MIS Quarterly

RESEARCH ARTICLE

LEARNING DYSFUNCTIONS IN INFORMATION SYSTEMS DEVELOPMENT: OVERCOMING THE SOCIAL DEFENSES WITH TRANSITIONAL OBJECTS[1]

By: **David G. Wastell**
Department of Computer Science
University of Manchester
Oxford Road
Manchester M13 9PL
U.K.
was@cs.man.ac.uk

Abstract

Given the continuing prevalence of IS failure, this paper contends that a fresh theoretical perspective and new methodological principles are required. It is argued that learning is crucial to the success of ISD, and that many IS projects miscarry due to the inherently high levels of stress and anxiety that imbue ISD and that elicit defense-avoidance behavior patterns in project teams. Such ***social defenses*** *reflect modes of group behavior that operate primarily to reduce anxiety, rather than reflecting genuine engagement with the task at hand. It is argued that the operation of these defenses can come to paralyze the learning processes that are critical to effective IS development*

Following a clinical research strategy, case studies are presented illustrating the working of defensive processes which undermined three IS projects. Three social defenses are illustrated: the organizational ritual, the sibling horde, and paranoid isolationism. Drawing on psychodynamic theory, the concept of **transitional space** *is introduced. Such spaces have two important aspects: a supportive psychological climate and a supply of appropriate* **transitional objects** *(i.e., entities that provide temporary emotional support).*

It is argued that IS development should be reframed as a transitional space, with particular attention given to the selection of appropriate transitional objects to assist in breaking down defensive processes. The cases are revisited to illustrate this approach in action; useful insights and positive practical outcomes are shown. It is concluded that the present psychodynamic perspective has considerable value in relation to the IS discipline: theoretically, in terms of our understanding of the social dynamics of ISD and at a practical level too, through the provision of diagnostic concepts and remedial measures that have significant potential to enhance IS praxis and to redress the high rate of IS failure.

Keywords: IS development, organizational learning, stress and anxiety, social defenses, transitional space, transitional objects, methodologies and models.

ISRL Categories: AA06, AA0903, A10101, FA, FD08

Introduction

Despite impressive technical advances in tools and methodologies and the organizational insights provided by many years of academic

[1]Robert Zmud was the accepting senior editor for this paper.

research, IS failures remain all too common. Recent spectacular examples include the London Ambulance Service fiasco (Wastell and Newman 1996), the failure of the Taurus share dealing system (Drummond 1996), and French railway's ill-fated train reservation system (Mitev 1996). These debacles provide a salutary reminder that IS development remains a highly perilous endeavor and that the problem of IS failure is far from resolved (Lyytinen 1988; Sauer 1993). For the discipline of IS, this suggests that there are still deficiencies in our theories and tools, and that if further progress is to be made in abating the rate of failure, new theoretical ideas and methodological principles are required.

The present work is an attempt to provide such a fresh perspective. The author develops an argument originally propounded by Wastell and Newman (1993) that many of the dysfunctions of IS development are due to its inherently stressful nature and the adverse impact that this has on participants. This stressfulness emanates from the high complexity (technical and managerial) of IS projects, that such undertakings typically involve a daunting combination of exacting cognitive demands, high levels of risk and uncertainty, political strife and the need to accommodate multiple stakeholder interests. Wastell and Newman (1993) contend that this climate of stress and anxiety exerts a pernicious influence on the cognitive and social processes that are fundamental to the success of IS development.

In particular, *learning* is disrupted. The importance of learning in IS development (ISD) has been emphasized by many authors (e.g., Ciborra and Lanzara 1994; Lyytinen and Robey 1998; Pentland 1995) and is implicit in the advocacy of user participation as the key to success (Kirsch and Beath 1996; Newman and Noble 1990). Normatively speaking, ISD is a process of organizational change in which IT systems are designed and deployed to enable more effective operational practices. To bring this about, the prevailing business paradigm must be questioned with goals, processes, and roles considered afresh in the light of new technological potentialities. Both IS professionals and users must engage in an intensive learning experience, the former to develop a thorough understanding of the business domain, the latter to reflect on current practices and to acquire an understanding of the potential of IT to transform how work is done. Through this process of communication and discovery, design work is progressively accomplished, ultimately resulting (if all goes well) in a technically sound system that satisfies the users and meets the business requirement. Although other factors bear on outcomes (such as organizational politics, Markus 1983), an effective learning process is thus critical to the success of ISD. The author strongly concurs with the view that inadequate and superficial learning lies behind much IS failure (Lyytinen and Robey 1998), and that the major problem in ISD is "limited learning, i.e., the limited capability to reflect upon and reframe the institutional and cognitive grounds that support habitual ways of doing things" (Ciborra and Lanzara 1994).

The overall aim of this paper is to discuss the problematic nature of ISD from a learning perspective. While the primary concern is with the sort of project-specific learning required to develop a particular concrete system, the existence of other forms of learning is also recognized, in particular the need for IS personnel to strive to improve their professional practice (through reflection on experience, by acquiring new techniques, etc.). Much of what the paper says is relevant to this level of learning as well. A theoretical orientation is adopted that is relatively novel in an IS context, that of psychoanalytic theory. It is argued that learning dysfunctions are endemic in ISD and that they can, to a significant degree, be seen as maladaptive responses to the anxieties that are latent in any learning situation but which are especially acute in ISD due to its inherently stressful nature (Wastell and Newman 1993). A reconceptualization of IS development is then presented, portraying it as a "transitional process"; this perspective is shown to generate new methodological insights and principles, and the efficacy of these ideas is demonstrated through a series of short case scenarios.

Anxiety and Learning: The Social Defenses

Broadly speaking, anxiety can play one of two roles in relation to learning (Figure 1). Wastell

(1996b) refers to anxiety as an "algedonic signal" (Beer 1994), which alerts the organism to the presence of a significant mismatch between its desired goals and the current situation. Psychologically, it is experienced as an unpleasant mixture of agitation and dread, involving a perceived threat to physical well-being or to the ego. The need to reduce anxiety may trigger one of two responses. On the one hand, it may galvanize healthy reality-oriented action, in which the threat is reduced through positive problem-solving. Alternatively, a defensive "displacement activity" may be evoked, which operates directly to attenuate the anxiety but which fails to address the "objective" situation. In Freudian terms, the "reality principle" is abandoned: relief is provided, but only superficially as the repressed problems have not been properly dealt with. Schein (1993) makes a similar distinction between the two potential roles played by anxiety in the learning process, which he dubs anxiety 1 (negative) and anxiety 2 (positive). In relation to its malign influence, he comments: "to avoid anxiety, we deny the problem, or simplify it even if that means distorting the problem, or project the problem onto someone else, or in various other defensive ways, *manage not to learn.*"

