Innovation; lessons from the private sector

Professor Tom Ling, November 2002

A 'think piece' in support of the Invest to Save Study

Contents

1 Context

The NAO Report 'Supporting Innovation: Managing risk in government departments' (NAO, 2000, p.4) noted that good risk management is desirable for a number of reasons and one reason was that it promotes innovation. It also noted that Departments 'are more risk averse than risk taking' (p. 6) and that Departments themselves reported that they more often identified financial, project and compliance risks rather than the risk of missing an opportunity. In a current study developing some of the themes of 'Supporting Innovation', the NAO explores the extent to which the Invest to Save Budget has achieved its objective of promoting successful innovation. In support of this study, this paper examines private sector experiences of innovation. In doing so it asks two key questions:

- What are the circumstances associated with successful innovation?
- What lessons can be learned relevant to the UK public sector?

We found a wide variety of activities covering each stage of the innovation cycle. Some of these involved innovation in how the project was financed or managed (for example partnerships in hi-tech clusters or contracting in the Hollywood film industry). Others involved innovations in how the service was delivered or the goods produced (for example, using customers experiences to change how engineering goods were produced, to identify new market niches such as palm-tops, or to change the emotional experience of young people in coffee shops). We have not separated out project management issues from delivery because they are in practice intimately related. However, in learning lessons for the public sector there would be merit in separating these out. The overall lessons are summarized in Table 1, below. We address these at various points in the argument.

Table 1 Innovation-focused activities found in the private sector

	Innovation-focused activities	**Examples**
Generating Ideas	Science-based R&D	'Ideas Factories', innovation centres, laboratory based experimentation
	Using experiences of lead customers	Identifying early adopters and using their expertise as a source of innovative thinking
	Using experiences of suppliers	Using suppliers as a source of innovative thinking
	'What if' experimentation	Modelling, scenario thinking, systems theory, simulations, whole system events
	Learning through partnerships and innovation clusters	Partnership and team-working, creating innovation clusters such as the 'Cambridge phenomenon'
	Identifying new market spaces	Understanding the consumption chain in order to identify new market opportunities and better ways to meet customers' needs
Managing Innovation	Personal skills	Reflexive practitioner capable of evaluating their practice and open to new practices
	Organisational culture	Understanding shared myths in order to change the dominant 'narratives' in an organization.
	Leadership	Sharing visions and enthusing
	Collaboration	Team working, diplomacy, open-ness
	Theoretical understanding of complex change processes	Systems theory
	Testing	Experimental, focus groups, trials
Diffusion	Communication	Knowledge management, communication skills
	Providing resources at the right time and place to support innovation	Project planning
	Overcoming resistance	Diplomacy, persuasion, authority
	Identifying success	Evaluation
	Disseminating evidence of success	Marketing and communication
	Managing risks	Risk assessment and management

1.1 The meaning of innovation

Peter Drucker defines innovation as 'change that creates a new dimension of performance' (Hesselbein, Goldsmith and Somerville, 2002, p. 1). More prosaically, Rogers suggests that it is about 'getting ideas adopted' (Rogers, 1995, p.1). Common to all implicit or explicit definitions is the claim that it is not only about the creation of new ideas but it also involves putting these ideas into practice in a way which adds value (however defined). The study of innovation is therefore the study of how new ideas are generated, how these lead to changes in organizational or individual practices which add value, and how successful practices are diffused.

The literature on this shares much in common with the literature on change management more generally. This was reviewed recently by Iles and Sutherland who suggested that it was hard to access and organise for six main reasons:

1. It contains contributions from several different academic disciplines including psychology, sociology, business policy, social policy and others.
2. Its boundaries can be set differently, according to the definition of change management employed.
3. Valuable contributions to the literature have been made in all of the last five decades, with the latter not necessarily superseding the earlier.
4. It contains evidence, examples and illustrations generated in a wide variety of organizations and from a diverse range of methodologies with varying degrees of rigour.
5. Some material is not readily accessible to non-specialists and does not lend itself to cumulative review.
6. The concepts included within it range in scale from whole academic schools, through methodologies to single tools.

(Iles and Sutherland, 2001 p.12)

In what follows we have made no attempt to review the whole literature. Rather, we identify the key elements in the innovation process and consider lessons that might be learned from the private and voluntary sectors and from overseas. These elements are:

- Generating ideas and finding new market spaces
- Managing innovation
- Diffusion of successful innovation

On occasions this might describe a sequence of events but in most cases innovation involves a less ordered assemblage of these components.

1.2 Innovation in the private sector

If we are to learn lessons from the private sector, it is important that we recognize the different constraints that innovators face in that environment. Following Hood and Rothstein's examination of business of business risk in government we might identify

three key differences (Hood and Rothstein, 2000). First, the primary unit within which innovation is assessed is the enterprise or cost centre. In contrast, in the public sector the primary unit might be a complex system such as urban renewal, criminal justice or health. Second, in the private sector, innovation is ultimately driven by shareholder value. However short-term and perverse this objective might be, it is at least easier to define than the objective of satisfying the 'public interest'. As a proxy for 'the public interest' we typically use 'policy objectives' when considering what drives innovation but we know that much innovation occurs independently of policy initiatives. Third, private enterprises have an obligation to remain within the law but the legal constraints on public bodies (for example concerning natural justice and freedom of information) quite rightly limit the ways in which they can innovate. Under these circumstances it is perhaps not surprising that most public sectors tend to assess risk and manage innovation differently compared with their private sector equivalents. In this paper we therefore do not suggest that activities can simply be transferred from public to private. However, there may at least be lessons to be learned.

