Setting Strategic Agendas: The use of qualitative methods in highly politicised contexts

J H Powell and R G Coyle

Respectively, Senior Lecturer in Strategy and
Visiting Professor of Strategic Analysis,
University of Bath
Bath BA2 7AY,
United Kingdom

Emails j.h.powell@whsmith.co.uk geoff.coyle@btinternet.com

Abstract

In the early phases of using simulation models to support strategic decision-making, the emphasis is on expressing information and physical flows. While this is appropriate for many managed systems, we suggest that it is inappropriate for a large class of problems involving the motivations and powers of agents in the system. In such highly politicised systems it is necessary to take the political aspects of power into account at an early stage in the analysis.

We present an approach to this class of problems, using a qualitative procedure based on influence diagrams. This method has been extensively and successful use in consultancy to study the motivations and powers of agents and thereby produces naturally an output directed at action planning at the strategic level. While it is complementary to numerical system dynamics approaches, it is more successful in deriving components of strategic action directly from analysis.

Key Words

Strategy, Qualitative modelling, political analysis, influence diagrams.

Context

In this paper we address the relationship between system dynamics and the formulation of business strategies. It is, of course, the case that system dynamics has always taken a policy orientation to whatever type of problem a practitioner happened to address; indeed, more than 40 years ago Forrester (1961, page 96) stated that 'policy is a formal statement giving the relationship between information sources and resulting decision flows'. In the same source (page 93) he remarked that 'in this book we shall look upon the manager as an information convertor'. More recently Sterman (2000) devotes much of a chapter (Chapter 15) to a discussion of the modelling of human behaviour. Essentially, though, he follows the standard system dynamics paradigm of representing and perhaps improving the 'rules' by which managers react to information flowing to them so as to regulate other flows within their sphere of responsibility.

This point of view is supported by much of the practice of system dynamics. For instance, Richardson and Pugh (1981), in one of the classic texts, discuss the concepts of the reference mode and the dynamic hypothesis. The reference mode is, they state, the graphs over time of important variables. They add that the development of a formal system dynamics model without a reference mode should not be attempted by the inexperienced. The dynamic hypothesis is, to them, 'a statement of system structure that appears to have the potential to generate the problem behaviour' (the reference mode). This style of system dynamics thought was also reflected in Sterman (2000).

Other texts take a different approach. Wolstenholme (1990) mentions neither reference mode nor dynamic hypothesis. Coyle (1996A) has one brief reference to the former but does not mention the latter. These authors tend to approach the modelling task by attempting to describe the system as it is (with proper simplification) rather than postulating a structure that might have the potential to reproduce observed behaviour or to induce desired dynamics. Naturally, one of the tests of such a model is that it will reproduce the observed behaviour with some degree of adequacy. (Coyle and Exelby: 2000, have discussed the validation of client-based models).

All of these stances are essentially rooted in a strongly empirical or positivist view in that they seek to be as definite or certain as possible about the subject of investigation, an underlying assumption bring the existence of a commonly-understood system. Indeed, when policies in the system in question have been fully and thoroughly analysed and reduced to rules to guide the control of flows under the influence of information feedback, one might imagine the human decision makers to be replaced by clerks following by rote a collection of rules for action; systems which in the literature of general management are called 'bureaucratic'. In system dynamics, this is fully consistent with its origins in control theory, which used to be called *automatic* control theory. A striking example of that *genre* is Tustin's *The Mechanism of Economic* Systems (1953), a remarkable book, even more so as it is may have been written while its author was suffering from influenza.

The positivist stance is, in a broader sense, also consistent with the general ethos of much of operational research, the literature and practice of which is redolent with

phrases such as ‘optimal decision rule’. That emphasis is strongly implied in the alternative term: ‘management science’.

Lest the preceding paragraph seem to be too critical, let it be understood that these positivist viewpoints have proven to be remarkably successful in theory and in practice. If, for example, all the linear programming models that control production in oil refineries were suddenly to vanish, then the oil industry would be in deep trouble. Similarly, the list of system dynamics models that have successfully influenced management decisions is extensive. That evidence is supported by the number of consulting firms who prosper through selling system dynamics services; the consultants’ round table meetings held at System Dynamics Society conferences are very well-attended.

This paper will suggest that, despite its evident successes, there are three main difficulties with this ‘standard’ approach when it is applied to truly strategic problems. Those difficulties relate to the nature of strategic decisions, the inherent ordering of such investigations, and the limitations of positivism. After discussing those difficulties, we will propose an alternative method of analysing the dynamics of strategic problems but first we must briefly review some aspects of strategy, concentrating mainly on what strategy is and how it is developed.