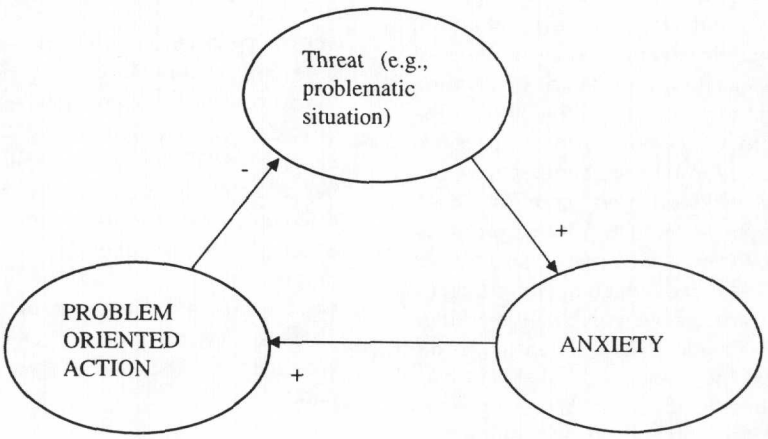
The present work is concerned with such defensive, antilearning processes, and with strategies to pre-empt and overcome them in the context of IS development. Two concepts are central to the approach: the *social defense* and the *transitional space*. The former will be discussed in this section; the latter in the next. The social defense is the group level counterpart of the intraindividual defense mechanisms described by Freud (Brown 1961); it denotes a durable configuration of social behavior that, while seeming rational and task-oriented, functions primarily to contain anxiety. The concept was originally articulated by Jacques (1956). It has been extensively elaborated in a general business context by Hirschhorn (1988, 1999), and has featured in recent research on organizational learning by Voyer et al. (1997) and Bain (1998). The social defense has much in common with Argyris' (1990) concept of the "organizational defence routine." Such routines help diffuse anxiety in threatening situations by covering up and bypassing painful issues. But they are ultimately selfdefeating: they avoid authentic engagement with substantive problems and inhibit real learning, which depends on openness, mutual trust, and a selfcritical disposition.

The social defense is thus the antithesis of genuine organizational learning. Several generic forms of social defense will now be briefly described, drawing primarily on the work of Hirschhorn (1988). Although they share a number of underlying psychodynamic principles, these defensive processes manifest themselves in a range of generic phenotypes. Three such syndromes will be described: the organizational ritual, the sibling horde, and paranoid isolationism. These archetypal forms will be illustrated in the case scenarios that will be presented later in the paper.

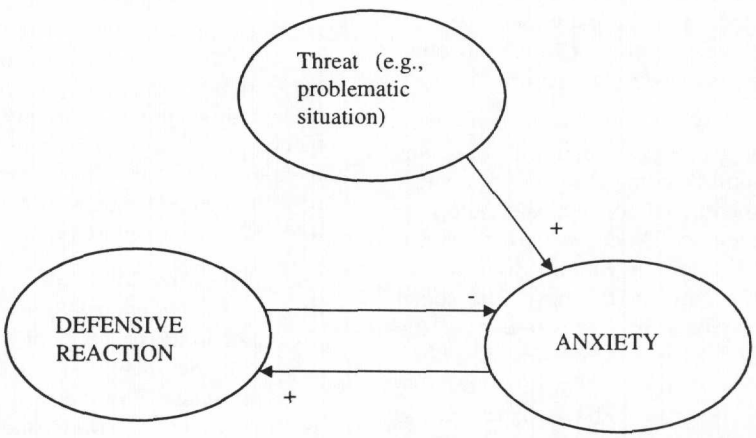
Hirschhorn (1988) defines the *Organizational ritual* as a work practice or procedure that takes on an authority of its own, dictating the behavior of individuals who follow the ritual rather like automata, their behavior no longer grounded in individual responsibility and personal engagement. The bureaucratic procedure provides a good example of this phenomenon. Menzies-Lyth (1988) makes extensive use of the idea in her much-quoted work on nursing practices, interpreting the apparently heartless and mechanical way in which nurses follow treatment protocols as a device for containing the pain that would ensue were they to engage with their patients at a more personal level.

The *sibling horde* is a more primitive form of defense (Hirschhorn 1988) that involves the acting out of an immature set of social relationships based on the roles and rituals of family life. Hirschhorn describes the case of a public sector agency where, following the departure of a strong but feared leader, senior executives enacted a fantasy of sibling rivalry, competing against each other in a way that paralyzed the power and authority of the new leader. This internecine conflict enabled the managers to deny the loss of the old leader, on whom they felt dependent but protected; by undermining the new leader, a power vacuum was also created that allowed the "team" to avoid addressing the real problems facing the organization.

The third defense is that of *paranoid isolationism,* a maneuver in which a group of individuals react



a) Healthy Learning



b) Maladaptive defense-avoidance

The psychodynamics of learning are depicted using simple causal networks showing positive and negative feedback loops (Senge, 1990). The upper portion shows healthy learning in which anxiety acts as stimulus for effective action. The lower portion shows its pathological counterpart in which anxiety evokes a defensive response in which the "threat" is not addressed.

Figure 1. The Psychodynamics of Learning

to a problematic situation by cutting themselves off from the outside world, adopting a paranoid posture and withdrawing into what amounts to a self-contained fantasy world. This reaction bears many similarities with *groupthink* (Janis 1989), which refers to the tendency of groups under pressure to turn inward, to develop and maintain a cohesive but distorted, paranoid view of the world.

IS Design as a Transitional Space

The argument advanced by this paper is that IS development, because it depends on effective learning, is highly vulnerable to blockage by antilearning defenses arising from the stresses of the development process. This section considers how these defensive processes may be overcome. At the core of the present approach is the concept of the *transitional space* together with the cognate idea of the *transitional object*.

The idea of transitional space was developed by Bridger and others at the Tavistock Institute of Human Relations in the UK (Klein 1989; Miller 1993). The Tavistock is renowned for its pioneering work on the application of psychoanalytic concepts in management consultancy, especially in relation to organizational change and learning. Organizational learning is now, of course, a burgeoning research topic. Arguably, the emphasis of much recent work (e.g., widely cited models such as that of Huber 1991) is on the mechanics of learning (how to acquire, distribute, interpret, and store knowledge). What distinguishes the work of the Tavistock is its focus on the corrosive influence of anxiety on learning and the application of psychoanalytic ideas both at a diagnostic and therapeutic level. The concerns of this paper are very much the same. While the existence of the wider literature on organizational learning is acknowledged, this paper is primarily concerned with expounding the author's particular theoretical position regarding anxiety and learning in ISD.

First, some brief words are said on the nature of learning. Huber (1991) defines learning behaviorally as a change in an entity's repertoire of response brought about through the "processing of information." Others, such as Senge (1990), put greater emphasis on the cognitive dimension of learning, that new behavior depends on and follows from an internal change in cognition, i.e., an enhanced understanding of the world. The present author also gives primacy to cognitive over behavioral change, while recognizing the intimate, reciprocal relation between the two (i.e., between action and understanding). Piaget (1970) depicts this dialectic in terms of two processes: that of *accommodation* (adapting cognitive structures to the world) and of *assimilation* (using the structures to interpret the world, as a basis for action). Learning is thus seen as a transition on the part of a cognitive entity (be it a single human being or an organization) entailing changes in epistemic schemata and in behavioral repertoire. The "zone of change" in which learning occurs is referred to as a *transitional space*. Like the Tavistock researchers, the author's interest is in how to create and configure the transitional space in a way that best facilitates the transition. There are two aspects to this: populating the space with appropriate *transitional objects* and the creation/maintenance of a supportive psychological climate.