2 Generating ideas and finding new market spaces

2.1 Generating Ideas

According to the *Harvard Business Review on Innovation* 'Businesses that constantly innovate have systematized the production and testing of new ideas, and the system can be replicated by practically any organization' (Hargadon and Sutton, 2001, p.55). There are generally recognised to be four different stages involved, each requiring its own organizational and cultural supports. These are, first, capturing good ideas from a variety of sources (whether originating in-house or not). Second, developing these ideas through experimentation, modeling, scenarios, or whatever. Third is revisiting old ideas to see how they could be used in new ways. Fourth is developing initial project plans that incorporate these ideas in the delivery of new services or products. There is also the over-arching problem of moving these ideas through from conception to delivery (what Hargadon and Sutton call knowledge-brokering).

The original 'Innovation Factory' was Thomas Edison's Research and Development facility at Menlo Park, New Jersey. More recently organizations such as IDEO, based in Palo Alto and Design Continuum from Boston claim to fulfill this role. Organizations and products associated in recent times with strong in-house innovation processes include Boeing jets, 3M post-it notes, Federal Express, the Sony Walkman and the Hewlett Packard 200LX pocket computer. These all appear to combine technical and creative skills with a capacity to manage the 'knowledge-brokering cycle'. Ann Livermore, president of Hewlett-Packard's (HP) Services Business describes some of the activities involved in developing HP's strategy for E-services. Her description describes a process of innovation which is rational, non-destructive and manufacturer-led:

We talked with our customers. We dug deep in HP Labs. We talked with industry watchers, and we talked with key technology and Internet strategists inside and outside of HP. We looked at what worked well on the Net, and we examined the Net's short-comings. We looked at new business models and how they might evolve. We looked at the role telecom companies, service providers, and others would play as the major catalysts for this new world. We looked at what was preventing companies from getting the full value out of their information technology (IT) investments. But most of all, our goal was to examine the next logical evolution of the Net. And a central thread emerged: a world of interconnected services – e-services.
(Livermore, 2002, p. 264)

However, there are a number of reasons why we should question how replicable this rational, creative and manaufacturer-led process might be (assuming that it represents an accurate account). First, as Schumpeter has demonstrated, technological innovations are often destructive affairs. This will often be creative destruction arising from the dynamic disequilibrium created when an entrepreneur innovates (this dynamism arises partly from the competitive advantage given to the successful innovator and the response of old and new competitors). This is arguably a necessary price for progress. On the other hand, innovation is also associated with less creative destruction– as the share-holders in many e-service companies would testify. The high and rising death-rate of new companies, according to Arie de Geus is not an inevitable feature of the new economy (de Gues 2002). De Geus cites a study carried out at Shell while he was there which examined the long-term survivors from the storms of creative destruction. It was found that these organizations saw themselves as communities with a shared culture which was not solely, or even mainly, concerned with maximizing profits or shareholder value. We will consider some of these organizational and cultural requirements for *successful* innovation below.

Innovation can often be destructive. Also, it is not necessarily subject to the rational control implied by Livermore. Schumpeter's work on innovation clusters producing long waves of economic growth describes a bubbling of innovation in key economic sectors with consequences that could not have been anticipated through the interaction of different but related technological innovations. These clusters of technological innovation were also associated with wide-ranging social and economic change. The lesson is that whilst individual companies may need to organize themselves in the way described by Livermore, this could not work for the economy (or even industry) as a whole. The analogy with the public sector may be that whilst parts of it can be rationally controlled and creative, there may need to be a tolerance for the unanticipated and the destructive. Clearly, this would most probably be associated with some capping of risk.

We also need to note that the manufacturer-driven model she proposes contains implicit assumptions that economists would argue do not always apply. Arguably, in the public sector this producer-led approach to innovation is the conventional model. However, von Hippel (1988) has long ago shown that the sources of innovation are more varied than this. He classifies the source of innovation as user, manufacturer, supplier and other. He presents empirical data that show that although the manufacturer is the source of 90% of

innovations in, for example, engineering plastics, it is the source of innovation in only 23% of cases in scientific instruments. In scientific instruments, users are the source of innovation in 77% of cases studied. Less commonly, suppliers are the source of innovation in thermoplastics in 36% of cases. Von Hippel postulates that the source of innovation tends to arise where the temporary profits ('economic rents' innovators receive for being ahead of the competition) are greatest. In the public sector there may be fewer incentives for customers and suppliers to innovate. We return to the question of 'users as innovators' below.

Before leaving the question of generating ideas, we should consider the role of experimentation in the innovation cycle. In the natural sciences experimentation is a necessary part of the generation of new ideas (although the history of science contains many examples of innovative ideas which were not born out of experiments). Indeed, those who follow Popper insist that only claims that can be disproved under repeatable experimental conditions can claim to be scientific. Edison is again often cited as the person first responsible for bringing this scientific method into the commercial setting. Today it lies at the heart of product development in key industries such as pharmaceuticals, automotive and software. The convergence of the disciplines of chemistry, biology and physics with information technology has in some areas reduced massively the costs of iterative experiments and in other areas created whole new research agendas as has been the case with genetics, for example. Beyond these traditionally research-intensive industries, new technologies are also making experimentation possible and economically attractive. With complex models and simulations 'what if' experiments are regularly carried out in areas such as financial services, transport and environmental protection.

