information system development. *Organization Science*, **4**, 548–576.

Sillince, J.A.A. & Mouakket, S. (1997) Varieties of political processes during systems development. *Information Systems Research*, **8**, 368–397.

Silva, L. (2007) Epistemological and theoretical challenges for studying power and politics in information systems. *Information Systems Journal*, **17**, 165–183.

Tushman, M.L. (1977) A political approach to organizations – a review and rationale. *Academy of Management Review*, **2**, 206–216.

Ulrich, D. & McKelvey, B. (1990) General organizational classification: an empirical test using the United States and Japanese electronic industry. *Organization Science*, **1**, 99–118.

Van de Ven, A.H. & Poole, M.S. (1995) Explaining development and change in organizations. *Academy of Management Review*, **20**, 510–540.

Ward, J.H., Jr. (1963) Hierarchical grouping to optimize an objective function. *Journal of American Statistical Association*, **58**, 236–244.

Willcocks, L. & Mason, D. (1987) *Computerizing Work: People, Systems Design and Workplace Relations*. Paradigm Press, London, UK.

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