The transitional object (TO) is a central idea in educational theory (Greenhalgh 1994), deriving from Winnicott's seminal studies of play and learning in children. Winnicott (1987) describes how such objects are important in the development of independence and self-reliance. The child's teddy bear is the classic example. It serves to help the child separate from its mother by acting as a surrogate protective figure; supported by the TO, the child develops self-confidence and ultimately makes the transition from dependency to independence. The concept of a transitional object thus refers to some "entity" that enables intellectual and emotional development by providing a temporary source of support allowing the learner to "let go" of a former, dependent relationship. This dependency could involve a person, an idea, a theory, or indeed a work-practice. The importance of TOs in relation to learning in business organizations has been emphasized by Hirschhorn (1988) and Senge (1990). A broad range of entities can function as such objects, both inanimate (e.g., models, methodologies) and human (teachers, consultants). Senge has advocated the use of software-based simulation environments ("microworlds") in this

role, through which managers can construct and explore models of organizational dynamics.

Two forms of transitional object are of special relevance in ISD, namely models and methodologies. *Models* are ubiquitous in IS practice, running the gamut from static representations (e.g., ER models) to working models such as simulations. Typically they are not seen as transitional objects although the author contends that they have a crucial role to play in this respect. Constructing models provides the opportunity for users and developers to articulate a shared understanding of the application domain in which its complexity is reduced to cognitively tractable proportions. Models are technically necessary (as IS specifications) but they also operate (potentially) at a more subtle emotional level as transitional objects. By reducing complexity, they facilitate learning by instilling confidence and a sense of control.

Methodologies also have a potent transitional role. Methodologies are reified bodies of procedural knowledge that render objective the expertise necessary to execute a complex and demanding task. In the context of any given project, they facilitate ISD by providing a source of instrumental knowledge that aids directly in the project's accomplishment. But methodologies function as more than instrumental tools: they also provide psychological support. The relationship between the user of a methodology and the methodology itself is a psychodynamic one and it is crucial that the emotional dialectics of this relationship be properly understood. Methodologies are not simply repositories of technical knowledge; they also embody authority, i.e., the methodology says not only *how* to do things, it also says that things *should* be done that way. The practitioner thus gains support from the methodology at both an instrumental level and in terms of his authority to act, the latter implying a temporary relinquishment of personal responsibility as the user of the methodology draws on the methodology to authorize his actions.

This projection of authority has positive value, especially for the inexperienced practitioner, as (like a teddy bear) it provides emotional security and thus emboldens the methodology user to engage with the daunting challenges of ISD. On the negative side, however, there lurks the danger of practitioners becoming too dependent on the methodology and not taking proper responsibility for their actions. When this occurs, the methodology is no longer functioning as a transitional object (enabling genuine problem solving) but as a ritualistic social defense. As practical experience develops, the danger of such fixation diminishes: studies of skilled designers show that they characteristically use methodologies in a flexible, pragmatic fashion (Bansler and Bodker 1993). At this stage, the methodology no longer functions as a TO; mastery has been attained and it is no longer necessary as a psychological crutch.

In summary, the author is arguing for a fundamental reframing of IS development as a transitional space, in which the design of an IS, first dimly seen in ambiguous and shifting outline, steadily takes shape through a process of mutual learning involving IS professionals and users. This learning process can be facilitated by the provision of appropriate transitional objects, whether they be techniques, models, or human agents. It also requires, as has been mentioned, a second ingredient, namely a supportive psychological climate. Both Senge and Schein emphasize that for learning to occur, anxiety and conflict must be supplanted by confidence and trust; people must feel "safe to play." To create this climate, it is vital that restrictions be removed, that "players" are not subject to inhibiting external pressures (especially of time) and more importantly here, internal inhibitions arising from their fears, past habits, and insecurities (Klein 1989).

Case Scenarios: Introduction and Research Approach

Several case scenarios involving the development of information systems are now presented. The presentation and discussion of the cases is organized in two sections: the first focuses on the manifestation of defensive symptoms in the three case settings; the second discusses how the reconceptualization of ISD as a transitional space was used to break down the social defenses and enable learning. The cases have been selected on the basis that each provides a good example of one form of social defense, although defensive

symptoms of other types are also seen. The case material has been largely drawn from three IS projects involving the author in a consultancy role, supplemented by an interview study. The narratives are constructed from diverse documentary sources: formal interview records, meeting minutes, and ad hoc observational notes. Cited quotations are taken from these records.

The general research approach follows the paradigm that Schein (1987) has described as "clinical field work." In an obvious metaphor with medical practice, Schein uses the term "clinical" to refer to a mode of inquiry based on the intervention of "helping professionals" (management consultants, IS professionals, etc.) in "human systems" (typically business organizations). Schein distinguishes this mode of inquiry from conventional qualitative research (ethnography in particular) in terms of a number of dimensions. The hallmark of clinical research is its foundation in some theory of "organizational ill-health," which is both diagnostic (it provides a way of understanding what is wrong) and therapeutic (it indicates which remedial measures are appropriate). Clinical research is also more narrowly focused than conventional research (typically on issues of interest to senior management sponsors) and validation of theory revolves around its ability to suggest efficacious interventions. Baskerville and Wood-Harper (1998) designate clinical research as a form of action research, although with a looser structure and a clearer commitment to an a priori theoretical position. Much case research in IS could, in their view, be classified as clinical, although it seldom is. They cite Hammer and Champy's (1993) classic reengineering work to illustrate their point.

The present research approach is designated *clinical* because it is based on a theory of organizational ill health (namely the existence of social defenses as barriers to learning) and it involves the active deployment of therapeutic measures to treat this malaise (e.g., transitional objects). There are clear epistemological drawbacks to the clinical approach from a scientific viewpoint, e.g., validation is problematic as it is difficult to rule out alternative explanations for findings. The reader of this paper may well speculate, for instance, on other interpretations of the cases. However, the possibility of alternative explanations is not critical for the reason that the accounts are not presented as definitive narratives. Rather, they are presented simply because they were the diagnostic interpretations that guided the interventions, and to the extent that these interventions were effective, validity is claimed for the interpretations and the underlying theory.

In general, the author believes the clinical model to be of considerable potential value as a way of systematically building and refining theory on the basis of consultancy work. Schein argues that there is a sense in which theory generated by the clinical approach is stronger than conventional methods. Being based on real interventions, it has the power to provide insights into deeper aspects of organizational dynamics (e.g., power) than investigations that do not perturb the status quo. The use of the clinical model would seem to have much promise in closing the gap between theory and practice in IS research, thus answering the call for greater relevance in our research endeavors which is a matter of long-standing and increasing concern (Benbasat and Zmud 1999; Davenport and Markus 1999).

