BREAKING DOWN THE SOCIAL DEFENCES: ENABLING LEARNING WITH TRANSITIONAL OBJECTS

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ABSTRACT

The concept of the “learning organisation” [21] has inspired much recent interest. The reality in many enterprises, however, is somewhat different. Difficulties and challenges are met, not with effective learning, but with defensive patterns of behaviour (“social defences”) which avoid rather than address problematic issues [24]. In this paper, we describe an information systems (IS) project in an organisation where defensive routines have severely disabled the learning processes that are critical to IS development. Our primary goal is to show how concepts from educational theory can inform IS methodology. In particular, we highlight the role that models can play as “transitional objects”, i.e. as intellectual/emotional protheses that can help break down defensive reasoning and give learners the confidence to deepen their knowledge of complex problems. The paper stresses the need to create a non-punitive, safe environment if learning is to flourish. This was achieved in the present study through a set of ground rules known as the “rules of engagement”.

I. INTRODUCTION

Stimulated by Senge’s popular book [21], the idea of “the learning organisation” has captured the imagination of researchers and practitioners. The rhetoric is potent and seductive, conjuring up the vision of a high performance enterprise populated by empowered, creative individuals working in harmonious collective endeavour. The learning organisation is the epitome of rationality; it denotes an organisation which “is continually expanding its capacity to create its own future” [21]. The imagery is both utopian and apocalyptic: those enterprises that learn will survive and flourish, those that do not will falter and die.

But many organisations fall well short of this ideal. Chris Argyris [2] has repeatedly drawn our attention to the ways that people in organisations conspire not to learn. Argyris describes these strategies as “organisational defence routines”. These routines help diffuse anxiety in threatening situations by covering-up and by-passing painful issues. But they are ultimately self-defeating: they avoid authentic engagement with substantive problems and inhibit real learning which depends on openness, mutual trust and a self-critical disposition. The concept of the “social defence” embodies a similar idea [9, 16, 23, 24]; it denotes a durable configuration of organisational behaviour that, whilst seeming rational and task-oriented, functions primarily to contain anxiety. The classic example is the bureaucratic ritual. By abdicating personal responsibility for their actions (projecting it onto “the procedure”) organisational actors are able to dissipate the anxiety that attaches to real engagement with difficult problems [9, 24].
The social defence is the antithesis of genuine learning, i.e. radical, creative problem-solving [21]. Indeed, social defences are most likely to manifest themselves in situations where learning is urgently required, namely times of change, uncertainty and crisis, i.e. conditions typical of IS development [23]. The anxiety created by a challenging and uncertain future can provoke either a positive problem-solving response, or else the defences go up to contain the anxiety. In Freudian terms, the "reality principle" [13] is abandoned; relief is provided but the benefits are, of course, only superficial as the repressed problems have not been properly dealt with. Wastell, in a lengthy case study, shows how IS methodologies, whilst masquerading as the episteme of rationality, often operate as social defences [24]. Following the methodology provides a comforting ritual whose enactment gives individuals a feeling of security and false effectiveness. All learning involves a search for simplification (a model) in which complexity is made tractable as a prelude to deeper understanding and broadened horizons. The fixation on methodology represents a form of "blocked" learning, a denial of characterised by rigid adherence to an inadequate model.

IS development is fundamentally a learning process in which technical specialists and users search for an optimal sociotechnical solution to a business problem [17,23,24]. The general aim of the present paper is to highlight the problematic nature of this learning process, and to consider ways in which learning dysfunctions can be addressed in an IS context. We will be particularly interested in the practical relevance of ideas from educational theory for IS methodology. In order to illustrate these principles, an action research project in a manufacturing firm will be described. The practical aim of the project was to develop a new information system integrating the sales and production functions of the business. The case is based on the experiences of one of the authors over the first 8 months of the project, working in the role of chief analyst/developer. Given the sensitivity of the issues, the company has been disguised, being referred to by the sobriquet "Bellflower plc.". The following account should be read in an allegorical spirit, i.e. as symbolising a common class of problems and illustrating a set of relevant interpretive/methodological concepts.