Such experimentation is characterized by specialization. As Patel and Pavitt point out, this specialization takes three forms:

- *Specialisation by discipline within science and technology*
- *Specialisation by corporate function inside the business firm, with the establishment of R&D laboratories; and – within the corporate R&D function – specialization between the development function concerned with product and process development, and the research function exploring options for future product development.*
- *Specialisation by institution within countries, with R&D laboratories funded by companies, and by governments – either directly or through universities and similar organizations.*

(Patel and Pavitt, 2000p. 217)

With specialization comes the need for co-ordination. Some of the literature uses the term 'national system of innovation' to describe how this may be achieved at the national level. More generally, national systems of innovation 'can be defined in terms of the institutions involved in the generation, commercialization and diffusion of new and better products, processes and services (i.e. technical change), and of the incentive structures and competencies in these institutions that influence the rate and direction of such change' (Patel and Pavitt, 2000, p. 217). Responsibility for creating this system is shared

between public, private and not-for-profit organizations. It displays the characteristics of governance, in which accountability and authority is diffused through a network, rather than government, in which accountability and authority are centralized. For example, through establishing laws of intellectual property or funding Universities, the state is involved. However, through sustaining networks and innovation clusters, private organizations also adopt a co-operative role going beyond a short-term focus on share value which can be mutually advantageous to a variety of organizations in the medium term.

As the OECD has put it, 'innovation results from increasingly complex interactions at the local, national and world levels among individuals, firms and other knowledge institutions' (OECD, 2001, p.3). However, the resulting 'innovation clusters' have to cope with pressures arising from new information and communication technologies, the globalisation of much R&D, finance and intellectual copyright, as well as the localization of particular clusters around a University or leading corporate player. Although some of these clusters are in high technology areas of biotechnology or informatics examples can also be found in more mature sectors such as agro-food production and the construction industry.

One of the most successful examples in the UK is usually seen to be explosion of growth in the high technology sector around Cambridge (DTI 1998; DTI/DfEE, 2001). The 1985 Report *The Cambridge Phenomenon* (Segal, 1985) first focused attention on the network-like relationships cutting across Cambridge University, the corporate sector and public bodies. The traditional barriers between academia and entrepreneurship have in many cases been overcome with a combination of team-working, intellectual curiosity and business acumen. Importantly, although research was initially fueled by a the high priority given to Government funding for bioscience, this was followed by support from venture capital and from the Alternative Investment Market (Charles and Benneworth, 2001, p.338). However, Cambridge is certainly not the only example of a successful innovation cluster. In Scotland the semiconductor industry and the Thames Valley cluster around defence industries are both examples of successful innovation clusters. For the public sector, the lessons might be that the creation of spatial and temporal locations within which different organizations can share their learning can, if properly incentivised lead to collaboration for innovation and mutual gain.

Even where innovation clusters do not exist in such an identifiable way, partnerships and networks still play an important part in stimulating innovation in the private sector. The film industry, for example, has for many years involves a shifting set of partnerships organized around particular projects (DeFillipi and Arthur, 2002). This is an industry where a large number of contractors come together around projects, often with similar memberships, before dispersing to form new teams around the next project. Management theory tends to identify the individual firm or profit centre as the primary unit of analysis in the study of innovation, this is to some degree challenged by the history of the film industry. Collaboration and partnership is often crucial to successful innovation. Tidd, Bessant and Pavitt (2002) show that there can be compelling reasons why a firm would choose to collaborate:

- To reduce the cost of technological development or market entry
- To reduce the risk of development or market entry
- To achieve economies of scale in production
- To reduce the time taken to develop and commercialize new products

(Tidd, Bessant and Pavitt, 2002, p.167)

Once the decision to collaborate has been taken, firms have a range of options about the form of collaboration. Each is appropriate under different circumstances. Tidd and his colleagues list these as sub-contracting, cross-licensing, consortia, strategic alliance, joint venture, and network. For example, Airbus Industries was a joint venture which, among other things, allowed for the diffusion of new technologies among participating countries.

Generating Ideas: some implications for the British Public Sector

Applied science
The 'ideas factory' implies a space in which scientists and technologists can 'play' and be at one stage removed from the end product. However, whilst there is a need for such specialization there is also a need to communicate to others in the innovation process and to align such work to the goal of adding value. At one extreme way of achieving this is a tightly controlled project behind rationally defined goals. The opposite is to allow surprising ideas to flourish in a creative culture. There are examples of both working. How should the public sector address this need for specialization, communications and alignment?

Modelling and scenarios
Another type of ideas generating is more about the environment within which the product or service will be used than about the product itself. Changes in this environment can often determine the success or failure of the product therefore companies seek to identify the range of likely futures and, as far as possible, 'future proof' their product. Should innovations in public services be assessed in a similar way?

Understand the experiences of customers and suppliers
As von Hippel has demonstrated, the source as innovation is as likely to be from suppliers or consumers as producers. It is not clear that that the experiences of customers and suppliers are as fully understood in the public sector and therefore a potential source of innovation is lost. One approach is to focus on lead customers or early innovators (this is being pursued currently through 'beacon' organizations. The public sector uses focus group and other forms of customer feedback but is this sufficient?

Innovating through partnerships and networks
In the past innovation often arose within the individual enterprise or the profit centre and this limited innovation in the whole system. However, in recent decades, network-like relationships (associated with, for example, the Cambridge phenomenon) have suggested that knowledge sharing can provide an alternative basis for generating new ideas. This style of collaborative competition seems to combine the benefits of both diversity and diffusion of best practice. We use partnerships to deliver but perhaps their primary benefit is in innovation.