Acme Stores: Case History and Symptoms

The first of the "exhibits" is Acme Stores, a "homeshopping" company providing a mail order service for a wide range of household items. The author's involvement took the form of an interview study (carried out in 1993) focusing on their experience in implementing a new parcel-tracking system (PTS). The case is described in full elsewhere (Wastell 1996a); only a brief overview is given here. What made the project of special interest was that the IS department in Acme had just taken the decision to replace its in-house development method with a structured methodology, SSADM (Downs et al. 1992). PTS was the first project on which SSADM was deployed. The following narrative is reconstructed from interviews with the project leader (PL), a senior developer (SD), and several users.

Problems were apparent from the outset of the project. PL commented that IS staff lacked confidence in their use of structured techniques that manifested itself in an overly fastidious attention

to notational detail and the aesthetics of diagrams. One of the strengths of SSADM is its clear prescriptive structure, in which every step in the development process is precisely delineated. Although developers appreciated the rigor that such a detailed framework provided, it became increasingly apparent that the methodology was being followed in a blind, mechanical way. SD observed that:

> People were investing dataflow diagrams with more formality than they justified...they became more involved with following the methodology and lost sight of what the system was for—they become worried about what task to do next... task 3.2.1, then 3.2.2 and so on ... people got bogged down... they lacked the confidence to say we're getting into too much detail here.

Although SSADM places considerable emphasis on user involvement, in practice it appeared that communication between users and designers was being obstructed by the methodology. Users complained that they would be presented with large sets of diagrams which they found difficult to understand; one commented that "we did not know what we were doing or why we were doing it...we felt ourselves becoming lost in the huge structure of the method." Rather than facilitating communication, the diagrams appeared to be functioning as device for avoiding real dialogue. SD remarked that many of the IS people wanted to avoid talking to users:

> they would send documentation through the internal post with a request to check it and report if there were any errors. It was a defensive attitude... I'll send this out, get on with the next thing, let them see all the work I've been doing.

Concern at the slow rate of progress was expressed at a mid-term steering group meeting where calls came from the user side for the development process to be streamlined. The IS department insisted, however, on the importance of taking a rigorous approach, arguing that SSADM represented a new "culture of quality." However, six months after the delivery date, the project was still far from complete and a systematic review was instigated. The overly bureaucratic structure of SSADM was identified as a significant concern, that too much time had been spent on producing and checking paperwork. User involvement was also highlighted as a major issue. SD commented that: "In the past, users got what they were given. They expected the IS department to do the work, to go away and bring a system back...they did not see systems development as part of their job." SSADM was an opportunity to break away from this passive role: users were expected to play an active part in specifying the system and ensuring that what they got was what they wanted. In practice, this higher level of involvement had not occurred.

Acme: Diagnostic Comments

The most striking feature of the case is the obeisant attitude of the IS staff toward the SSADM methodology. This strongly suggests SSADM was providing a defense mechanism. Wastell (1996a) has argued that IS methodologies, by providing comforting rituals, have considerable potential to function as social defenses. Rather than fulfilling their ostensible rational role of providing an efficient and effective medium for building information systems, they can function at a deeper level as a defense against the anxieties and uncertainties of ISD. As has been argued, IS projects can be highly stressful; they are technically demanding and often involve painful challenges to established structures and practices. Awkward questions must be asked, awkward users confronted, and a complex IT solution somehow developed and implemented.

In this stressful milieu, "following the methodology" provides IS professionals with an illusion of control: by subordinating themselves to the authority of SSADM, the IS staff in Acme were able to escape from their feelings of inadequacy faced with the daunting problems of developing a new system (Wastell 1996a). They drew back from the real job of analysis, of engaging with users in an open and frank debate about IS requirements. Instead, they withdrew into the "womb of security" provided by the method. They fretted about details of notation, of whether the method was being correctly followed, and they distanced themselves from users. The other side of this withdrawal was the aggrandizement of methodology as an all-powerful agency: somehow SSADM would realize the IS solution

as long as they followed its rules and procedures! The dominant social defense in Acme was thus the operation of SSADM as an organizational ritual (Wastell 1996a).

Symptoms of the second of the defense mechanisms, the sibling horde, were also evident. Acme was a very conservative company organized along traditional lines with well-defined, functional departments. Managers were effectively administrators and innovation was regarded with great caution. One of the motives for using SSADM had been to promote more user involvement. However, authentic collaboration, with users and designers taking an equal share of responsibility, presented a radical challenge to the hierarchical paternalism of Acme. In practice, user managers (who had sat on the project's steering group) had made little real input to the project (PL described the group in disparaging terms as "very passive? just a talking shop"); they simply expected the IS function to take all the responsibility, do all the work, and deliver a system satisfying their needs. Clearly, this is a fantasy in the sense that success cannot be achieved without their active involvement, but by casting the IS function as an all-powerful provider and themselves as dependent children, the users were able to avoid the responsibilities of genuine partnership.

Bellflower: Case History and Symptoms

The second of the cases is Bellflower, a medium-sized UK engineering company, manufacturing valves for the water industry. As a result of an overture from the company, a joint project had been initiated in 1995 to develop an information system for sales engineers providing them with better customer information and product data. The author was the lead academic on the project, responsible for managing a small team of researchers and for providing technical advice on IS design.

One of the main requirements was the need to provide more accurate information regarding production and delivery times for valves as there had been a recent history of late deliveries. Customer frustration was increasing, some loss of business had occurred, and there were signs of falling market share. A key issue was to investigate the etiology of this problem. Technically, the analysis indicated the problem to be attributable to the firm's primitive MRP system, which was essentially concerned with monitoring stock levels and "reordering" components, rather than managing current and future production of complete units. Delivery time estimates were based on a list of "lead times" generated each week by the MRP system; these simply indicated the time, at the current moment, needed to build a valve given the MRP's knowledge of stock levels and assuming no further demands on capacity. The MRP system thus took no account of the overall demands (e.g., orders in the pipeline) on the business.

As the analysis began, it became apparent that the management climate within the company was seriously going to impede our attempts to develop a system that involved substantial cooperation between different departments, Sales and Production in particular. The management style was very autocratic with an aggressive "no lose" sales policy the cause of considerable conflict. The lead developer on the project (MR) commented in a confidential report that:

> The managing director is widely seen as a bully, with little tolerance of variation from written procedure or for innovation. Permission is required for any variation and sanction for any employee's action?. The "no lose" policy means that they will do anything to withhold an order from a competitor, be it to cut price or promise short delivery."

Commenting on the adversarial relations between departments, MR observed that:

> Some sales engineers seem to enjoy being pitted in a battle to win enough concessions from Production to ensure that their customers will not be put into the backlog.... Previous attempts to resolve these issues through quality circles and inter-departmental meetings have failed because they never really got to the root of the problem.

Bellflower: Diagnostic Comments

On the surface, the delivery-time problem seems to be a simple case of miscommunication arising

because the weekly assessment of lead times did not take into account the typical three-month lag between quotation (in which a delivery date was promised) and the time at which a firm order was received. In principle, a conversation was taking place in which Sales was asking Production "What is the delivery time for this valve?"; the "lead time" information provided by Production can be seen as its reply. Interpolating the implicit elements of this conversation (shown in italics) risibly demonstrates its pantomime quality:

> **Sales:** *When this order is placed at some unspecified point in the future* what can you promise as the delivery time for valve X?
>
> **Production:** *If you were to order valve X now and we had no capacity restraints* we could deliver in N weeks.