The Nature and Location of Strategic Decisions in Organisations

Strategy within an organisation deals with those issues that materially affect the survivability of the firm over the long term. Usually, but by no means always, these issues encompass large resource applications and take substantial time to implement. In short, strategy is to do with the big issues. It has in the past been seen as the domain of the chief executive (Mintzbeg, 1994). On this view, strategy emerges from the top and is handed down to subordinates to implement. An alternative view, which has gained wide acceptance, is that strategic concepts emerge at all levels of the organisation according to their degree of contact with the outside world and their knowledge of specialised aspects of the business (Quinn, 1980; Quinn et al 1992).

On this latter view, the strategy of a company is seen as a two-way process. Architectural frameworks are passed down from the top, while proposals for the components of strategy, and judgements of feasibility, are passed upwards. In this incrementalist model, top management are seen as much to be selecting from menus of strategic options as inventing new ones from scratch (Powell and Bradford, 1998, provides a more extended discussion).

It is evident that the incrementalist view implies that powerful individuals will be able to push their strategic ideas more effectively than the less powerful, possibly even to the detriment of better strategic ideas. It is clear that the Mintzberg model has even more to do with power as the chief executive can enforce a strategy simply by virtue of rank. Strategy is thus seen as, and accepted as being, an inherently political process and, as such, liable to produce solutions which may be seen as sub-optimal with respect to an outside observer. Further, since strategy concerns itself with the survivability of the firm it is almost self-evident that the organisation’s policy will be affected by (and under some conceptions initiated by) outside agencies: clients, competitors, peer companies and regulators, for example.

We therefore suggest that an analytical process that does not include at its heart the power of people to influence decisions and to suggest and mediate strategy is less likely to be successful than one that does deal with such issues. We will propose such an approach.

The Traditional Components of System Dynamics

The traditional system dynamics approach can be summarised as having four components. Three of these are technical: the reference mode; the dynamic hypothesis; and the model formulation in terms of policies (or mechanisms) which control flows from information about stocks. The fourth aspect is not technical; it is the definition of the model purpose and Richardson and Pugh (1981) sagely remark that a model should be *designed* to answer some – ideally a few - well-chosen questions. However, those questions are about the system's dynamic behaviour and the decision rules that determine that behaviour, not about strategy in the sense defined above, and not about power in organisations.

The Limitations of Positivism

Despite its evident success in operational problems, the limitations of positivism in relation to strategy are striking and deserve some conceptual and, paradoxically, pragmatic consideration.

The conceptual argument is that positivism eschews any 'metaphysical' considerations. In philosophy that may be a tenable stance but we suggest that, in business strategy, the 'metaphysics' correspond to the power of individuals and the aspirations of interest groups. To neglect these factors, or to attempt to reduce them to numerical form may, we believe, be a fundamentally flawed approach; we observe that the references to power in the system dynamics literature are very few and far between (e.g. Sterman, 2000, page 601), a notable contrast with the ubiquitous discussion of power in the strategy literature.

The pragmatic consideration is that positivistic models are not much used in the generation of strategies. That will bring down a storm of protest but let us consider two examples.

System dynamics has been remarkably successful in the modelling of an immense variety of defence problems. Coyle (1996B) has summarised the open-source literature, but there has been an almost endless list of applications to classified problems. It is fair to say, though, that the vast majority of those models have dealt with issues such as the dynamics of military operations and the balance of investment between competing demands. The strategic questions of why one would need to engage in those operations, or how the competing demands arose, having been decided before the modelling and without the use of models. It is striking that no modelling of any sort was done during the UK's recent defence review. This is in contrast with the extensive use of positivist, numerical, models in operational planning for the implementation of the results of policies derived from higher level negotiation and accommodation processes.

The second example is the well-known People Express micro-world, dealing with matters affecting the success of a low-cost airline. Micro-modellers argue that this model, and others like it, permits managers to see the effects of their mental models of, for instance, the effect of service reliability on passenger demand and, indeed, many other aspects. To the extent that one can reliably simulate qualitative factors such as the connection between reliability and demand, that is true but the ensuing decisions about how much money to spend on reliability, frequency of service and many other issues are operational rather than strategic. Of its type, People Express is an excellent model, developed by a virtuoso in system dynamics (Sterman), but, with all respect, it is not truly strategic as it deals with how to run a low-cost airline, *once someone has decided that low-cost might be a viable strategy for an airline*.

The Ordering Of Strategic Thought

It is, of course, a common and oft-repeated complaint in operational research that its practitioners are rarely able to get involved in strategic work and are largely confined to the operational level. The reasons are now plain to see; the inherently positivist approach and the ordering of analysis are not suited to strategic choice as they do not address factors such as power. This is shown more clearly in Figure 1.

