Models of Innovation and Implications for Australian Regional Development

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ABSTRACT
This paper presents a new typology of innovation with reference to two parameters; firstly, the degree to which innovation is incubated in a complex network of business relationships versus key bilateral relationships; and, secondly, the degree to which innovation is undertaken as a strategic leap as opposed to incrementally. Evidence from the literature is presented to demonstrate that *Advanced Business Services* play a critical role regardless of which model of innovation in this typology is applied, albeit that the transaction of this role will vary significantly across these categories. This finding is related to the geography of advanced business services in Australia to draw out some key urban policy issues, including the latent potential for a 'core-periphery' pattern of economic development to emerge nationally.

INTRODUCTION

This paper reviews the literature on technological change and economic development, and proposes a theoretical framework for analysing the strategic role which Advanced Business Services play in the innovation process.

For the purposes of this paper, 'Advanced Business Services' are defined as *"Enterprises providing a largely customised, problem solving service to other businesses, where the services in question require application of significant intellectual effort or capital"*. They encompass firms that:

- Derive most of their sales from **business clients**; and
- Provide product development and / or cost management solutions which are specifically **tailored** to the needs of clients; and
- Apply a high degree of **creativity and intellectual analysis** in delivering these solutions; and
- Act as the **primary provider** of intellectual content as opposed to acting as agents for other corporations providing pre-designed goods and services.

In terms of the Australia and New Zealand Standard Industrial Classification (ANZSIC), Advanced Business Services are generally covered by the following sectors:

7511 Financial Asset Broking Services	7519 Services to Finance and Investment n.e.c.
7730 Non-Financial Asset Investors	7810 Scientific Research
7821 Architectural Services	7823 Consultant Engineering Services
7831 Data Processing Services	7832 Information Storage and Retrieval Services
7834 Computer Consultancy Services	7841 Legal Services
7842 Accounting Services	7851 Advertising Services
7852 Commercial Art and Display Services	7853 Market Research Services
7854 Business Administrative Services	7855 Business Management Services
7861 Employment Placement Services	7869 Business Services n.e.c.
8431 Higher Education	8432 Technical and Further Education
9621 Business and Professional Associations	

Overview

The literature on technological change can be segmented according to whether the focus is on innovation within the enterprise itself, or whether innovation is approached from an industry or region wide perspective, that is, large groups of transacting enterprises. These segments are shown in Figure 1.

The horizontal dimension of the matrix distinguishes between the firm's engagement in invention driven innovation ('Strategic Leap') versus its propensity for incremental innovation ('Organic').

Commentary in respect of the vertical dimension of the matrix is focussed on business to business links and may not be overtly concerned with 'innovation' as such. More likely, it will concentrate on 'productivity improvements' or 'enhanced competitiveness' in nations, regions and industries. One powerful theme in the literature within this dimension relates to the re-engineering of industry value chains and, in particular, to extensive outsourcing supported by new information, communication and management technologies, as the keys to national and regional prosperity.

Broadly speaking, the classical literature on innovation occupies the bottom right quadrant in the model. It characterises innovation in 'strategic leap' terms – the creation of new products and processes from formal 'new knowledge' like scientific research. This view generates a policy focus on knowledge institutions (universities and the like), economies of scale, the venture capital market, general skills and competency development and protection of intellectual capital. This perspective generally supports the notion that modern economies have a 'dual character' – one economy based on new knowledge ('hi-tech') and a second, based on older, commodity based, industries. Analyses of competitive advantage using these conceptual frameworks revolve around notions of 'path dependency' in innovation, 'lock in' of new technologies and 'first in takes all'.

The classical literature tends to be somewhat 'introspective' with its focus on the hero innovator. There is little emphasis on the business to business networks within which innovation takes place. To the extent that there is commentary on this issue, it stresses key bilateral relationships, for example, those between researchers and sponsor firms, and those between sponsor firms and the providers of high risk capital.