2.2 Generating new ideas by finding new market spaces

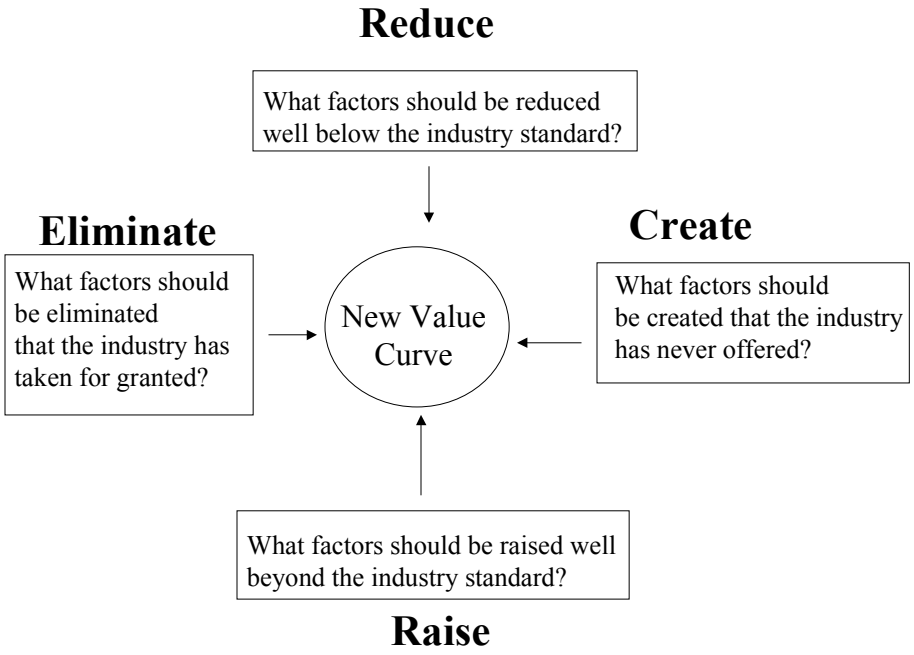
In the private sector much competition is described as 'head-to-head' with a number of producers providing similar products or services. Success depends upon driving down costs and meeting customer needs. However, some successful innovations are more concerned with establishing a new 'market space' for which there are no direct competitors. There are a variety of ways of achieving this. For example, the hand held computer attempts to combine the benefits of a Filofax with those of a lap-top and to minimize the disadvantages of each. In a different way, the urban 4x4 market was opened up by Range Rover creating a new emotional relationship to a functional product. Similarly, Starbucks changed young people's emotional relationship with the coffee shop.

For the public sector, the interest in identifying new market spaces is, first, in providing new ways of securing up-take of services, especially to 'hard to reach groups'. Secondly, it provides a way of considering whether some aspects of public provision should be improved, reduced, changed or abandoned. It could lead to radical innovation in services if pursued systematically. Whilst there are great incentives in the private sector for identifying and satisfying new market spaces, in the public sector there may even be disincentives since meeting new market spaces may disrupt existing comfortable relationships and cultures. Therefore it might be helpful to consider how the private sector goes about doing this.

Kim and Mauborgne (2001) have studied companies that successfully managed to do this and in this section we draw primarily on their work. Home Depot, for example, revolutionised the do-it-yourself market in the US by identifying the reasons why people used hardware stores, the reasons why they chose contractors, and identifying how they could provide the most desirable elements of each. Intuit, another example cited by Kim and Mauborgne, developed a software package to allow people more easily to manage their personal finances. The founder of Intuit, Scott Cook, describes how they viewed the market competition, 'The greatest competitor we saw was not in the industry. It was the pencil. The pencil is a really tough and resilient substitute. Yet the entire industry over-looked it' (p.6).

The essence of this approach is that, by understanding customer needs better, a new product or service can be developed which is not simply better or cheaper than existing products or services but is radically different (a 'new value curve'). For example, in the case of book retailing, customers might be attracted on the basis of price, knowledgeable staff, selection of books, store ambience, store hours, and café and lounge area. By focusing on store ambience, hours and cafe and lounge facilities, Borders bookshop has been able to find new markets for books and take customers away from traditional independent bookstores. It is suggested that by answering four simple questions about each aspect of the customer experience, a new product or service can be developed. This moves the producer onto a 'new value curve'. These are outlined in diagram 1.

Diagram1.



By asking these questions, it is possible to innovate to provide added value to customers by providing them with less of what they don't use and more of what they want. An additional dimension is to look at complementary products and services. For example, fitness centres' link to fashion and health products. In the public sector, GPs waiting rooms are often used as a source of information and services other than just health. Similarly, Arts organizations may build up a profile of their customers and market on the basis of 'if you enjoyed X we think that you will enjoy Y'.

Kim and Mauborgne also suggest that emotional appeal can be added top functional items to create added value. We mentioned the example of the urban 4x4 and Starbucks above. Swatch were equally successful at persuading customers that they needed different watches as fashion accessories for different occasions. The public sector has always had such emotional resonances to its services. Giving blood, for example, is a service that depends entirely on the sense that it is 'the right thing to do'. Successful and failing schools also provoke different emotional relationships with their users. Across the public sector there is now more interest in how providers should move from a more passive approach to emotional attachment towards adopting a more pro-active marketing style.

Finding new market spaces: some implications for the British Public Sector

Cheaper and better or different?

Do public providers concentrate on providing better or cheaper products when they should be providing different products?

Do public providers provide some services that offer more than is habitually used? Rather than whole services being increased, are there just certain parts of the service that should be increased? If there are some activities which the public sector should no longer be doing, how would anyone know?

Building new relationships with public sector products?

Where there are complementary public services, should more of these be provided together to provide added value? Where the private and public sectors provide complementary products, what should be the legal, ethical and political constraints placed on complementary provision and marketing?

Providing added emotional appeal to help the uptake of a service involves additional marketing costs but may increase provision, especially to 'hard to reach groups'. What limitations, if any, should be placed on this?