The upper part of the diagram shows, on the left, a process by which competing strategic concepts co-exist within, and eventually emerge from, the frame of the firm's (or any other organisational form's) perceived problems. The competition between the concepts is resolved either by coercion or politicisation. The right hand side indicates the assessment of the emergent strategic concept (such as to adopt an expeditionary strategy for the use of armed forces or a low-cost basis for an airline) leading to declared policies, on, say, the benefits of retaining forces of a given type or the ways in which the low-cost airline should be managed.

The dotted line below the centre indicates that the two upper parts of the diagram are fundamentally different in that the processes on the left hand side are manifestly not positivist in nature whereas those to the right are. In essence, we argue that system dynamics and, more generally, operational research are strikingly suited, and have achieved significant success, in 'right-hand' problems but are inherently and fundamentally unsuited to 'left-hand' concerns. Later in this paper we shall propose a reformulation of the feedback analysis paradigm that will, we believe and have demonstrated in practice, take system dynamics thought more deeply into supporting the strategy generation process within organisations.

Within the wider domain of operational research the response to the lack of penetration of strategic issues has been the growth of 'soft' OR. Within system dynamics there has been a good deal of effort devoted to qualitative models, in which only a diagram is drawn and there is no simulation. The proponents of this argue that, in the right circumstances, it can lead to useful insights about the problem in question and that it is a useful complement to quantitative modelling (and they have also done much quantitative work). Its opponents say that it is not system dynamics at all as it does not allow dynamics to be reliably predicted.

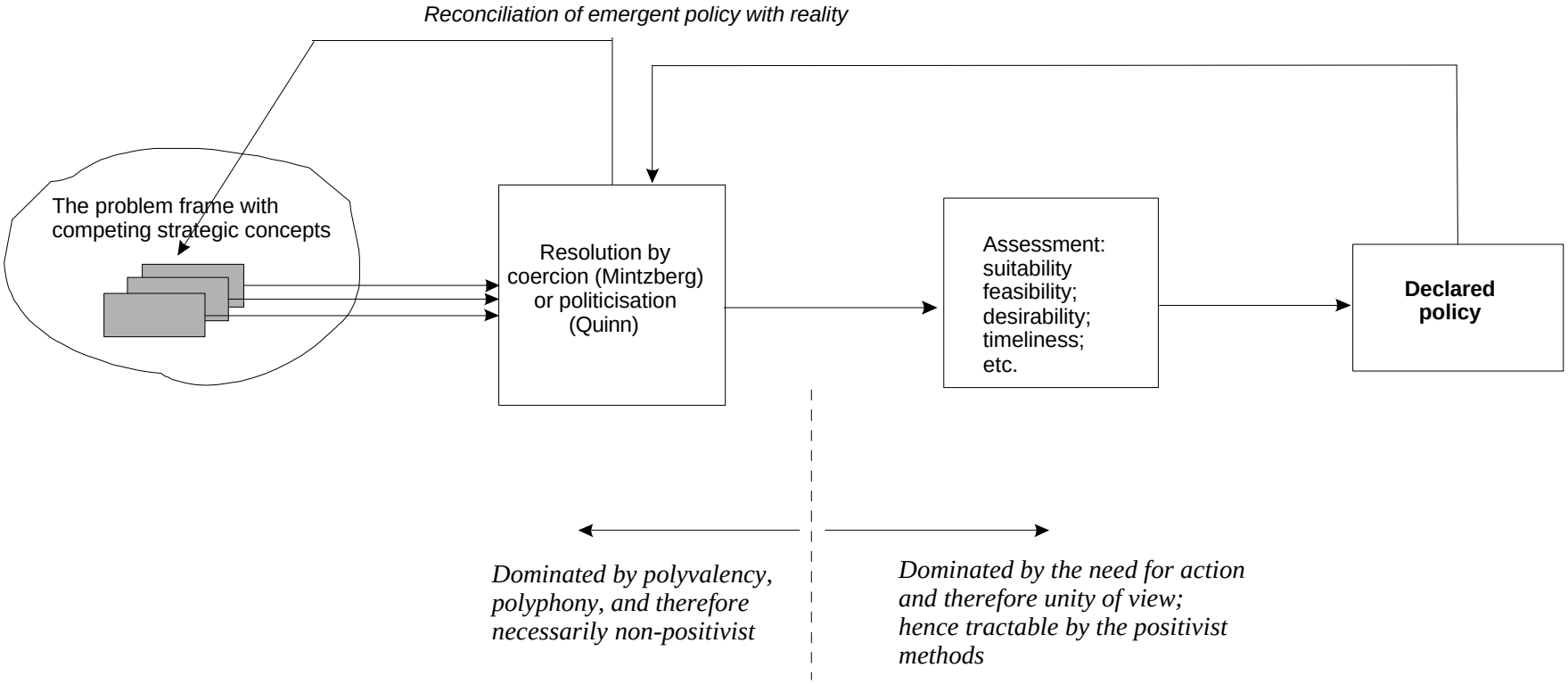

Figure 1 A Framework for Strategy Generation

We suggest that position begs the question. The aim of analysis is to shed light on problems. For some problems, predicting dynamics will achieve that but, in the area of strategy, one first has to choose strategy before its dynamics can be assessed. As we have argued, the system dynamics paradigm, because of its positivistic nature and its inherent ordering has inevitably been concerned with the analysis of the operation of a pre-chosen strategy. One might even argue that 'strategy', as comprehended by system dynamics, is self-selected in that only those aspects tractable to positivist approaches are included.