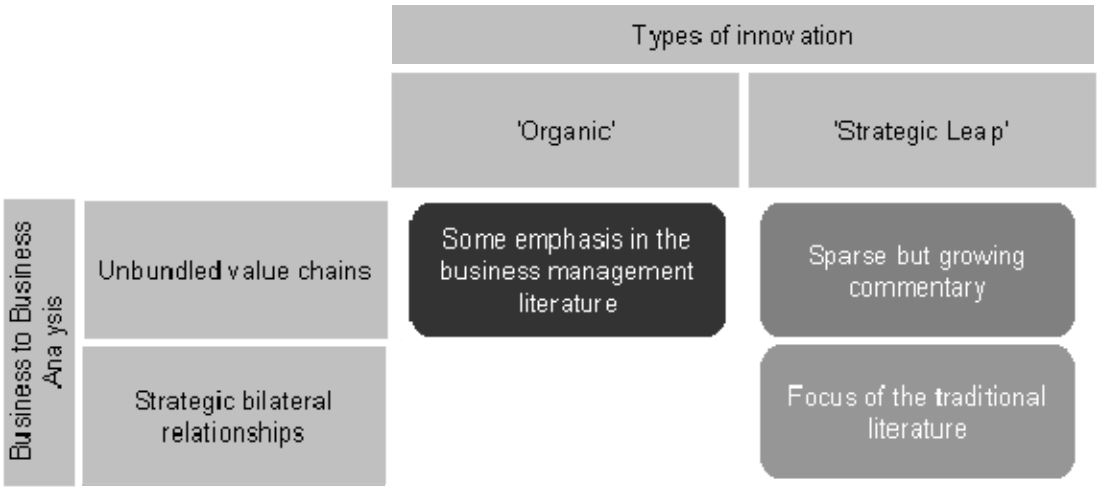


Figure 1 Perspectives on Innovation

More recently, innovation analysts have begun to emphasise its incremental or 'organic' nature. In these perspectives (top left quadrant), the knowledge base of the economy, as in the science system, remains important. But it is recognised that strategic or opportunistic alliances between firms, distribution and supply links and 'tacit knowledge' – the non-codified know-how held by workers and agents in industry clusters – can become just as critical as science in successful innovation.

This way of thinking about innovation inevitably involves greater analysis of how businesses interact with each other and create, to greater or lesser degrees, effective 'learning networks'. Understanding how outsourcing to specialists generates opportunities for new ideas, both in product content and in the delivery of value adding processes, therefore becomes an abiding theme in this space within the literature. This segment has been driven by management theory and commentators on business strategy characterised by journals like the Harvard Business Review.

The top right quadrant in the model is, perhaps, the most recent segment within the literature. While its focus is still on discrete, patentable and often dramatic innovations based on scientific break-throughs, the writers in this space urge a more systemic approach to analysis compared to the bilateral pre-occupations of the classicists. They argue that learning networks are just as important to the successful detection and incubation of big new ideas as they are to implementation of incremental improvements to business practices.

Regardless of the framework through which the innovation process is examined, Advanced Business Services appear to play a key role. In the classical interpretations of 'strategic leap' innovation, these Services are key brokers, necessary to mediate commercially sensitive information in bringing new ideas to market. Moreover, Advanced Business Services including marketing, management and financial consultants are often contracted to do the front end work on innovation, because production corporations are generally under pressure to maintain market share in their mainstream suite of products and services.

In the 'organic form' of innovation (top left quadrant) and contemporary analyses of 'strategic leap' innovation (top right quadrant), Advanced Business Services form the glue that holds industry clusters together. They forge links between anchor exporter firms, suppliers, training institutions, regulators and researchers both through the circulation of knowledge workers between enterprises within the same competency sphere, and through standard contractual arrangements to deliver financial brokerage, strategy advice, skills development and many other services. They find and transmit new ideas for productivity improvement. These segments in the literature are explored in more detail below.