The conversation clearly fails because the implicit components are "not heard," i.e., one party appears not to understand the question being asked and the questioner fails to realize that the answer being given is inappropriate. The real question, however, is why this pattern of miscommunication had become institutionalized. Both parties knew that something was wrong, yet nothing had been done to resolve matters. This could only be because the dialogue was advantageous for both parties. Against this background, let us ask first what Sales gained. Sales' problem was that it was assessed in terms of the financial value of its orders and the "no lose" policy put it under intense pressure to win business. A fictional answer from Production suited Sales. The lead times were in effect minimum lead times; they were highly unrealistic, but they allowed Sales to quote short delivery times. And, of course, Sales could always blame Production if (when!) the delivery was late. Production on the other hand was judged in terms of its ability to deliver on time. The problem was that Production could not answer the real question: how could it give delivery times for orders placed at some unspecified point in the future? Production gave the only answer it could, i.e., based on the current situation. The dysfunctional conversation allowed Production to neatly side-step a difficult question by answering an easy one. When the delivery was late, it could always blame Sales for not giving warning about prospective orders.

The dominant defensive symptom in Bellflower is the use of conflict to avoid the assumption of responsibility, i.e., we have an example of the defense of the sibling horde. The triangle of relationships involving Sales, Production, and the managing director (MD) bears a strong resemblance to the archetypal family situation, symbolized by Freud's concept of the primal horde, i.e., a tribe of brothers dependent on a hated but feared father figure (Marcuse 1972). The conflict between Sales and Production is redolent of the behavior of squabbling children. Rather than facing up to critical problems, they fight and blame each other, refuse to own up, scape-goat the MRP, and so forth. The presence of a strong patriarchal leader reinforces these fantasy roles; indeed the MD's role as a stern father is legitimated by their behavior: "because they are behaving like children, then I will treat them as children."

Playing out the sibling role wards off anxiety because it allows the "brothers" to avoid taking responsibility: they are only children after all; solving problems is something "grown-ups" do! It allowed each party to absolve itself of responsibility for the problem, excusing them from taking difficult action to resolve matters, action that entailed acknowledging their failings and accepting their mutual dependence. However, this retreat into "departmental bailiwicks" had paralyzed their ability to learn how to manage the situation more effectively. Solving the problem depended on cooperation between the two departments; neither could solve it unilaterally.

Erewhon Ambulance Service: Case History and Symptoms

A recent project in the Erewhon Ambulance Service (EAS) supplies the third of the exhibits. EAS provides the emergency ambulance service (via a fleet of 60 or so vehicles staffed by paramedically trained crews) for Erewhon, a large metropolitan area in England. In mid-1995, EAS initiated a project aimed at introducing "clinical audit" within the service. Clinical audit is a well-established quality improvement mechanism in health-care that involves setting targets and measuring performance in order to improve clinical practices (Kogan et al. 1995).

At the core of this initiative was a new Paramedic Information System (EPIS) comprising a dataset of items that were to be routinely collected for each incident (time and location, rudimentary details of any clinical interventions, etc.). The implementation of EPIS was a major undertaking technically and organizationally. Data collection terminals had to be installed and tested for each ambulance and over 200 staff trained in its use. Despite this, the definitive system was implemented to the planned schedule in August 1996.

In September, the author (and a colleague) were commissioned to evaluate the system. The author was well-known to EAS, having completed a highly favorable evaluation of another IT system; however, this time the evaluation was very critical. In short, EPIS was judged to be almost worthless for clinical audit purposes. In particular, there were many areas where critical data was missing, e.g., there was no information regarding the initial clinical status of patients, thus making it impossible to judge if decisions regarding treatment options had been correct. There also appeared to be wide variations in the way that different crews recorded cases and interpreted operational definitions. Paramedics themselves, while not overtly hostile to the system, were somewhat cynical. They saw EPIS as being of very limited value to them, "another management gimmick" one commented.

The report's principal criticism was the lack of a real understanding of the nature of clinical audit in the higher echelons of EAS. No cogent view of audit emerged in our interviews, although there was strong adherence to the belief that collecting clinical data would be of considerable value as a resource management tool. However, beyond one or two fanciful examples, no clear, implementable concept of audit emerged. This lack of vision is all the more remarkable given that clinical audit is a well-understood concept in the rest of the UK Health Service, where it is seen as a professionally oriented quality improvement process. Yet such a philosophy had had little influence on the design of EPIS. As a result, critical clinical and procedural detail was missing.

The history of this failed project is characterized by several themes, playing in an elaborate counterpoint. At the outset, senior management had failed to enunciate a clear vision of clinical audit. Despite this, they had instigated a major project to create a supporting information system. Although extensive consultation was essential to define requirements, both externally (e.g., with clinical specialists in emergency medicine) and internally (e.g., with front-line paramedics), neither form of consultation had occurred. Instead, the project had been simply handed over to EAS's IT department, which had progressed it with minimal external involvement, their view being that it was basically a "bean counting" mechanism for automating the collection of the sort of statistical information that had previously been collected on paper. Undoubtedly, this was of value, but it hardly met the requirements of clinical audit!

EAS: Diagnostic Comments

Although there are common elements with the other exhibits, the dominant symptom in EAS is of a different nature. The EPIS debacle provides a cogent example of the third of the defenses: paranoid isolationism. To develop a genuine audit system, a spirit of self-critical openness and a readiness to collaborate with other professional groups was crucial. Instead, a siege mentality had developed in which the senior managers in EAS had isolated themselves, both from operational elements of the Service (the paramedics) and external agencies. Both groups were seen as hostile and threatening. As a result, an information system had been developed that was wholly inadequate for the purposes of clinical audit; indeed, it was little more than a replication of the statistical reporting system that had been in place beforehand. The comments of a senior clinician eloquently describe the isolationism that had prevailed.

> It should not have been difficult to set up a group to design a sensible system. But they're very defensive, they won't let people in at the design stage. They need a clear concept of what the system's for and an open-house policy. The managers are very sensitive to anything that might reflect badly on the Service.

To understand how this had come about, some further background is required. Until recently, ambulance services in the UK were fully integrated parts of the National Health Service

(NHS), i.e., they were elements in a large public bureaucracy. Information systems played a part in the NHS, but not an integral role in service management; the systems that existed were essentially statistical reporting systems. Over the last decade, profound changes in the NHS have occurred. An "internal market" has been set up of purchasers and providers. In this new environment, many ambulance services have attained so-called "trust status," freeing them from the NHS bureaucracy and allowing them to operate, in effect, as commercial enterprises. However, the ambulance service is typically still managed by people who have spent much of their careers as administrators in a public bureaucracy. This was very much the case in EAS, where all the senior management had come from within the Service. Hence, they lacked real business experience and were unfamiliar with practices such as quality management.