We might go so far as to raise the question that system dynamics, as currently practiced, might have forgotten its self-declared intent, which is to establish policies for dynamic systems, rather than to predict dynamics under various policy options.

A Suggested Methodology

The methodology we suggest for the study of strategy in the context of feedback is called QPID ('cupid') – qualitative politicised influence diagrams. The name is tautological as influence diagrams are by definition qualitative but we like the sound of QPID better than the sound of PID.

The QPID method has four components.

The first step is the development of a correctly specified influence diagram of the causal mechanisms at work in the system. We have found, of course, that this is best done in a group session and we have also found that in most cases only a day or so is required to complete it.

The second aspect is to identify and label the actors in the system. That is usually easy as they are normally include the people involved in the model-building group and they know very well who the external actors are. We will discuss some specific cases later but typical actors might be the production manager, the finance director, the hidden actor of the market, and so forth. Each is assigned a unique identifying letter, such as P, F, and M.

Thirdly, we label each link in the influence diagram so as to identify the actor, or combination of actors, who control that link. In terms of actors X, Y and Z, a label X denotes that a link it is controlled by that actor. Using set-theory notation, XY denotes that X and Y jointly regulate a link, $X \cup Y$ means that X *or* Y controls a link. This can be carried to whatever degree of detail is called for.

The fourth stage is to decide what each loop is supposed to achieve and then to determine what the actors should do in order to meet that goal. That sounds very simple, and it is not intellectually difficult, but its results are rather profound in the generation of strategies for an organisation, and that will be demonstrated in the rest of this paper.

A Simple Illustration of QPID

Figure 2 is a simple example (adapted from Powell and Bradford, 1998) before we introduce a full analysis of a real problem.

The problem concerns a well-known company, referred to as FoodCo. The firm has become a target for a group of activists who have threatened to adulterate its products in support of their agenda and who have, in a few cases, actually succeeded in doing so. Naturally, if people come to feel that food bought from FoodCo's many shops is unsafe they will go elsewhere, with potentially disastrous consequences for the company, not to mention the livelihoods of its thousands of employees. The issue, therefore, is the strategies to be adopted by various agents within FoodCo, of whom we show here only two, the security function (S) and the public relations department (P). These are strategies in the deepest sense because, as we remarked earlier, they are concerned with the very survivability of FoodCo. A third, external, actor is A, the leaders of the Activists.

The survivability of the firm is shown in the positive feedback loop in Figure 2 which is, of course but a fragment of the full model. The effect of the loop is that, if attacks by A are successful, the firm becomes more attractive to A as a target for further attacks. The mental model of FoodCo's management is that an attractive target makes products more vulnerable, hence increasing the likelihood of successful attacks. It is evident that this positive feedback loop, if allowed to get out of hand, could ruin FoodCo, but what is to be done to prevent that happening?

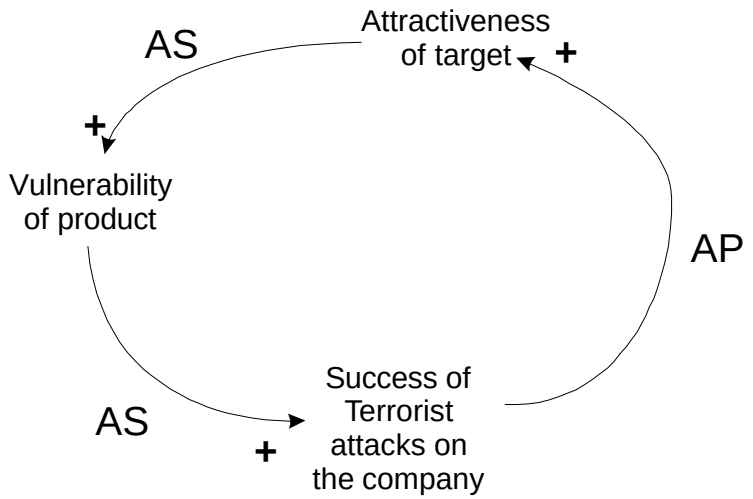

Figure 2 A Simple Politicised Loop

The QPID method labels each link to show who controls it; essentially this means which agents can regulate what might loosely be called its 'power'. Thus, the link from vulnerability to success of attacks is controlled both by the activists, A, and by the security function, S. They are not, of course, collaborating but are competing for control of the link.