CLASSICAL PERSPECTIVES

The term "creative destruction" perhaps best characterises classical perspectives on the process of economic innovation. It was coined in 1942 by Joseph Schumpeter in his work, *Capitalism, Socialism and Democracy*, to denote a "process of industrial mutation that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one."[1]

According to Simmie (2001)[2], Schumpeter pioneered four key concepts in economic theory:

- Innovation is the main source of dynamism in economies;
- The importance of the historical perspective in understanding long term economic change;
- The need to distinguish conceptually between invention, innovation (capitalist exploitation of inventions) and the diffusion of innovations; and
- The importance of links between organisational, managerial, social and technical innovations.

Schumpeter's insights into how entrepreneurs create a cost or product advantage over rivals have led to his crediting as one the founders of the 'Evolutionary School' of economics. This contrasts

[1] www.investopedia.com (May 31, 2004)

[2] As quoted in Berry (2003)

with the 'neo-classical' school where innovation is treated as an exogenous or given factor. In the neo-classical perspective, material welfare is achieved through the promotion of perfect competition, with firms responding to prices as the key signallers of consumer and societal preferences. In part, competition is maintained by the force of 'diminishing returns to scale', a process by which large firms may not indefinitely hold a market advantage (Berry, 2003).

Ironically, while 'creative destruction' is something of a catch cry in Evolutionary Economics, this school holds that, far from being prone to diminishing returns, firms can forge a continuing market advantage, even market domination, by being the first to create a compelling new product or service. Berry (2003) cites the near universal adoption of Microsoft's DOS, and the continuing use of the 'QWERTY' keyboard configuration (a 19th Century innovation) as evidence that this market advantage can be maintained, despite the subsequent availability of technically superior products and services in the same market.

As Berry (2003) explains, the reasons why a 'new technological paradigm' persists once established, relate to *increasing* returns to scale, which are a function of:

- the large up-front or sunk costs (major R&D) required;
- network effects (dependence between different products perpetuates a common platform); and
- customer 'groove in' (it costs customers time and money to switch to different products).

In effect, the innovating firms create the conditions for natural monopoly and a 'lock in' effect under which, in most cases, it is a 'winner takes most' outcome (Arthur, 1994).

Schumpeter had a broad view of innovation, defining it to include new products, drawing on new production technologies, exploiting new sources of supply and introducing new forms of business organisation. Nevertheless, many theorists who have built on his work have focussed on 'discrete pieces of innovation' in the sense of an idea that can be formally protected as intellectual property. At least this is the impression gained from the comprehensive literature review undertaken by Berry (2003) as part of his assessment of what drives economically dynamic regions.

This focus on discrete and legally protected innovation draws policy attention to two issues; the entrepreneurial culture of the economy in question and the formal ideas engines within that economy, in particular universities and other R&D institutions. In line with this, much of the applied regional economic development thinking in Australia during the 80's and 90's, and continuing to a significant extent today, has emphasised the commercialisation of new knowledge created in publicly funded research institutes. Relevant programs have included the fostering of 'technology precincts' to build improved relationships between university and nearby industry (Blakely, 1985), the creation of new collaborative institutions to steer university research towards more commercially promising fields (eg the Co-operative Research Centre initiative launched by the Hawke/Keating Government in the mid 90's) and a host of technology incubator programs undertaken at Commonwealth, State and local government levels.

ORGANIC INNOVATION

As noted, the Schumpeterian view of innovation is undoubtedly wholistic in scope, but most of the classical commentary inspired by this concept focuses on a key firm making some form of technological or 'new product' breakthrough. The more recent business literature has tended to rebalance the discourse on innovation by placing greater weight on building competitive advantage through 'continuous improvement'. This could involve a series of relatively modest innovations in a firm's business operations, none of which might qualify for patent protection, or even concerted conservation as a 'trade secret'.