Their defensiveness can thus be attributed to lack of confidence and insecurity. Although the concept of audit was manifestly not properly understood by EAS, senior managers were unwilling to expose their ignorance by engagement with others, especially with professional groups who had considerable audit experience combined with greater technical knowledge of emergency medicine (i.e., the senior clinicians). They were also loathe to risk establishing mechanisms that might yield results reflecting adversely on their professional practice (e.g., audit projects suggesting highly valued interventions to be counterproductive). For instance, when the researchers presented their report, they proposed a hypothetical audit project, namely an investigation focusing on minimizing on-scene intervention for cardiac arrest, the motivation being the belief voiced by some emergency physicians that patients were being over-treated at the scene and that this was producing harmful delays. This proposal was instantly rejected by EAS management, with the comment that: "this is too research oriented... looking at the impact of on-scene times would not tell us anything that we don't know already? we already know this." The researchers had serious doubts about this statement. To our knowledge, EAS does not have any evidence relating to the beneficial or adverse effect of reducing on-scene treatment, nor is any general information available in the published literature.

In summary, rather than set about the design and implementation of an effective quality system, senior management in EAS had turned inward, depicting the outside world as hostile and persecutory. To keep out "threatening others," they had taken refuge in the grandiose fantasy that they could build an audit system without any external help. However, they had not created an effective quality system at all; in fact, they had simply regressed to something that they did understand and that was non-threatening, namely a statistical reporting system.

Breaking Down Defenses With Transitional Objects

In the three cases, we have witnessed the social defenses at work in various guises undermining the development of information systems. In EAS, their operation had produced an IS that was largely worthless; in Acme, they had seriously compromised the business value of a major system and delayed its delivery; in Bellflower, the extant defenses clearly constituted a major barrier to the development of the new sales management system. The different cases show defensive processes in three different contexts: among developers (Acme), among potential users (Bellflower) and at the senior management level (EAS). This section revisits the cases and considers how the social defenses may be overcome by reframing ISD as a transitional space and through the deployment of appropriate transitional objects within this space. Bellflower is treated in the most depth, as this case best exemplifies the present approach.

Bellflower

From the present perspective, the key task in ISD is the need to identify an appropriate set of transitional objects and to establish a supportive psychological climate in order to facilitate learning. To build the required sales support system in Bellflower, a production scheduling model (articulating critical relationships between capacity, orders, and delivery times) was a *sine qua non*, and we naturally saw this model as the primary transitional device. Other objects featured in the situation but this was the dominant one, and so

the focus is exclusively on it. One may argue that the need for such a model is obvious, and the author would not dispute this. What is not so obvious is the conceptualization of it as a transitional object.

As well as providing the right sort of objects, it is also vital that the psychological climate of the transitional space is conducive to learning, i.e., it should be open, non-critical and supportive. Such "psychological safety" was especially important given the degree of conflict and distrust in Bellflower. To establish such an environment, a set of rules (the "rules of engagement") was explicitly laid down for project meetings. These rules were based on the accepted precepts of good teaching practice (Darwin 1977; Reynolds 1995), e.g., the debarring of threatening criticisms, the eschewing of closed questions, the acceptance of all views as worthy of examination. The researchers explicitly saw their role in the project as that of "curators" of the learning environment (i.e., the transitional space) that would enable the production scheduling model to be constructed.

Given the history of conflict in the company, a bilateral approach to model construction (joint workshops, etc.) was not regarded as appropriate or realistic, at least at the outset. Rather a mediational approach was adopted dealing with Sales and Production separately. Through a series of interviews and meetings (held under the rules of engagement), the researchers facilitated the development of a set of partial models articulating the world-views of each protagonist. On the Sales side, the focus was on developing predictive models of future demand which, with known orders, would enable meaningful production targets to be specified. On the Production side, the modeling focused on product structure and lead times for components and subassemblies.

The final phase involved synthesizing these inputs to produce an integrated model, bringing together the two perspectives. This model was refined and evaluated through joint workshops (tenable in the context of a bilaterally owned model) leading to its acceptance by both sides. A production scheduling tool implementing the model was bought, which has enabled production to be planned jointly by the two departments. In effect, the modeling process put in place the foundations of a sophisticated MRP system. Subsequent specifications for a full fledged MRP system have since been developed, which have drawn heavily on the modeling work that was done. This system is currently being implemented using SAP, supplemented by Lotus Notes for modules specific to the Sales department.

The role of models as transitional objects has been critical throughout the whole process, from the initial prototypes right through to the definitive unified model. By providing a non-threatening means of challenging assumptions and expanding learning horizons, the models rendered tractable the messy complexity of the everyday world, giving our "learners" the confidence to deal with a complex issue. Moreover, the models helped diffuse conflict. The impersonal, intellectual nature of the modeling process reinforced the "rules of engagement" by obliging the participants to step outside their "normal" social roles (i.e., as quarrelsome siblings) and to behave as thoughtful, rational adults capable of solving their own problems. The fantasy of the sibling horde was thus eroded, with "false independence" (both sides denying their mutual reliance) becoming steadily supplanted by a healthy acknowledgement of interdependence and "kinship."

The need for models to be empirically testable is an aspect that is worth emphasizing as a final remark. For instance, in one workshop, Production disputed the degree to which forward planning was really possible. Carefully avoiding "taking sides," the rejoinder was to suggest a concrete experiment. By looking retrospectively at past orders and quotes for a three month period, it was found that 75% of sales actually could be predicted, but that 25% could not. The experiment revealed Sales' argument to be partially justified, but nonetheless not fully adequate. This stimulated a useful refinement of the model, namely a segregation of the market into stable and variable segments. This vignette nicely illustrates the importance of testable, empirical methods (experiments or past data) as a way of resolving conflict and breaking down defensive positions, thereby enabling learning to proceed by allowing participants to "let go" of defective beliefs and prejudices.

Erewhon Ambulance Service

The initial reaction of EAS management to our report was very defensive. The critical issue, in our view, was to help EAS develop a real understanding of the nature of clinical audit. To this end, the report had proposed what was thought to be a relatively simple audit project (reducing on-scene time) to serve as a model of how audit ought to be done. It was hoped this would provide an effective transitional object, helping EAS to develop a deeper technical understanding of the information systems and work practices necessary to realize audit, and the confidence to proceed to full-scale implementation of quality improvement within the Service.

The initial project was rejected, as we have seen, and was clearly ill-chosen as a transitional object. It was simply too threatening, implicitly holding up to challenge a principle that was absolutely integral to the ambulance service's sense of self-esteem and public worth, namely, that paramedic resuscitation procedures for cardiac arrest were of indisputable benefit. Indeed, the audit project was predicated on the opposite premise! To make matters worse, we had argued for specialists in emergency medicine to be involved. This was advocated in order to help break down the barriers that EAS had erected around itself, but given its defensive posture, this proposal only served to entrench their resistance.