Bellflower is a long way from Senge’s utopian paradigm of the learning organisation. The firm is suffering from a deep-seated “learning disability”: social defences seemingly dominate the interior life of the company and have undermined its ability to learn effectively. IS development in this context was a daunting prospect calling for a careful choice of approach. The paper will first outline the general company context before describing a key symptom which tellingly illustrates its current problems. An interpretation of the symptom will then be presented in order to bring to the surface the defensive processes that were at work. We will then consider our project against this context, indicating how our approach has been guided by educational precepts. A key methodological feature is our use of models (microworlds) as “transitional objects”, i.e. psychological prostheses which enable individuals and organisations to develop intellectual and emotional maturity.

2. BELLFLOWER: PRESENTING SYMPTOMS

Bellflower is a medium-sized engineering company with a U.K. manufacturing centre and an international sales organisation. Its products are sludge valves, for application primarily in the water industry. Whilst they are of a similar generic type, there are considerable variations in their size and in the material used in their construction. Sludge valves may to an extent be considered as bespoke products, built to a customer’s specification. They are assembled from components (castings, machined items etc.) many of which are manufactured on site; the production facility includes a foundry and a machine shop. Valves generally take from four to twenty six weeks to produce.

Although Bellflower’s balance sheet is superficially healthy, there are growing problems in the firm’s ability to match its productive capacity to fluctuations in demand. With the recent upturn in economic conditions, the plant is currently working flat out with the work-force putting in substantial overtime. Despite this, there is a growing backlog of outstanding work and management have been slow to respond with investment in the production infrastructure. The key symptom of Bellflower’s malaise is the inability of sales engineers to give realistic estimates to customers of delivery times. The problem is compounded by the company’s “no lose” policy, which means that they will do anything necessary to win an order and keep out a competitor. This puts pressure on sales engineers to quote short delivery times which bear little relationship to what is possible. Late deliveries are causing increasing customer frustration and there are ominous signs that Bellflower is beginning to lose market share.

Technically, many of the current problems can be traced back to the firm’s primitive MRP (Manufacturing Resources Planning) system which is essentially concerned with monitoring stock levels of components and “re-ordering” items based on historic need, rather than managing current and future production of complete units. Delivery time estimates are based on a list of “Lead times” generated each week by the MRP; these simply indicate the time, at the current moment, needed to build each valve in the firm’s product range given the MRP’s knowledge of stock levels and assuming no further demands on capacity. The MRP system thus takes no account of the overall demands (i.e. orders in the pipeline as well as old commitments) on the business. It is also somewhat inflexible: it rigidly enforces a “first come, first served policy” irrespective of the relative priority of customers. As a result of their frustration with the current system, the sales force put pressure on Production to give their customer priority. Of course, this “gun ho” interference only adds to the general chaos, and further undermines Production’s ability to plan its work effectively and Sales’ ability to quote realistic delivery times.

Conflict between Production and Sales is thus endemic. Production, judged in terms of its ability to deliver on time, blames sales engineers for not allowing enough time between order receipt and the promised date of delivery. Sales engineers, assessed in terms of the financial value of their orders, claim that Production do not give them a realistic date when asked for one, and that it is Production’s fault that delivery dates are not fulfilled. Many sales engineers actually seem to enjoy being pitted in a battle against each other to win enough concessions from Production to assure them that their customers will not be put “into the backlog”, although others see this as self defeating futility and want to change the situation. It must also be said that the management style in the company is very autocratic. There is little tolerance of variation from written procedure or of innovation. The managing director is widely seen as a bully and is viewed with ambivalent feelings of fear and hate. The organisational climate in Bellflower is thus not a happy one!

3. DIAGNOSIS

The delivery time problem is a defining example of the way that Bellflower’s information systems have broken down and no longer serve to facilitate effective collective action. It is not a messy, ill-specified problem; nor does it pose any fundamental technical difficulty. Yet it has not been dealt with. This is critical: the well-defined, tractable nature of the problem is what gives it special diagnostic significance. It can be seen is a microcosm of a deeper malaise. Presumably other organisations routinely solve problems of this character (although there are many similar cases of failure in the literature; Ackoff [1] provides a classic example involving conflict between purchasing and merchandising departments). The problem should have been solved, but has not been. We will now examine the situation in closer detail.
3.1 Dysfunctional conversations

We will begin our exegesis by viewing the delivery-time problem from a language-action perspective [4,12,22,26]. This viewpoint regards information systems as communication media: their normative purpose is to mediate conversations (made up of “speech acts”) that convey information and establish commitments so as to regulate and coordinate work in organisations. The delivery time scenario is in principle a conversation. In essence, Sales are asking Production “What is the delivery time for this valve?”. The “Lead time” information provided by Production can be seen as their reply.