In their survey of the innovation experiences of 70 Australian companies in the early 1990's, Carnegie and Butlin (1993) critiqued the pre-occupation in the literature with invention driven innovation.

> *"Conventional wisdom says that innovation equals invention plus commercialisation. (We see)..this view as both narrow and misleading. Innovation is not science. Nor is it technology or the ownership of invention. The conventional wisdom has its limited truth, but it is only one aspect of a broader process that covers new or improved products, services, individual supply processes and collective supply systems." p 3.*

Against this background Carnegie and Butlin (1993) identify two forms of innovating enterprise. The first includes firms engaged in an '*innovating thrust'*. This involves both 'continuous incremental improvement' – where risk levels are very low owing to the high degree of familiarity with the products, services and supply processes in question and the minor scale of individual changes – and 'step change' innovation which, whilst discontinuous, '(is) closely linked to existing strengths and has a high degree of fit with the enterprises activities' thereby containing risk. The second form of innovating enterprise is engaged in a 'strategic leap' – the classic commercialisation of a new idea or technology. This entails the development of 'radical new products, services or supply processes that do not fit with the activities of existing business units'. The strategic leap is described as the high risk / high return form of innovation.

An important differentiating factor with respect to continuous improvement or 'organic innovation' relates to its *tactical* nature. Unlike innovation based on substantively new knowledge – where a long term commitment to strategic R&D is often necessary - organic innovation is highly responsive to near term competitive pressures or changes in the firm's operating environment, for example, a change of leadership, a take over or the move into a new geographic market. Organic innovation can be conceptualised as multiple adjustments and initiatives undertaken by motivated enterprises as they seek to gain advantage in one or more of the key 'dimensions of value for customers' as identified by Carnegie and Butlin (1993), namely:

PRICE	Short term
	Long term
UTILITY	Conformance to quality
	Durability
	New functions
	Variety
	Service
TIME	Reliability
	Response time

Opportunities to differentiate a company's market offer on any one of these dimensions can be identified through a variety of channels. Occasionally, they will be turned up by formal studies or audits of business process. More often than not, they will flow from operatives on the shop floor who are highly sensitized to the scope for efficiency improvements in the local environment and/or are in command of invaluable intelligence about currently unsatisfied needs of customers (Brown, 2002).

It would be imprudent to undervalue the contributions which technological breakthroughs make to productivity and wealth generation. The rapid rate of 'strategic leap' innovation in information and communication technologies, for example, has left no part of the production economy untouched, from mining to the marketing of hair-cuts. Nevertheless, organic innovation may be a more pervasive and, in some circumstances, more powerful strategy for competitive advantage, particularly if platform technologies are easily accessible. For their part, Carnegie and Butlin (1993)

point out, with a hint of exasperation, that firms engaged in organic innovation 'represented more than 90% of the innovating enterprises observed, but they tended to attract much less than 10% of the publicity'. Moreover, they have not on the whole been the major focus of public policy aimed at encouraging strong, internationally competitive enterprises through innovation'.

The observations of Carnegie and Butlin (1993) regarding the relative importance of strategic leap versus organic innovation were broadly supported by the results of a 1996/97 survey of innovation behaviour in the Australian manufacturing sector, conducted by the Australian Bureau of Statistics. This survey focussed solely on 'technological innovation' in the narrow sense; that is, the introduction of new products or physical production techniques, as opposed to new management strategies. The survey showed that the most important sources of 'innovation ideas' both at the project inception and roll out stages tended to be management, customers, marketing staff, competitors and production staff; in other words, those engaged in 'coal face' activities as opposed to strategic research. A relatively low 12% of innovating firms cited in-house R&D staff as a key source of innovation ideas, while universities, government organisations and government research institutions were almost an insignificant source of such ideas (see Table 1). These results are echoed in a similar survey of innovation behaviour in UK industry (Stockdale, 2001).