At first glance, this does no more than emphasise the need for products to be less vulnerable, but further thought goes deeper.

In the link from ***attractiveness*** to ***vulnerability***, S needs to make the product less vulnerable as a target, while in that from ***vulnerability*** to ***success of attacks*** the task for S is to protect a vulnerable target. The analogy may be drawn between camouflage as a means of making a military target less observable, and hence less liable to be attacked, and protection of that target in the event that it is attacked.

The link from attacks on the company to attractiveness of target is jointly controlled by the activists and by FoodCo's PR function. The PR role is to protect the image of FoodCo as a soft or attractive target, perhaps by presenting the case that lessons have been learned from earlier attacks and that undeclared, but effective, improvements to product safety have been made.

Analysis of this simple loop suggests that the company's PR and security functions have an intimate mutual concern in preventing this loop from getting out of control and threatening the very survivability of FoodCo. That, on our earlier definition, is fundamentally strategic and is a simple illustration of how feedback thinking can suggest strategic concepts. Further, that has been expressed in fairly precise terms as to what these two parts of the company must do.

A Comprehensive QPID Analysis of FoodCo

Figure 3 is a more complete influence diagram for FoodCo. It has been slightly simplified from the original version, both for tractability and for confidentiality. The loop in Figure 2 is part of Figure 3 but was slightly rephrased for ease of explanation.

Figure 3 is, of course, much more complex than its predecessor (the reason why some links are shown in dotted lines and labelled as Loop A will be explained below). In general, it should be self-explanatory, though we have no space for a detailed explanation of all its causal processes. We must, though, draw attention to the link from ***safety features of product*** to ***perceived product safety***, the perception being that of the customers. This has the sign -/+ which means that the mental model of FoodCo's managers is that the introduction of added safety features, such as tamper-proof closures, will at first make customers nervous about safety – the effect is minus. As safety features become more common and better understood, customers will become more confident that products are safe – the effect will be positive.

Three comments are necessary before we proceed to its analysis.

The *first* is that it is the product of two workshops with FoodCo management, requiring in total about one day of the time of busy people. We have found that such speed of progress is a strong selling point for this sort of analysis. Its formulation engendered a good deal of debate in which many implicit beliefs were clarified with the aid of the emerging structured framework. The resulting diagram is, therefore, the shared mental model of about 10 people from the company.

Secondly, this is a classical influence diagram in that it puts a very complex and subtle problem onto one piece of paper. Again, we have found from numerous practical cases that it is hard to overstate the value of that to the managers concerned.