This conversation, however, is not working as it should. Habermas’s theory of communication [15] distinguishes two classes of conversation: rational dialogue, i.e. dialogue which is oriented to mutual understanding, and strategic dialogue, which is essentially selfish and manipulative. Rational conversation depends on the “ideal speech situation”, i.e. the full and free exchange of knowledge and ideas in a spirit of openness and mutual trust. Ideally, it is this sort of conversation that information systems should mediate and facilitate. However, the conversations that we have observed in Bellflower, typified by the delivery-time dialogue, reflect a substantial falling off from this ideal. They are highly distorted and dysfunctional, amounting to little more than crude exercises in game-playing.

On the surface, the delivery-time conversation seems to be a simple case of miscommunication arising because the weekly assessment of lead times does not take into account the typical 3 month lag between quotation (in which a delivery date is promised) and the time at which a firm order is received, by which time the delivery date is clearly out of date. Filling out the conversation by interpolating its implicit elements (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 delivery time for valve X?

Production: If you were to order valve X now and we had no capacity constraints we could deliver in N weeks.

The conversation fails because the implicit components are “not heard”, i.e. one party appears not understand the question being asked and the questioner fails to realise that the answer being given is inappropriate.

Having made this preliminary diagnosis, the real question is why this pattern of miscommunication has become institutionalised. Both parties must know there is something wrong, yet nothing has been done. This can only be because the dialogue is fulfilling some functional purpose for both parties, and we must therefore ask what each party gains from the miscommunication. Let us ask first what advantage Sales obtain. Sales’ problem is that they need to win orders and that the “no lose” policy puts them under strong pressure to promise short deliveries. A fictional answer from Production suits them. The lead times are in effect minimum lead-times, they assume no capacity restraints. They are highly unrealistic, but they allow Sales to quote short delivery times. And of course, Sales can always blame Production if (when!) the delivery is late.

The problem for Production is that they cannot answer the real question. The question is silly: how can they give delivery times for orders placed “at some unspecified point in the future”. They have no way of knowing either the order book or the capacity situation at that time. Production give the only answer they can, i.e. based on the current situation. Their problem is compounded by the poverty of the “production model” in the MRP. The MRP accounts only for the time required to manufacture components under ideal conditions, and lead time estimates are based solely on current knowledge of stock levels. Moreover, the MRP only “knows” about components, not about valves: components are not allocated to particular orders until they enter stock and are picked for assembly. The dysfunctional conversation suits Production: it allows them to cover up their ignorance and avoid responsibility. By “fancy footwork” [2] they neatly side step a difficult question by answering an easy one. When the delivery date is wrong, they can always blame the MRP for its impoverished model and Sales for not warning them about prospective orders.

The dysfunctional conversation thus suits both sides. It allows each party to absolve itself of responsibility for the problem, excusing them from taking difficult action to resolve matters. Through dysfunctional conversations both sides are able to reduce their cognitive load and avoid anxiety. They have reacted maladaptively to the complexity and stress of their situation by blaming each other, thus avoiding the embarrassment of acknowledging their failings and their mutual dependency. However, this retreat into departmental bailiwicks has paralysed their ability to learn how to manage the situation more effectively. Solving the problem depends on cooperation between the two departments; neither can solve it unilaterally. Quality circles and interdepartmental meetings have failed in the past because they never got to the root of the problem and ended up compounding the defensive strategies each department employed.

3.2 Social defences: rituals and sibling rivalry

In the introduction, the concept of the social defence was introduced to refer to patterns of organisational behaviour that operate as anxiety defences but which inhibit learning processes; indeed they often arise as maladaptive reactions in the very situations where the need for learning is at its most acute. Two general classes of social defence can often be seen at work in organisations: the organisational ritual and the covert coalition [9,24]. Both are in evidence in Bellflower.

The organisational ritual refers to the rather common situation where business procedures are enacted in a mechanical, detached fashion. This allows individuals to disown personal responsibility for their actions, absolving them of the need to take the initiative. There is undoubtedly a strong emphasis on procedures in Bellflower. As a result of ISO 9000 accreditation, highly prescriptive procedures have been instigated. All departments carefully abide by the letter of these procedures, i.e. they make sure that their overt behaviour complies with the minimum required so that they can always defend their behaviour as being in accord with the rules. However, enacting these “rituals” allows departments to avoid addressing real problems, of advocating sticking to the procedure rather than trying to find an improved solution. Procedures are thus used as a defence against change, rather than a record of current practice and a basis for continuous improvement.