It is certainly possible that the ideas flowing from market rather than R&D sources could constitute 'strategic leap' innovation, but it is more likely that they will be the basis of organic forms of innovation. This is simply because the information captured by management, marketing and production staff will be generated by day to day operations. Certainly, only a small proportion (9%) of the innovating manufacturers in the Australian survey saw patenting or licensing of their ideas as the way of realising the innovations in question.

Table 1 Source of Innovation Ideas – Australian Manufacturers, 1996/97

	Proportion of Technological Innovators using Source		
	Initial Idea	Throughout the project	Technical Information
Source	%	%	%
Internal sources			
Management	79.4	66.7	34.1
Production staff	23.4	44.4	19.3
Technical staff	17.8	31.4	22.1
R&D staff	12.1	16.2	11
Marketing staff	26.7	22.6	10.9
External market/commercial sources			
Parent company in Australia	6.9	5.6	3.8
Parent company overseas	4.7	3	3.7
Other part of business group	3.7	4	3.5
Competitors	24.5	6.3	3.8
Unrelated company	7.1	3.5	2.9
Clients or customers	31.7	19.8	7.5
Consultants	10	13.3	11
Suppliers of raw materials	12.6	10.4	14.8
Suppliers of components or parts	5.1	10.6	11.3
Suppliers of equipment	11.7	10.5	12.8
Educational/Government			
Universities	1.7	2.9	2.9
Government organisations	0.4	0.6	1.3
Government research organisations	1.3	2.7	2.5
Generally available information			
Government standards / regulations	2.3	3.5	2.5
Patents, licences	3.8	3.5	4.2
Computer information systems	4.2	3.4	5.1
Conferences, meetings, journals	14.2	8.4	11.6
Fairs and exhibitions	24.4	9.6	10.5

VIEWING INNOVATION THROUGH A ANOTHER LENS: PRODUCTIVITY GROWTH THROUGH VALUE CHAIN UNBUNDLING

As noted, while the conceptual frameworks for considering innovation can be differentiated by reference to the type of innovation involved – strategic leap vs organic – they also vary in terms of the way inter-firm relations are characterised. One approach, commonplace in older public policy reports on innovation, emphasises key bilateral relationships, most notably between the innovating firm and the originators of the ideas or technologies in question – often universities or other government funded research institutes.

Another approach is to consider the innovation process in the context of dense networks of multi-lateral relationships amongst firms, where each business to business contact – however routine – may carry the potential for new ideas to incubate and migrate. The following pages explore the innovation process from this angle. The discussion traverses the drivers of outsourcing, the evidence of its acceleration in modern business practice, how this process supports enterprise innovation and how these advantages can be further multiplied if the inter-firm contacts in question occur within an industry 'cluster' context.

The Value Chain

The core subject of the business strategy literature is the creation and defence of competitive advantage at the firm level. A foundation concept to aid thinking in this direction is the *'Value Chain'* proposed by Porter (1985).

In this model, any business can be described in terms of five 'primary activities'. These include; *'inbound logistics'*, or the process of conveying material or information inputs to the a 'production' site – be this a factory or office; *'operations'*, being the process by which inputs are combined or otherwise transformed into higher utility products and services; *'outbound logistics'*, or physically delivering the services and products to customers; *'marketing and sales'*, or identifying and recruiting customers; and *'after sales service'*, that is, maintaining the utility of the products and services once in the hands of the customer, and retaining the loyalty of the customer.

According to Porter (1985), this five stage value adding process must be co-ordinated and controlled through various management and governance structures. He identifies four 'support activities' which, once again, are applicable to any enterprise. These include; *'firm infrastructure'*, or the planning and financial management elements of the business organisation; *'human resource management'*, which is to do with marshalling, training, motivating and supervising employees and in house contractors; *'technology development'* covering activities like formal R&D and other management efforts to either lift perceived product value or reduce production costs; and *'procurement'*, or management of the links between the five value adding phases as well as sourcing of primary inputs.