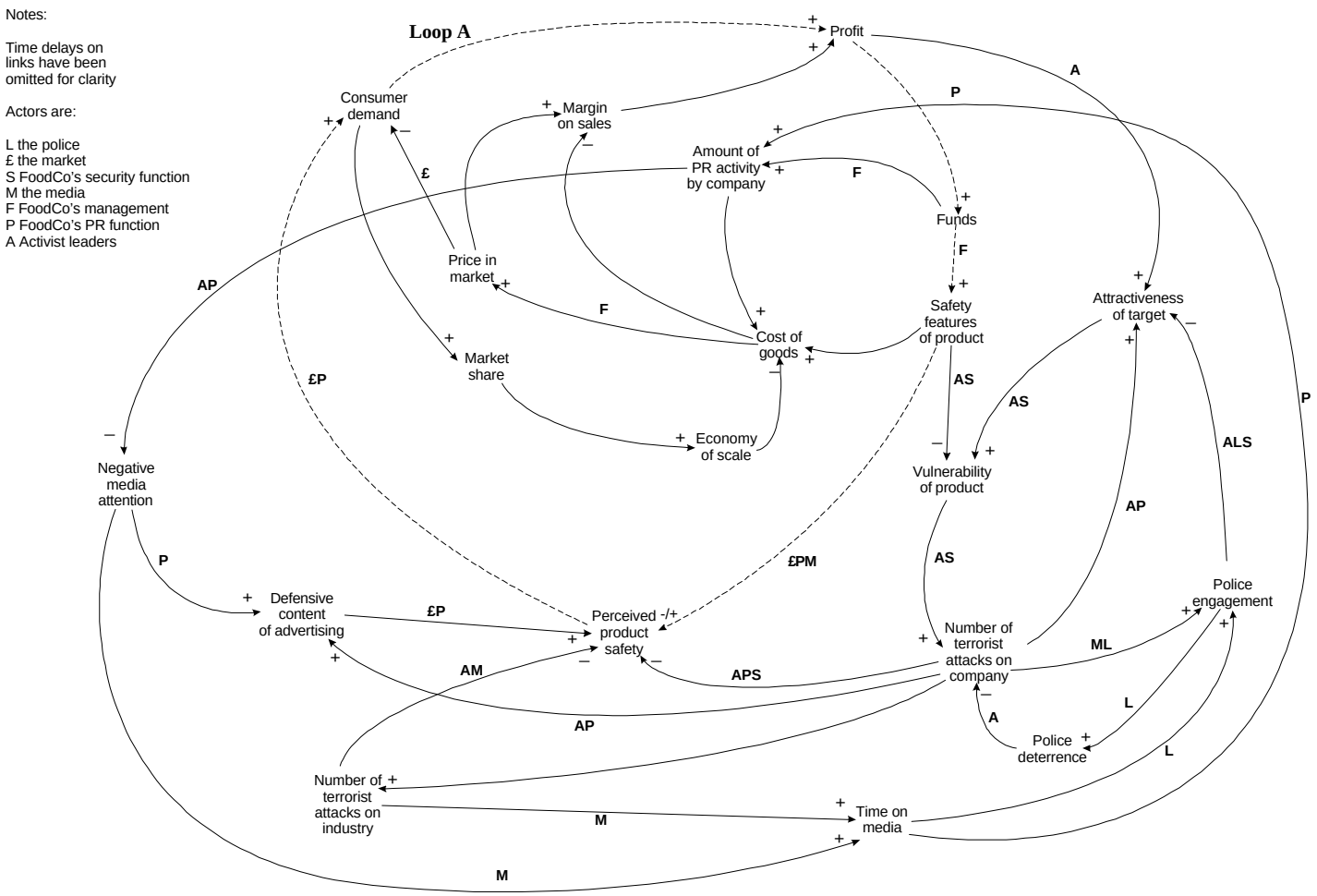

Figure 3 The Complete FoodCo Influence Diagram

The *third* comment is that this problem involves numerous internal and external actors (in no particular order): the police (L), the customers in FoodCo's market area (£), FoodCo's security function (S), the media (M), the company's management (F), its PR department (P), and last but not least, the leaders of the activists (A). Each of these has its own agenda so the problem is characterised by a not exceptional degree of polyvalency (the property of there being more than one value-system) and polyphony (the property of there being more than one voice). Polyvalence and polyphony are aspects of any political system and it is clear that FoodCo's apparently straightforward security problem is in fact highly politicised.

Loop Analysis

Study of a model's feedback loops for the light they can shed on the problems it represents has a long history in system dynamics. Generally, it has been informal and intuitive though Coyle (1977) proposed the concept of explicit loop summary tables.

Whether formal or explicit, the analysis was intended to help one to understand existing dynamic behaviour in a simulation model or to help one to deduce ideas as to how dynamic behaviour might be improved. In one sense we are heirs to that tradition but in another we differ from it in that we seek to identify the components of truly strategic actions that take account of the powers of political actors in the problem.

The first stage is to identify what appear to be the significant loops in Figure 3, as shown in Table 1. Each of these is identified in the usual way as being either a positive, or runaway, loop or a negative, goal-*seeking* loop. Each loop is characterised as slow/fast or weak/strong using the judgement of the management team.

We have no space in which to analyse all these loops so Loop A must serve as an exemplar.

It is easy to see that this loop is, at a fundamental level, **truly** strategic as it can operate in two modes. If the minus part of -/+ dominates, it will operate as a negative loop and will seek the goal of the activists by reducing FoodCo's customer base and profits until a point is reached such that FoodCo is so unprofitable that the activists no longer see it as an object of attention. On the other hand, if the -/+ sign can be moved to +, the loop has the potential to win the 'battle' on FoodCo's behalf; the invulnerability of the products reinforcing FoodCo's market share and generating profits to be spent on further measures to enhance invulnerability.

We start the detailed analysis by identifying FoodCo's objectives for the variables in this loop:

Perceived product safety	high
Consumer demand	high
Profit	high
Funds	high
Safety features of product	high

Loop	Brief Description	Type	Weak/ Strong	Slow/ Fast
A	Increased product safety worries and then reassures customers	Goal-seeking changing to Runaway	Strong	Fast
B	Added safety feature increase real safety to customers	Runaway	Strong	Slow
C	Profit increases leading to increased threat leading to more investment in security	Goal-seeking	Strong	Slow
D	Increased profit leads to increased threat, reducing profit	Goal-seeking	Weak	Slow
E	Product safety substitutes for police actions	Goal-seeking	Strong	Fast
F	Police activity deter terrorists	Goal-seeking	Strong	Fast
G	Police respond to media interest in threats to company	Goal-seeking	Strong	Fast
H	Police respond to media interest in threats to industry	Goal-seeking	Weak	Fast
I	Customers respond unfavourably to defensive advertising reducing desire for (visibly) safe products	Runaway	Strong	Fast
J	Customers respond unfavourably to defensive advertising reducing profits making the store less threatened	Runaway	Weak	Slow
K	Increased threat provoked by greater profits is offset by PR	Runaway	Weak	Slow
L	PR activity competes with increased product safety	Runaway	Strong	Slow

Table 1 Loops in the FoodCo Diagram

We now go through the links one at a time, considering the nature of the link, and the actors involved, and hence deducing necessary action components for FoodCo to consider while taking account of possible competitor reactions.