3 Creating Organizations that can Manage Innovation

The capacity of an organization to innovate is different from the sum of the capacities individuals in it. There are many different ways of looking at organizational capacities (see Iles and Sutherland, 2001) but taken together these generally include three themes: resources, processes and culture (see Christensen and Overdorf, 2001). What organizations are capable of doing is a consequence of the resources available (cash, skills, tacit knowledge etc.), how these resources are applied (knowledge management, communication, decision-making processes), and culture that holds the organization together (not only the ethics but also being risk averse or 'can-do', inward-looking or outward-looking, producer focused or user-oriented etc.).

Examples of innovative organizations in the private sector frequently highlight two issues; leadership and learning. Although at first sight these are opposed (the former being perceived to be top-down the latter being bottom up) in concrete examples we find that leadership is often about empowering others and stimulating learning, whilst learning organizations are characterized by a particular style of strong leadership (rather than no leadership at all).

In accounts of innovative organizations, Bill Hewlett and Dave Packard's founding of Hewlett Packard is often cited. In contrast with Livermore's approach quoted above, the company was formed with little sense of what the product might be. In Hewlett's words:

> When I talk to business schools occasionally, the professor of management is devastated when I say that we didn't have any plans when we started – we were just opportunistic. We did anything that would bring in a nickel. We had a bowling foul-line indicator, a clock drive for a telescope, a thing to make a urinal flush automatically, and a shock machine to make people lose weight. Here we were with about $500 in capital trying whatever someone thought we might be able to do.
>
> (Quoted in Collins and Porras, 2002, p. 75).

Similarly, Sony was founded with no specific product idea and the first brainstorming session on what to do took place after the company had been founded. However, despite some examples of organizations that innovated from the outset, one study found a negative correlation between early product success and a long-term history of innovation (Collins and Porras, 2002). In other words, the experience of doing one thing very well at an early stage may limit the innovative capacity of the organization later in its life.

Innovative organizations can be analysed separately from the products or services they produce. These may be synchronic (all the inter-related features of an innovative organization at one moment in time) or diachronic (charting the stages through which innovative organizations move). Mintzberg observes that industries and organizations go through an initial novel design stage when products and services face constant redesign. Before long, this settles down into a dominant design with some adaptation but little product innovation. This is followed by adaptive designs which continue until the limitations of the original design become so apparent that a new period of novel design begins (Mintzberg, 2002, p. 143-4). (There are parallels to be drawn with Thomas Kuhn's idea of paradigmatic shifts in the history of science which are followed by periods of 'normal science'.)

Mintzberg argues that the top-down model of strategy formulation prompting organizational change followed by implementation and action may be appropriate for certain sorts of organization but that organizations going through innovative activity need to be managed differently: 'There is no place to start in this model, nor in the world of complex innovation, because all of this is loops within loops. *Self-organization* is the key, but that is helped by a *consolidation* of experience that may eventually appear as *vision* – after the facts, as a consequence of them' (Mintzberg, 2002, p. 151).

The development and use of knowledge to improve performance in the web-like world described by Mintzberg requires a particular approach to learning. In a classic text on organizational learning, Agyris and Schon (1978) describe three different types of learning that take place in organizations. These are 'single loop learning' which is an adaptive and incremental attempt to narrow the gap between actual and desired performance. It operates within the status quo of the organization. Second, 'double loop learning' is aimed at learning how changes in the status quo can improve performance.

Third, there is ‘deutero-learning’ which involves learning how to learn and can support both single and double loop learning.

Unfortunately, according to Agyris and Schon, most organizations are dysfunctional in their learning because individuals struggle to be in unilateral control, seek to minimize losing and maximizing winning, to minimize the expression of negative feelings, and to be wholly rational. In place of this model they propose a model of learning which involves promoting valid information, encouraging free and informed choice, and a reflexive approach to learning and its application. These ideas are developed more fully in the influential text by Peter Senge, ‘The Fifth Discipline (1990) and the later application of these ideas in Senge (*et al)* ‘The Fifth Discipline Fieldbook’. For Senge, the learning organization is founded upon five disciplines. These have been usefully summarized by Iles and Sutherland (2001) as:

1. Personal mastery: the discipline of continually clarifying and deepening personal vision, of focusing energies, of developing patience, and of seeing reality objectively.

2. Mental models: the discipline of working with mental models allows individuals to unearth the assumptions and generalizations that influence their understanding of the world and shape how action is taken.

3. Building shared vision: involves unearthing the ‘shared pictures of the future’ that foster genuine commitment and enrolment rather than compliance, encouraging people to excel and learn.

4. Team learning: builds the capacity of team members to suspend assumptions and enter into genuine thinking together. It also involves learning how to recognize patterns of interaction in teams, such as defensiveness, that underline learning.

5. Systems thinking: the ‘fifth discipline’ integrates the other four, fusing them into a coherent body of theory and practice.

(Iles and Sutherland, 2001, p. 64)

Claims made on behalf of Learning Organizations are great and, intuitively, a persuasive case can be made for it, especially in organizations seeking to be innovative in the face of complexity and rapid change. Unfortunately, there is very little evidence about the actual success or failure of ‘Learning Organizations’ and so learning lessons for the public sector would necessarily be provisional. Furthermore, the methodological challenges facing any attempt to systematically compare and contrast learning organizations and power organizations are great.

If Mintzberg and Senge represent one approach to building innovative organizations, Walton (1987) represents the other. For Walton, ‘Innovation cannot be effective unless it is guided be a vision made manifest in a model. A model is a general concept of the future of the organization and evolves from an understanding of the limitations of

traditional organization and experimentation with alternatives' (Walton, 1987, p. 15). This approach emphasizes the role of leadership in developing a coherent vision within which innovation can take place. Such a vision should align a group of interrelated policies and integrate the interests of multiple stakeholders. It is therefore not insensitive to the needs of stakeholders and, indeed, it emphasizes the benefits of resonating with wider social values. The difference is therefore more of emphasis than of principle.