By competitive orchestration of the primary value adding steps, through astute management of the support activities, enterprises are able to generate a margin for distribution to employees and shareholders (see Figure 2).

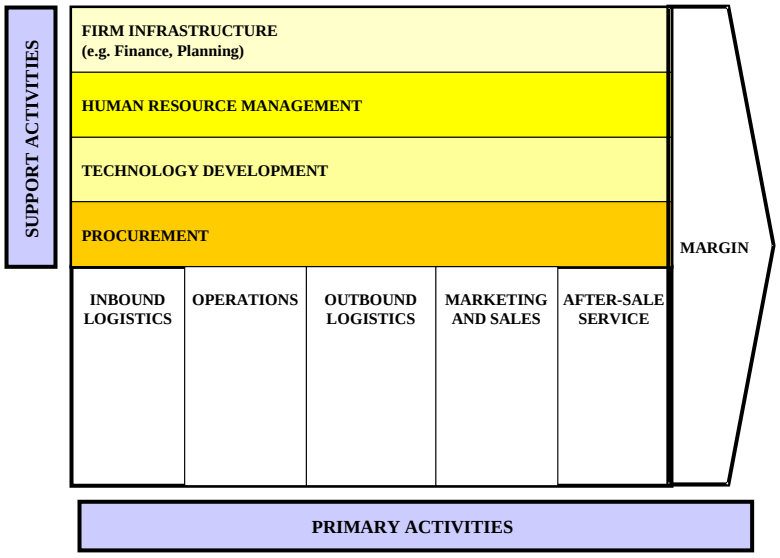


Figure 2 Porter's Value Chain

Competitiveness through Value Chain Unbundling

As noted, firm competitiveness can be characterised as a continuous search for greater efficiency and creativity in each of the nine elements of the generic enterprise.

While innovation at the enterprise level can be approached any number of ways, an obvious, and increasingly prevalent, strategy for gaining a competitive edge is to contract out certain aspects of the primary value chain, and even some aspects of firm infrastructure, to specialists, as a vast literature on outsourcing has shown. Specialists are likely to enjoy economies of scale compared to continued direct performance of these tasks by the primary value adder. This could result in cost savings which are greater than the foregone margin on these activities for the primary value adder. Moreover the contracting organisation can shed certain plant, inventory and logistical risks by outsourcing. Thus, it may make sense for a national retailer (e.g. Coles Myer) to outsource road distribution functions to a specialist contractor (e.g. Linfox), rather than carry the risks of maintaining a major fleet of trucks and diverting management effort from retail promotion to the management of an army of drivers.

In a similar vein, the specialist organisations holding outsourcing contracts are more likely to discover better ways of performing the tasks in question compared to continued 'in house' operations. This may be because their higher volumes of specialised activity allow greater investment in R&D in this area. They may also be exposed to a wider range of operational settings which offer the opportunity to trial new business models. Thus, as firms seek to better manage their value chain through contracting out particular functions, they open up multiple fronts for innovation, many of which may be minor and incremental in nature but which, in aggregate, can give rise to substantial productivity and value added gains, perhaps comparable to the commercialisation of intellectual property created through formalised research.

The use of outsourced specialists to gain or maintain a competitive position is also significantly conditioned by broad trends in government regulation. Market regulation in advanced western countries at least has been drifting towards more European style models where corporate stakeholders are implicitly defined to include a much larger spectrum of the community than equity holders (Kiel and Nicholson, 2003). Corporations are increasingly being expected to consider the impacts of their decisions on staff, the environment and the community generally, in a movement loosely summed up in the slogan of 'triple bottom line' accountability. This has tended to lift the bar in terms of compliance costs. The regulatory 'overhead' of government legislation and