The covert coalition is a more subtle, although at root a more primitive form of defence [9]. Covert coalitions involve the acting out of an immature set of social relationships, typically based on the well-trodden roles and rituals of family life. Hirschhorn [9] describes the case of a public sector agency in which senior executives retreated from their leadership role by enacting a fantasy of sibling rivalry. The internecine struggles within the senior management team, in which key personnel undermined the authority of their colleagues, allowed the team to avoid facing up to difficult problems. In another example, an IS project is described [24] in which senior managers enacted a fantasy of parental omnipotence and sibling dependence. This fantasy, in which the IS function was seen as an all-powerful provider and the users as dependent children, avoided the risks of genuine collaboration and partnership.

Juvenile behaviour is a striking feature of the present malaise in Bellflower, arguably the primary symptom. The group dynamics bear a strong resemblance to the archetypical family situation, symbolised by Freud’s concept of the primal horde, i.e. a tribe of brothers ruled by a tyrannical father [13]. The behaviour of Sales and Production recalls that of a group of siblings, dependent on a hated but feared father-figure (the managing director). Their conflict is reminiscent of the immature behaviour 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 legitimat-
ed by their behaviour: "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 for dealing with the problem: they are only children after all, solving problems is
something "grown-ups" do!

4. TOWARDS A REMEDY

The reader will recall that our remit in Bellflower was to develop a new information system
encompassing Sales and Production, to remedy some of the ostensible problems described above.
Our approach has not been to rush in with a solution. Rather we have held back and taken a deeper
look at the "problem-situation" using the paradigm of the learning organisation to shed light on
Bellflower's condition and to help develop a methodological strategy for the project. This analysis
has revealed chronic internal problems within the company which have compromised its ability to
deal with increasingly urgent problems. Bellflower's problem is not that they need a new IS; that
would be akin to a physician treating the symptom not the disease, to use a rather well-worn analogy.
Bellflower's problem is a "learning disability" [21].

4.1 The metaphor of the classroom: transitional objects and learning

Information systems development (ISD) is conventionally portrayed as a technical process
carried on by rational actors striving for optimal solutions [18,23]. Learning is clearly a critical
ingredient of the process (hence the arguments for user involvement [17]) although this is often
obscured by the emphasis on techniques and technology in many methodologies and textbooks. Our
view of ISD gives central importance to learning. Fundamentally, we see systems development as a
dialectic in which developers learn about the application domain and users learn about the transforma-
tory power of information technology. However, the learning process is a fragile one in any
environment. Anxiety, stimulated by problem complexity and the fear of change, is a particularly
corrosive influence. As Schein [20] 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 key to successful ISD is thus to help participants overcome their anxiety, thereby
enabling effective learning. However, it is one thing to assert the fundamental importance of
learning; the real issue is to use this philosophy to inform the practice of ISD. The main concern of
the present paper is to examine the relevance of key concepts from educational theory for IS
methodology. We will show in practical terms how these ideas have guided our approach in
Bellflower, helping to break down the social defences and stimulate learning in somewhat
unpromising conditions.

The main concept in our approach is the transitional object. This a key idea in educational
theory, deriving from Winnicott's seminal studies of learning in children [25]. Winnicott describes
how transitional objects are important in the development of independence and self-reliance in
childhood. The child's teddy-bear is the classic example of such an object. In normal development,
the teddy-bear serves to help the child separate from its mother by acting as a surrogate protective
figure. Supported by the transitional object, the child develops self-confidence and ultimately
makes the transition from dependency to independence. The idea of the transitional object thus
refers to some person or object which stimulates individuals to experiment and explore new
approaches or ideas, and enables them to progress. Senge [21] stresses the vital importance that
they play in the learning process. A particular class of transitional object figures centrally in his
theorising, namely the "microworld".

By "microworld", Senge means a "microcosm of reality" where people "feel safe to play". Microworlds are models which simplify the world by highlighting key variables and their interac-
tions; they provide actors with cognitively tractable representations of the "blooming, buzzing con-
fusion" of the real world. It is crucial to see these devices functioning at two levels in the learning
process. Intellectually, microworlds provide a medium which helps actors deepen their understand-
ing of a domain. At an emotional level, because the models reduce complexity to a manageable
level, they provide actors with a sense of control. In other words, they function as transitional
objects giving learners the confidence to move forward, either to deepen their theoretical under-
standing or to begin to tackle real problems.