So far we have looked at how organizations might be changed from within to become more innovative. An alternative approach is to innovate through establishing new relationships with others. These can take two forms. The first is to work differently with the consumption chain. The second is establishing new relationships with others in the production chain. (Both of these approaches could also appear in the section above on generating new ideas but they are also ways of improving organizational capacity). Through bench-marking and a panoply of other mechanisms designed to spread good practice in the public sector, we are familiar with the latter approach. However, the former is less familiar to public sector reformers and may reward some attention.

Macmillan and McGrath use their case study of Blyth Industries to argue that 'By analyzing its customers' experiences and exploring various options, Blyth industries, for example, has grown from a $2million U.S. candle manufacturer into a global candle and accessory business with nearly $500million in sales and a market value of $1.2billion' (Macmillan and McGrath, 2001, p. 132). Macmillan and McGrath suggest that there are two stages to this. The first is 'mapping the consumption chain' which involves capturing the customers total experience with a product or service. The second is 'analyzing your customers experience' to understand how to differentiate your goods or services in order to add value.

In the first stage there are fifteen key questions:

1. How do people become aware of their need for your product or service?
2. How do consumers find your offerings?
3. How do consumers make their final selections?
4. How do customers order and purchase your product or service?
5. How is your product or service delivered?
6. What happens when your product or service is delivered?
7. How is your product installed?
8. How is your product or service paid for?
9. How is your product stored?
10. How is your product moved around?

11. What is the customer really using your product for?
12. What do customers need help with when they use your product?
13. What about returns or exchanges?
14. How is your product repaired or serviced?
15. What happens when your product is disposed of or no longer used?

Having mapped the customers experience in the consumption chain, analyzing this experience involves asking 'what, where, who, when and how' at each stage. For example, asking what customers are doing at each point, where customers are at each stage, who else they have to deal with, when events take place (24/7/52 or seasonal etc.), and how customers' needs are being addressed. Building organizational change around this analysis might lead to more innovative organizations than could be achieved by organizational learning or inspirational leadership on their own (although these might also be required).

Managing innovation: some implications for the British Public Sector

Organizational variety and organizational life

Organizations contain their own limitations and capacities that are relatively independent of the individuals within them. Are we satisfied that the very limited range of organizational forms that exist in the public sector is adequate?

Many innovative organizations in the private sector were established before the developed their product range. Could this be tolerated in the public sector? Could the equivalent be simulated?

Leadership

Have we developed an adequate evidence base on the benefits of organizational learning and leadership? There is little systematic evidence from the private sector.

New organizational links with the customer

Have we segmented the consumption chain sufficiently in our analysis of the quality of public services? Should we build organizations around the insights that come from segmenting the consumption chain?

4 Diffusion

Through benchmarking, beacons, best value and many other means, the British public sector in recent years has overtly and formally addressed the need for the diffusion of good practice. In this section we look briefly at how this takes place in the private sector.

Diffusion is the process by which innovation is communicated, resources are provided to support change, and the problem of agency is over-come (by incentives, culture or whatever) leading to an outcome in which innovation developed in one part of the system is taken up and applied elsewhere. Diffusion may be planned or it may be spontaneous. It may be achieved through formal or informal channels. The context of diffusion may be one of individual agents making free choices, collective and binding decisions being taken by the whole group, or authoritative decisions being taken by those in authority. The literature on it therefore covers the sociology of new technologies and organizational change, literature on communication and information, literature on risk and uncertainty, the economics of investment, productivity and economic performance, and literature on networks, competition and clusters. All of these are also interested in time, in that the rate and clustering of diffusion is seen to be important.

To some extent and amongst other things, diffusion is related to the characteristics of the innovation itself. Rogers (1995) lists the relevant characteristics as:

1. Relative advantage: how much better is the innovation than previous practices?

2. Compatibility: how compatible is the innovation with the existing values and experiences of potential adopters?

3. Complexity: how difficult are the ideas behind the innovation and how difficult is it to adopt it?

4. Trialability: how easy is it to trial the innovation in a safe way?

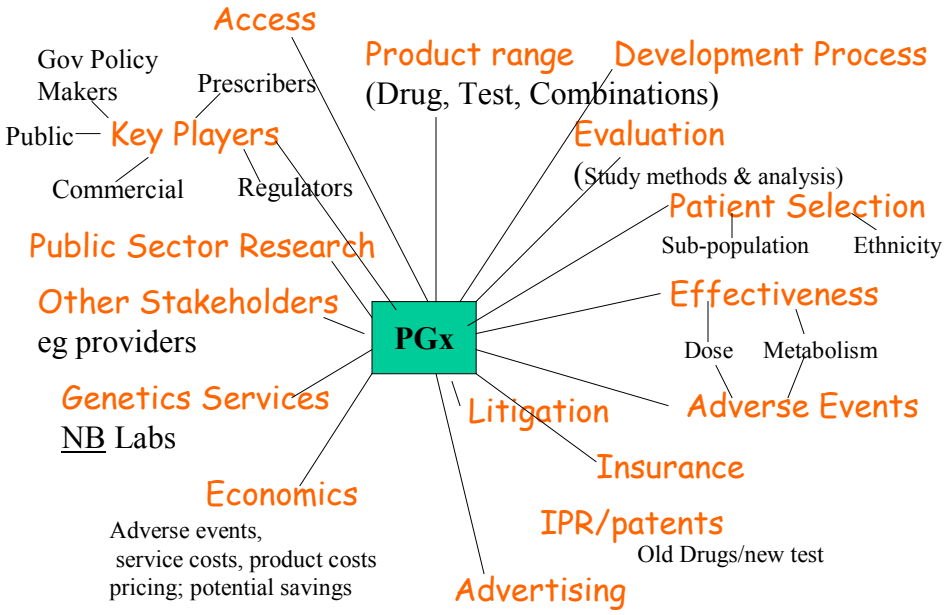
5. Observability: how visible are the benefits of the innovation to potential adopters?