Given these considerations, an alternative project was subsequently proposed, namely, a largely in-house investigation of a new gel treatment for burns. This was seen as ideal as a transitional object. It was non-threatening (the focus was on the efficacy of the gel, not the competence and worth of the paramedics) and entailed minimal external involvement. The gel project was initially approved and detailed design work carried out. In the end, it was not carried through to fruition, due to competing priorities. However, the design work has helped develop both confidence and capability, and in the last two years EAS has made substantial progress. A clinical audit group has been formed which involves senior clinical representation. Several other audit projects have been carried out focusing on critical conditions such as angina and asthma. The Service's information systems have also been upgraded and now incorporate key information regarding initial clinical status that was omitted before.

The Aftermath of Acme: Gotham City Council

Regarding Acme, no further work in the company itself has materialized. However, the author is currently involved in a methodological initiative in another organization where the approach taken has been strongly influenced by the experience in Acme. The organization is a local government agency (Gotham Council) with around 30 development staff in the IT department. The aim of the project is quite radical: to move from the current software development approach (unsystematic and chaotic) to a more formal, user-oriented methodology.

This initiative represents a different form of learning from that discussed thus far. Up to this point, the main focus has been on learning at the level of the business domain, of understanding user requirements properly, and building the right system. In the Gotham case, the focus is on learning in the domain of IS practice; the aim is to improve the quality of IS work through the adoption of a new working methods. Both levels of learning are crucial to effective ISD, as was noted in the introduction, and transitional objects are critical in both settings, as they are in any learning scenario.

Given the prior experience in Acme, the key issue has been to avoid the kind of fixation and dependency seen there, where methodology came to function as a social defense. The risk of such fixation is clearly greatest where, as in Acme, a highly prescriptive methodology is imposed by fiat. Reflecting these concerns, the initiative in Gotham has been explicitly instituted as an experiment in which the onus has been on the practitioners to develop their own methodological ideas before consolidating these experiences into new working practices. This transitional space has, over the course of the project, been populated with a number of potentially useful TOs. For instance, several methodologies have been introduced to the practitioners (e.g., Soft Systems Methodology: Checkland and Scholes 1991), not as prescriptions but as resources to be explored and evaluated. Here the

transitional role of methodology is not to facilitate construction of a system but to function as an educational device enabling practitioners to think beyond current ways of doing things. The researchers themselves have operated as TOs, providing expertise and supportive encouragement, but making sure that responsibility and ownership remain firmly with the practitioners.

At the time of writing, the initiative is progressing well. A group of key practitioners has come together and two specific formal measures have been evaluated, namely the use of metrics for resource management and peer review to improve software quality. This evaluation is now complete and consideration is being given to the implementation of both practices. Further work on a fully-fledged project management system is also underway.

Discussion

This paper has attempted to shed new light on the chronic problem of IS failure by proposing a novel psychodynamic perspective. The author has argued that ISD is a problematic learning process in which high stress levels are, potentially, a serious disruptive threat. We have seen how three major initiatives were undermined by the operation of defensive processes, arguing that these scenarios typify the vulnerability of IS projects and that such learning dysfunctions are a significant cause of IS failure. Although each exhibit highlighted a particular "symptomatology," the three social defenses share several common features. They all represent patterns of defense-avoidance behavior in which a threatening situation is avoided by engaging in a diversionary pattern of social action that reduces the presenting anxiety but that fails to address the substantive problem.

The primary symptom is a shrinking of "social boundaries": in all three cases, we have seen a denial of dependency on others and a withdrawal from wider, and problematic, social engagements. In Acme, developers and users backed away from each other; in Bellflower, Sales and Production fought rather than cooperated; and in EAS, managers isolated themselves from their staff and external agencies. This *boundary attenuation* reflects what Hirschhorn (1988) refers to as a "retreat from role", i.e., an abdication of responsibility. The need to interact with others, to understand their viewpoints and problems, is critical for ISD to be effective. But this brings many risks: of "cognitive overload," of being judged inadequate, of encountering resistance. Such anxieties are avoided by redrawing the boundary, rationalizing this by denying the need for wider engagement (Acme), or by portraying other groups as persecutors not allies (Bellflower and EAS). The information system must still be built, however, even though crucial partners have been cut off. The cases indicate several "fantasies" through which developers can gain the necessary strength and power to overcome their feelings of inadequacy, e.g., by endowing a inanimate object with magical power (methodology functions as such a "fetish" in Acme) or by self-aggrandizement (the conviction in EAS that they could do it on their own).

Faced with such anti-learning defenses, the author has argued for a reframing of ISD as a transitional space and for the judicious use of transitional objects within this space to break through the defenses and release the learning processes that are the key to success. The idea of transitional space draws attention to the vital importance of engendering an open and supportive psychological climate that nurtures rather than deters learning. Within this space, transitional objects play a crucial role. In Bellflower, we have shown how the construction of a production scheduling model helped our clients to reflect more deeply on their work situation and to transcend the old antipathies that had become an excuse for inaction. In EAS, a pilot experiment has provided the critical TO. In Gotham Council, the deployment of a range of objects has assisted in the development of a new IS paradigm.

Implications for Practice

The present work has clear implications for practice. These can be most clearly seen by considering the perspective of those in leadership positions in IS projects. The framework suggests that the primary role of "project leaders" should be the creation and maintenance of a supportive learning environment and the populating of this "space" with appropriate transitional objects. To

create the right environment, project leaders could consider an explicit set of rules such as those deployed in Bellflower; in less extreme cases, the adoption of a flexible user-centered design methodology may suffice in order to create the right sort of open and critical spirit. Throughout the life of a project, leaders must be vigilant for symptoms of defensiveness and ready to deploy appropriate countermeasures; e.g., a workshop or some other initiative to re-engage with users when developers, for instance, have become preoccupied with technical design in a way that suggests defensiveness. Redefining the project leader's role as the custodian of "a learning zone" is not to dismiss the conventional role of planning and control, but to argue that learning is at least as important. In a similar vein, Ciborra and Lanzara (1994) have argued for a "redirection" of current design practices toward learning and experimentation. Their idea of design as a "formative context" has much in common with the idea of transitional space.

Although most relevant at the level of the project leader, the present framework has value for all participants in ISD by raising awareness of the various ways that design work can be deflected from its true goal. Being sensitized in this manner should help to alert practitioners to the imminent danger of defensive processes. For instance, feeling that too much time is being spent on polishing dataflow diagrams or perfecting screen layouts should prompt the astute practitioner to question whether engagement with an altogether deeper and less tractable problem is being avoided. Simply raising critical awareness in this way and providing a terminology for articulating such feelings of concern in itself is likely provide major benefits in the world of practice.

In preempting or breaking through defensive processes, transitional objects have a crucial role to play and it is vital that project leaders (indeed all participants) understand this role. Several types of TO were seen at work in the cases: models, methodologies, and pilot experiments. Other forms of TO suggest themselves as relevant in an IS context: prototypes, for instance, have natural potential as transitional objects (Baskerville and Stage 1997); scenarios represent another potentially useful resource (see Carroll 1995). Common to these exemplars is a core property; all afford some sort of microcosm in which the complexity of the world is reduced to a human scale. At an *intellectual* level, this simplification helps actors deepen their understanding of a situation/process by reducing it to cognitively manageable proportions. At an *emotional* level, by reducing complexity, the TO provides a sense of control, giving "learners" the confidence to move forward, to engage authentically with real, substantive problems.