Our key task in Bellflower was thus to identify and develop an appropriate transitional object, i.e. a microworld focusing on those critical relationships that will help Sales and
Production to understand the basis of their current problems and achieve greater reciprocal
understanding. The absence of a clear model (in both departments) of the relationship between
"production load" and "lead time" appeared to be at the root of many of their diffi-
culties. It is a basic tenet of systems theory [3,10] that an adequate model of a system is neces-
sary in order to exert "competent control" over it. The development of such a model was
regarded as our primary task.

But it is at this point that we are confronted with our key problem, namely the presence of
deep conflict in Bellflower, of a climate of fear and mistrust in which defensive manoeuvring has
abandoned "ideal speech" and disabled learning. Whilst espousing microworlds, Senge [21] does not
say how they may be fashioned in such an adversarial environment, nor does he discuss the crucial
role that they can play in resolving such conflicts. Although Senge presents a number of archetypal
models of dysfunctional company behaviour which are certainly of great analytical value, he
does not explain what to do if two elements of the company espouse conflicting models of the busi-
ness and are firmly entrenched in antagonistic positions.

4.2 Treatment and prognosis

How then did we set about our task in such unpropitious circumstances? Given the
degree of entrenched conflict in the company, a multilateral participative approach (joint meet-
ings and so on) was not regarded as realistic. Indeed, we have commented that this sort of collec-
tive approach had been tried before and had failed. Instead, we adopted the role of mediators,
basing our intervention on the general approach used in formal negotiations (such as Camp
David [6]) and in the classroom by teachers faced with deep-seated conflict [8]. In essence, the
approach involved a series of unilateral meetings with each "side" in which the primary task
was to crystallise their respective world-views by using models as transitional objects. From
these partial views, a common model was synthesised which functioned both as a shared
"knowledge structure" allowing each party to develop an understanding of other perspectives,
and as a neutral authority for settling conflicts.

In practical terms, we proceeded by interviewing staff in Sales and Production on an indi-
vidual basis, asking interviewees to describe the work they did, the information they used, the areas
where improved information was required, and so on. Our methodological approach in these inter-
views is important. Guided by the classroom metaphor, we saw ourselves as "curators of the learn-
ing environment", rather than dispensers of wisdom. Our role was to deal with complexity, not by
providing solutions, but by translating problematic issues into testable, simplified forms (i.e.
microworlds). The interviews were conducted under what Reynolds [19] has called "the rules of
engagement". These rules [5,19] provide the cornerstone of good teaching practice: e.g. to avoid
one voice dominating, to avoid threatening criticism and closed questions, to value primary over
secondary sources, to accept all questions as worthy of examination etc. The rules are crucial in
establishing a safe environment in which constructive "learning conversations" [7] can take place. The importance of "psychological safety" in an organisational learning context has also been emphasised by Schein [20].

The testability of models is crucial to learning. In the classroom, models must be open to practical investigation if the pupil is to come to accept their weaknesses and hence the need to "move on" [19]. Abstract or glb statements must therefore be translated into concrete, testable propositions. At one point, for instance, a member of Sales claimed that forward planning was possible and that Production really should be able to do it. Carefully avoiding "taking sides", our rejoinder was to focus on the technical question of how this could be done and 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' model to be partially justified, but nonetheless not fully adequate. This stimulated a useful refinement of their model, namely a segregation of the market into stable and variable segments.

Models thus provided a non-threatening means of challenging current assumptions and expanding learning horizons. As conceptual abstractions, they are free from the messy complexity of the everyday world and its petty disputes. They facilitate learning by acting as transitional objects giving "learners" the confidence to deal with complex issues. By transcending politics, they play a key role in defusing conflict, diverting energy away from fighting into the more constructive task of model development. The dispassionate, intellectual nature of the modelling process forced our participants to step outside their "normal" social roles (i.e. as quarrelsome siblings) and behave as thoughtful, rational adults capable of solving their own problems.

As confidence built up, the complexity of the models was increased in order to encompass more of the "world of the other", i.e. how the behaviour of one department interacted with other parties and impinged on the overall performance of the company. Questions focused particularly on information flows between departments and on the meaning of terms (e.g. "lead times"). The learning process thus began to erode the fantasy of the sibling horde, by replacing "false independence" (in which both sides deny their mutual reliance) with a healthy acknowledgement of interdependence and kinship. The sales force came to acknowledge, for instance, that the only people that could supply information about future production demands (and hence available capacity) was them, and Production were able to admit that they will never be able say how long it takes to deliver a valve if they do not ask Sales for a forward "load plan".