There are many famous examples of failed (or unacceptably slow) diffusion of beneficial innovations. Rogers cites the case of controlling scurvy in the British navy in which an English sea captain demonstrated beyond doubt that citrus fruit could prevent scurvy in 1601. A century and a half later, a British navy physician carried out another experiment that confirmed this but it was not until another half century had elapsed that, in 1795 scurvy was immediately wiped out by adopting the innovation of using citrus fruit. It is tempting to put this down to the congenital conservatism of the British naval establishment but it should be remembered that in other respects (weaponry, for example) they were rapid adopters. Another famous example cited by Rogers is the failure of the technically superior Dvorak keyboard, developed in 1932 by Professor August Dvorak, to replace the existing QWERTY keyboard (which had originally been designed to slow the

typist down to a speed compatible with the mechanism). These examples show that the barriers to innovation can be highly complex and may vary from case to case. In the case of scurvy control, the status of those making the discovery, the decision-making processes, alternative claims, and the priorities and values of decision-takers all seemed to conspire to prevent adoption. In the case of QWERTY, it was simply the difficulty of persuading each successive generation of typists, trained to use QWERTY, that the cost of changing was worth their while, and to create a sequence of events that allowed a critical mass of typists to change at the same, predictable, time so that suppliers could provide the new machines.

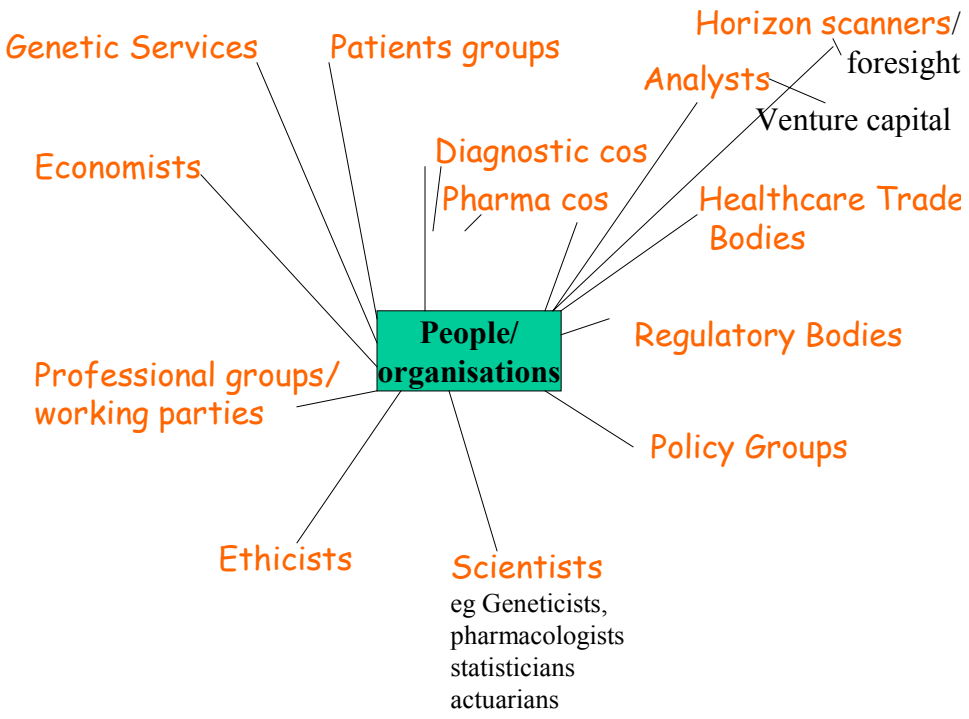
In most difficult areas of diffusion there are multiple barriers. For example, in pharmacogenetics, there is the potential for the development, diffusion and uptake of innovations which, potentially, could lead to better targeting of existing drug therapies, improved dosage, less damaging side effects, and new test-drug combinations that could eventually bring substantial health gains. The pharmaceutical companies stand to make great profits, the health service to have improved health outcomes, and individual patients to have better treatments available. However, despite this apparent mutuality of interest, it may prove hard to diffuse the innovations that are anticipated coming from the R&D programmes of the pharmaceutical companies. A glance at a map of the issues involved suggests why this might be the case (Figure 2).

Figure 2 Issues involved in diffusing innovation in pharmacogenetics



If these are the issues to be resolved, then the key players who would be party such a resolution are described in Figure 3.

Figure 3 Key players involved in diffusing innovation in pharmacogenetics



Barriers arise first from communication problems. The values and language of the venture capital and the pharmaceutical companies may not be the same as those of patient groups. Health economists will not speak the same language as genetic scientists or ethicists. A second barrier concerns coordinating the decision-making processes of a range of stakeholders, each with its own time-frames, institutional pressures and protocols. A third concerns the uncertainty of the evidence and the risk that actions will not result in the intended outcomes. And a fourth concerns asymmetries of interests such that some players stand to benefit greatly whilst for others the benefits may be only marginal or even take resources away from preferred activities. When innovating in public services, government has a role to play in overcoming all four of these barriers. They have a unique role to play in stimulating a shared language, establishing agreed time-frames, managing risks, and negotiating amongst conflicting interests. In a policy arena such as pharmacogenetics, without government addressing each of these, innovation may be stifled, despite the opportunities for mutual gains.