Perceived Product Safety → Consumer demand (controlled by £ and P)

While the company may propose the market will dispose, deciding the extent to which safety features are regarded by customers as being real improvements to the product, from their point of view. The PR function has a role to play, as shown by their presence in the actor list. It is necessary for this link to operate strongly.

Action components resulting:

A1 Advertising to be targeted to ensure that secure closures are a prominent feature of product display, but stressing their role as enhancers of confidence rather than a defence against intruders.

A2 Market survey to be carried out off-site to investigate customers' sensitivity to security issues and degree to which they view safety features as important components of a product.

A3 Advertising to be targeted to include general safety considerations in product presentation.

Possible competitor action

Response is likely to be limited unless FoodCo's store becomes a specific target for action, but it is possible that competitors may raise their shelf holding of 'safe' products (unbleached toilet tissue for example) in order implicitly to claim a greater safety through product selection.

Further action components:

A4 Advertising that discriminates our product from those of competitors (not necessarily on safety grounds) will strengthen differentiation.

A5 Advertising that stresses the importance or relevance of or our product discriminants will strengthen demand.

Demand (and Margin) ® Profit and ***Profit ® Funds***

These are financial connections with no actors and no action components are deduced.

Funds ® Safety features (controlled by F, FoodCo's management)

Given an allocation of funds, this link targets funds specifically at safety features and this link must operate strongly.

Action components resulting

A6 Commence an efficient an effective product development programme for safety features on display cabinets.

A7 Commence a liaison programme with key suppliers to enhance product safety features.

Possible competitor action

None

Safety features ® Perceived product safety (controlled by market, FoodCo's PR function and the media). This is required to be a strong effect.

This is the key link as whether it is positive or negative will determine the polarity of loop and thereby, in large measure, whether FoodCo struggles to survive or whether the company can 'win' against the activists. It must, therefore, also operate strongly so as to, in a sense, 'switch off' the minus sign and ensure that the positive sign

dominates requires a coherent programme that defuses customers' perceptions that security features are a threat rather than a positive development. The key to this is a briefing to the responsible elements in the media by PR staff to appeal to their social conscience, using the argument that a failure by them to act and report responsibly will result in, among other things, an increase in mothers cooking their own baby food with a consequent risk of poor hygiene. A 'be prepared' campaign is needed to stress the responsible aspects of the product safety programme while talking down the possibility of the threat.

Action components resulting

A8 Commence 'be prepared' campaign.

A9 Strengthen alliances with peer companies and suppliers to stress conditional nature of threat.

Possible competitor action

Competitors should be sympathetic to appeals for a common approach.

Analysis of Other Loops

It is noteworthy that analysis of Loop A produced no fewer than 9 very specific strategic action components. Other loops proved to be similarly prolific though it would greatly increase the length of this paper to enumerate all the other loops at similar length. We can, though, summarise that analysis by stating the resulting action components (letters denote the loops in Table 1).

B1 Take police advice on appropriateness of suppliers' tamper-proof closures.

B2 Investigate customer expectations for safety closures.

B3 Audit shelving arrangements for overall deterrence (such as placement in view of check-out operators).

B4 Play role of attackers to test overall provision.

B5 Brief security staff on appropriate position to take with customers about animal rights threat.

B6 Prepare standby press releases in the event of an attack and arrange defensive briefings of journalists to stress likelihood of any attack being unsuccessful.

E1 Brief security staff on appropriate position to take with Police.

E2 Make appropriate releases to press about FoodCo attitude to threats.

E3 Brief security staff on appropriate support to Police.

E4 Use trade associations to facilitate managerial focus by senior police officers.

Summary Of Resulting Actions

It is evident that some of the 19 action components have elements in common and they can be collated into a summary form for top management review. The result of doing so is:

- A close connection is necessary between the activities and planning of the security function and the PR function. It is appropriate for PR to be part of the contingency planning for product safety attack.

- Close cooperation is necessary between FoodCo's security function and those of the industry as whole.

- Close cooperation is also appropriate with the commercial functions of other firms in the industry so as to prepare defensive briefings with a coherent 'all food in all our stores is safe' theme.

- The effectiveness of the security function is intimately connected with the business success of FoodCo. This provides good arguments for increased funding for security, changing it to a significant part of the business as opposed to a 'two-legged overhead'.