Through this delicate process, a unified model (embodying key relationships between production demands, capacity availability and delivery schedules) has been created. The model has established a conceptual framework shared by all parties. In many ways, the dysfunctional conversations of old reflected a clash between the "component level" view of Production and the "valve level" view of Sales; this mismatch suited both sides by allowing them to blame each other and thus avoid facing up to problems. To enable a meeting of minds, an intermediate conceptual entity was required. The unified model provides this in the form of the "sub-assembly". Organising production schedules around this concept provides a basis for Sales and Production to plan together the allocation of production capacity taking into account real and prospective orders, and market variability.

5. CONCLUDING REMARKS

Kendall and Kendall [11] argue that the system development process can be viewed from several angles by bringing to bear different metaphors. The conventional view is to see it as a deterministic engineering process, the metaphor of the machine. Kendall and Kendall propose several alternative metaphors: the journey, the zoo, the game, and so on. In this paper, reflecting our learning orientation, we have proposed another analogy, the metaphor of the classroom. We have argued that ISD is a highly problematic learning process in which the acute stresses of systems development are a constant disruptive threat. In Bellflower, the classroom metaphor led us to adopt the figurative role of teachers dealing with a class of unruly, fractious children!

The classroom metaphor is more than an exotic trope. It has the practical potential to furnish methodological precepts that we believe can make a real contribution to the praxis of IS development, e.g. the principles of good teaching practice that are enshrined in our "rules of engagement". In particular, the concept of models as transitional objects has been shown to be an especially useful idea. The domain of information systems is replete with such microworlds (e.g. dataflow diagrams), although their role as transitional objects is seldom given enough emphasis. Fuller appreciation of this role draws attention to the dangers of transitional objects, e.g. of learners developing a morbid dependency on the object (a fetish). We know that this is an omnipresent risk in system development: Wastell [24] describes an example where systems analysts became increasingly preoccupied with polishing the minor details of their dataflow diagrams and lost touch with the real aims of their project.

From a learning perspective, the key task in ISD is to identify the right transitional objects and to use these as intellectual and emotional prostheses. In Bellflower, we have shown how the construction of microworlds helped our "pupils" to reflect more deeply and critically on their work situation, to make the radical shift of mind that Senge [21] dubs "metanoia". The role of models in managing and resolving strife is also crucial, especially in highly conflictual situations: models provide an impartial authority for settling differences, thereby defusing the explosiveness of such conflicts. We will round off the paper with a vignette showing how old patterns of juvenile behaviour have become increasingly untenable in the new regime in Bellflower.

In a paper exercise using the unified model, Sales and Production recently agreed a production plan. Three weeks later Production wrote an angry memo to the MD saying that the new planning system must stop, that it was "causing too much work" and was technically suspect. Sales reacted by appealing to the model. The original plan was checked and corroborated. In the course of this, the "real problem" came to light, namely that Production were actually behind schedule, i.e. that their objection to the model was really a fraudulent attempt to cover up an internal failure (in their stock re-ordering procedures). The complaint to the MD has now been withdrawn and Production are working on a resolution to their internal problem. This revealing episode shows how the unified model, by applying what has been called the "squeeze of principles" [6], has helped break down the old patterns of sibling conflict in Bellflower. Faced with a problem, Production's first reaction was to regress to a juvenile response, i.e. to disown the problem, blame the model and appeal to the father figure to sort things out. Sales, however, did not respond in kind; they involved the neutral authority of the model which enabled the problem to be dealt with in a rational, adult fashion.

To conclude, at the time of writing the prospects in Bellflower look promising. A common model has been built, the level of conflict attenuated, and substantial progress made towards the "learning organisation" ideal. The next stage of the project is underway, namely the development of a computer-based IS founded on the unified model. There appear to be genuine grounds for optimism that the dysfunctional conversations of old will be replaced by rational, task-oriented discourse mediated by the new information system. But, of course, only time will tell. Such best-laid schemes - Burns consoling the dispossessed mouse - are ever apt to "gang agley, an' lea'e us nought but grief an' pain, for promis'd joy". Well, we'll see!
REFERENCES