Diffusing Innovations: some implications for the British Public Sector

Formal vs informal approaches to diffusion management

In recent years, the primary formal model of diffusion in the public sector has been authoritative and process-based (e.g. Best Value, Beacon Councils). These have had some success but, as is often the case in the private sector, could more spontaneous, optional and informal processes sometimes deliver successful diffusion?

In the past, informal processes of diffusion in the public sector have worked well (for example, GPs read health journals and information sent by drug companies). The institutional drag of slow adopters meant that the success or failure of early adopters could become apparent. The pace of technological and organizational change is now so great that even the early adopters find it hard to keep up with innovation. Also, in the UK at least, a high value is placed on parity of service across the whole country so that there is political pressure to innovate simultaneously across the whole system. Furthermore, in the public sector although innovation is encouraged, risks are also capped and this shapes the patterns of diffusion. Are there ways of formally capping risk and rewarding best practice without creating a uniformity lacking the opportunity to learn from diversity?

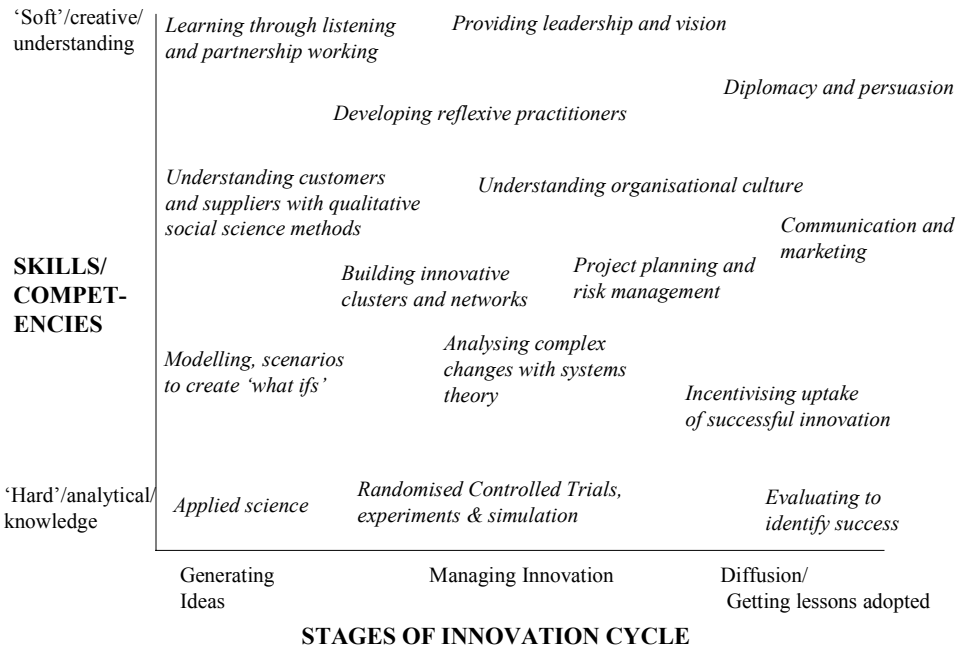
Overcoming barriers to diffusion

Barriers to diffusion may often exist where services are delivered through partnerships involving public, private and voluntary organizations. These involve the lack of a shared language, few shared timeframes, problems of managing and sharing risk, and overcoming conflicts of interest. What should be the legal, ethical and political limitations to overcoming these?

5 Concluding comments; lessons from the private sector

Successful innovation in the private sector depends upon generating new ideas, developing these, applying them and diffusing successful innovations throughout a whole industry. In addition there is a 'knowledge brokering' role to ensure that information is moved through the system. The skills and competencies required for each of these vary, as do the organizational forms and cultures. In this short review we have seen the wide range of ways in which the private sector has attempted to innovate. We might summarise the skills and competencies identified in Figure 4 below.

Figure 4 Skills and competencies required in innovating and diffusing successful innovation



From the private sector we learn how much energy is put into innovation and also what a variety of activities are focused on achieving it. However, there are no meta-analyses of this evidence and, indeed, the methodological barriers facing such a project would be considerable. Consequently we are left with evidence that is often anecdotal and self-serving. Furthermore, whilst there are powerful incentives to innovate in the private sector, not all of these are benign. Some, for example innovative buy-outs intended to restrict competition or asset-strip may be financially astute but against the public interest. Others, as in the case of corporate fraud, may be financially innovative but illegal. However, despite these caveats, if we were to distill the key points arising from this review, they would include the following:

Figure 5. Key lessons

Innovation: Key lessons from the private sector

- Innovation requires a variety of competencies at key stages in the innovation cycle. Each requires its own space and time but along with specialisation comes the need for coordination. In the private sector coordination is provided by the product line. In the public sector the equivalent would be the policy objective.
- One successful innovation does not necessarily mean that all the right processes are in place. Therefore attempts to replicate based on shallow learning may fail (as many failed companies discover). Avoiding this requires organisations that learn
- The private sector invests heavily in understanding customers' and suppliers' experiences when innovating. There is a risk in the public sector innovation is driven less by customers' and suppliers' experiences and more by process (e.g. creating partnerships, introducing IT).
- In the private sector, marketing own success (for PR) and copying the success of others (for profit) is highly rewarded and therefore common. In the public sector dissemination has to be more actively managed if lessons are to be learned and disseminated. Government has a unique role in this but it cannot do everything.
- Innovation can be in the way the project is financed or managed or in how the service is delivered.

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