- Specific but subtle advice to customers regarding what they should do if they observed that product seals were not intact was considered appropriate, with the obvious proviso that such advice must not be seen to imply any actual threat.

- The connection ***time on media ® police engagement*** implied that the security function's very positive relationship with the police authorities could be used to the advantage of FoodCo in the event of a product safety threat to give advance warning and increase the level of police interest in the problem.

This, though, simply summarises 19 action components into broad form and, for FoodCo, all 19 must be carried into effect. In other cases, we have found that further analysis is needed to avoid conflict between action components.

FoodCo's manager in charge of this study accepted all the recommendations, mainly because the clarity of the QPID analysis enabled her very easily to justify them to her superiors.

System Dynamics And Strategy

The opening argument of this paper was that 'classical' system dynamics was fundamentally unsuited to the generation of strategic actions because of its positivist roots and the ordering of its analysis. Further, because of its emphasis on policies as guides to routine management action it fits very well with bureaucratic theories of management but not at all with the strategic theory exemplified, in different ways, by Mintzberg and Quinn. Those views stress the politicisation, polyphony and polyvalence of strategy and it is evident that system dynamics, with the emphasis that

many of its practitioners place on simulation of fixed functions as a *sine qua non*, cannot deal with those attributes.

QPID, on the other hand fits perfectly with incrementalist views of strategy as it explicitly deals with the powers of people to generate strategic options. There is an architectural framework expressed here as what it is desired that the loops should do. For example, in Loop A it was required that all the variables should be at high values. Labelling the links with the actors that control them corresponds exactly to the Quinnian view of strategy emerging according to people's specialist knowledge and contact with the outside world; the QPID actor analysis formally includes external agents, such as, in this case, the media, the customers, the police and, of course the activists. Further, we believe that QPID improves on the incrementalist model by placing those power-holders in the context of the inherent dynamics of the business system. Finally, the summary of the actions that is presented to the senior manager is precisely in accord with the concept of choice from a menu of strategic options that have, where necessary, been carefully studied to avoid conflict between actions.

In short, we believe that the QPID analysis not only corresponds exactly to the theory of strategy development that we summarised in the earlier section on The Nature And Location Of Strategic Decisions In Organisations, but also extends that theory in significant ways by placing it in a dynamic feedback context.

In relation to system dynamics, we have shown that a qualitative approach based on an influence diagram with analysis of actors and links can lead to a very specific and extensive set of strategic actions. Those go far beyond, say, spending more on PR and are as definite as the form of words to be used in media briefings. The suggested actions also avoid the manifest uncertainties of attempting to simulate that £X on PR with have Y effect on negative media coverage and, eventually, Z result on perceived product safety.

Is QPID system dynamics? The question verges on metaphysics. Qualitative analysis has a long pedigree in the discipline, going as far back as about 1977. In our judgment, QPID is rooted in the formal rigour of the syntax of influence diagrams, and some form of diagram of feedback and causal processes is an inherent initial step in any system dynamics model, whether it is diagrammatic or quantified. Our principal conclusion, though, is that QPID is strikingly successful in taking the system dynamics paradigm into truly strategic questions.

References

(Books originally published by MIT Press have been re-issued by Productivity Press)

Coyle R G (1977), *Management System Dynamics*, Chichester, John Wiley.

Coyle R G (1996A), *System Dynamics Modelling: A Practical Approach*, London, Chapman and Hall/CRC Press.

Coyle RG (1996B), 'System dynamics applied to defense analysis', *Defense Analysis*, Vol. 12, No. 2, pp 141-160.

Coyle R G and D Exelby, (2000), 'The validation of commercial system dynamics models', *System Dynamics Review*, Vol. 16, No. 1 (Spring 2000): 27-41.

Forrester J W (1961), *Industrial Dynamics'*, MIT Press.

Mintzberg H (1994), *The Rise And Fall Of Strategic Planning*, Prentice-Hall, New York.

Powell J H and J P Bradford (1998), 'The security-strategy interface: using qualitative process models to relate the security function to business dynamics', *Security Journal*, 10 (1988) 151-160.

Quinn J (1980) *Strategies For Change: Logical Incrementalism*, Homewood, Irwin.

Quinn J, D Mills, B Friesen (1992), 'The learning organisation', *European Management Journal*, 10, 146-156.

Richardson G P and A L Pugh (1981), *Introduction to System Dynamics Modeling with DYNAMO*, MIT Press.

Sterman J D (2000), *Business Dynamics*, Boston, McGraw-Hill.

Tustin A (1953), *The Mechanism of Economic Systems*, London, Heinemann.

Wolstenholme E F (1990), *System Enquiry*, Chichester, John Wiley.

Back to the Top