Seeing the above entities as potential transitional objects is not to say that this is all they are and that this is their only function. Rather it is to emphasize the critical place of learning in ISD and to stress the powerful role that such objects *can* play in facilitating learning if they are deployed in a way that is fully attuned to this role. The reader might object that many of these entities already exist in an IS context, so what is added by all this talk of transitional objects? The author would agree that the objects themselves are not novel, but rejoin that what is added is subtle but profound, namely a change of perspective, a *sensitization* to the role that these familiar entities and artifacts can play as potential enablers of learning, and indeed as inhibitors if fixation and blockage develop.

This latter insight is a crucial one. The essence of transition is the unraveling of one set of dependent relationships and the refreezing of a new sociotechnical configuration (Miller 1993). ISD represents such a transition, potentially a profound one. The fear and uncertainty that is inevitably aroused can express itself in overt or covert symptoms of resistance which can seriously frustrate the change effort, resulting in outright failure or a system that fails to realize its full potential (Wastell and Newman 1993). Deploying TOs can facilitate the change process by providing a source of support through the transition, redirecting the anxieties that could otherwise lead to the erection of defenses.

But TOs are not panaceas, their use by no means guarantees success. We have seen this vividly in the cases. At one extreme, the TO may be rejected outright: users, for instance, may refuse to cooperate in a modeling or prototyping exercise. More subtly, they may develop a strong dependency on the object itself, with this

attachment reflecting their anxieties about the future and their reluctance to let go of a source of stability and security. This risk applies to all the TOs we have mentioned: clients can become dependent on consultants, modelers can become obsessed with the details of models; methodologies can degenerate into self-serving rituals. The risk is all the more insidious because it is a covert and largely unconscious expression of resistance. The ironic potential of TOs to function as defenses represents their dark side; it is critical that those occupying leadership or change-agent roles in ISD see the management of dependent relationships as a key part of their role, ensuring that reliance on TOs serves its proper transitional function of enabling learning and change.

Implications for Theory and Research

From a theoretical perspective, the primary contribution of this work is to provide an intellectually coherent view of ISD as a learning process that embraces both learning dysfunctions and measures that may be deployed to facilitate learning. It complements the conventional normative literature on organizational learning by drawing attention to the problematic nature of the learning process, emphasizing the truism that merely providing mechanisms will not ensure that learning will occur. While it does not provide a complete account of IS failure (it is acknowledged that some failures are due to other causes, such as internecine politics), nonetheless the author believes that many IS failures are "learning failures" and that the present framework thus has considerable worth and relevance. The critical reader may counter that there is nothing truly novel here, that much of what has been said is intuitively obvious. While it may be true that isolated elements are not in themselves unique (e.g., the emphasis on supporting learning), the author believes that the edifice as a whole, by providing a unifying synthesis, represents a significant theoretical advance.

Applying the present framework to some of the classic failure stories in the IS literature confirms its theoretical promise. For instance, the presence of deep conflict between users and developers in the widely-cited case study of Franz and Robey (1984) suggests that something akin to the sibling horde was operating as a social defense. Moreover, the present perspective points to certain objects in the environment of that project that *might* have functioned as transitional objects, e.g., the "old system" that the developers wished to investigate/document, and the user specification document that was also produced by the developers. However, in the hostile political climate of the project, neither object provided the desired leverage and indeed both became the focus of political conflict. One could speculate that had a joint modeling exercise been carried out, following the mediational approach in Bellflower, a happier outcome might have been achieved. Although speculative, such reflections nonetheless indicate the present framework to have both promising explanatory power and pragmatic potential.

In general, the paper highlights the need for further research on stress-related learning dysfunctions and the remedial means by which these may be addressed. The work has made a start by adumbrating some generic patterns of defensiveness and by suggesting remedies in terms of transitional spaces and objects. Further research is required to build on this platform. More investigation of defensive processes is required, examining their dynamics in greater depth and exploring other manifestations beyond the three archetypes described here. The concept of transitional space also requires further attention. It has informed the present work in a radical but largely informal way, as a personal philosophy rather than an explicit methodology. Although the enactment of this credo has been intuitive and expedient, reflecting local contingencies (e.g., the rules of engagement in Bellflower), it has nonetheless decisively influenced how situations were understood and handled. The purpose of this paper has been to outline this philosophy in general terms, and to provide informal evidence of its potential contribution. Fragmented methodological statements have been made but further work is clearly required to operationalize the transitional approach in a methodological framework. This framework will undoubtedly be open-textured and contingent, rather than hard and rigorous; it will contain general principles, exemplars, scenarios, and will (of course) need to be seen for itself as transitional object!

Further research on learning dysfunctions and on methodology can be prosecuted in several parallel lines. Longitudinal field studies are clearly called for, especially clinical studies (Schein 1987) involving the deployment of interventions to overcome blocked learning processes, and also more conventional qualitative studies with a stronger emphasis on objective theory validation. Complementing field studies, there may well be an important role for laboratory experiments; such studies would enable the impact of stress on group functioning to be investigated under controlled conditions, allowing defensive processes and methodological prescriptions to be rigorously investigated.

Concluding Comment

The failure rate of IS projects remains unacceptably high. This paper has introduced a novel theoretical perspective, contending that many IS initiatives encounter difficulties due to the operation of anti-learning defenses. It has been shown how reconceptualizing ISD as a transitional space can help to preempt or to overcome these defenses through the creation of a supportive learning environment embodying an efficacious set of transitional objects. The case scenarios demonstrate that the theory of social defenses has diagnostic value and that the notion of transitional space has therapeutic utility. While recognizing the epistemological limitations of the clinical model, the author would adduce the cases as cogent evidence for the theoretical validity and practical usefulness of the present psychodynamic perspective. It is believed that this perspective has considerable promise in addressing the chronic problem of high IS failure rates and in opening up new lines for further research.

Acknowledgements

The author would like to thank a number of people who have contributed directly or indirectly to this work: to Martin Reynolds for helping develop some of the key ideas in the Bellflower case and for his tenacious field-work; to Peter Langmead-Jones who worked with me in EAS; to my colleagues on the CAPELLA team in Gotham Council (Tom, Karl, Peter, Mike and Chris); and finally to all those involved in the review process whose perceptive and supportive commentaries contributed so much to the shaping of this paper.

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About the Author

David G. Wastell holds a B.Sc. and Ph.D. in psychology from the University of Durham, UK. Immediately following his doctorate, he worked at the Applied Psychology Unit, Cambridge, before moving to Manchester to take up a lectureship in Medical Informatics. He is currently a senior lecturer (associate professor) in information systems at the University of Manchester, Department of Computer Science. He has extensive practical experience of IS development gained through consultancy work within both the public and private sectors. His research interests are in three main areas: IS development and organizational learning; software process improvement; human factors design of complex human-machine systems.