supervision is much heavier than it once was. Importantly, this overhead is amenable to the efficiencies offered by specialists in accounting, legal reporting and industrial relations to name a few. Moreover, corporations looking to create a competitive advantage in the 'triple bottom line' environment are likely to find that maintenance of a competent in-house public relations team is a necessary but not sufficient condition for shaping public and community perceptions of how the firm is performing against its wider accountabilities. Such companies may be drawn to specialist advice on 'issues management', and, as exposure to such advice becomes more intense, it can be expected that these firms will seek to embed a sophisticated 'communications' plan into their formal business strategies, opening up yet another requirement for specialist advice, perhaps from management consultants. Even when in-house resources are more than adequate with respect to the technical analyses required by Boards, companies often turn to specialists for 'independent' advice to demonstrate due diligence in case of a future legal challenge or community controversy. This can be construed as a defensive competitive strategy made necessary by Government regulation.

The application of contracting out in one form or another is likely to be as old as the practice of trading itself. While the search for strategic partners was once confined to familial or regional domains, the advent of ICT breakthroughs, new trading protocols which operate largely independently of government (e.g. the Internet) and the progressive freeing up of trade barriers within and between nations has enabled exponential growth in outsourcing, with worldwide suppliers coming into contention for even relatively minor local contracts. For example, many surviving TCF manufacturers in Australia are turning to strategies whereby the high value added or 'thinking' aspects of the value chain are retained domestically (design, technology development, marketing) while production and distribution aspects of the chain are outsourced to suppliers in China, India, Fiji and other low wage countries.

In the context of technological, market and institutional advances, the primal drive for competition-exposed firms to gain advantage through outsourcing is creating a world of 'unbundled' value chains. It is becoming possible for enterprises to become, in one sense, entirely disengaged from the locus of production and to, instead, focus on orchestration of global sourcing and distribution contracts (Cisco Systems, 2003).

In the unbundled value chain environment, firms can more readily gain an edge in a variety of ways including:

- The creation of an entirely new product or service offer (possibly generated from a research effort or partnership); and/or
- The delivery of an existing product or service at a lower price to the consumer (through the institution of improved production techniques, more efficient logistics or outsourcing); and/or
- The enhancement of an existing product through better industrial design; and/or
- The enhancement of an existing product offer through better packaging with attendant or allied services (for example, extended warranties or provision of roadside emergency services with new car sales); and/or
- The enhancement of an existing product or services through improved presentation, marketing, communications and retailing strategies.

As noted, from a business perspective, each of these strategies is an equally valid 'innovation' even though some, for example, improved marketing, may involve no substantive improvement in the product offer. Hence, although formal R&D may be an important innovation strategy, firms have a wider set of opportunities to gain a competitive advantage through incremental innovation, including:

- Management improvements in corporate planning and human resource development;
- Marketing and promotion;
- Corporate mergers and acquisitions;

- Production chain management; and
- Design.

Moreover, the potential for such incremental innovation is supported by value chain unbundling and, in turn, fuels further value chain unbundling.

Recognition of these wider sources of innovation may explain the apparent paradox of Australia's strong economic performance over the past two decades, including its rapid expansion in exports of high value added manufactures and services, despite the nation's stubbornly poor ranking in officially measured innovation infrastructure, especially in terms of business expenditure on research and development (BERD).

Evidence of Unbundling

Innovation or 'technological progress' through the unbundling of value chains was extensively documented by Carter in her landmark studies of production function changes in the US economy from the 1940's through to the 1960's. Carter (1970) compared the input – output transactions tables and Leontief matrices for the US at various points during this period. She observed an apparent paradox; the US economy was becoming more productive both in terms of capital and labour, but the production process across all sectors was becoming more complex, with each unit of output requiring a broader spread of inputs from other sectors. In short, customers were gaining better value, for example, cars were cheaper when measured by the multiple of average annual earnings, but there were many more intermediary suppliers in the production of cars than in the past. The 'more value with more middlemen' paradox was resolved on the basis that the participation of more specialists in the production process brought about greater efficiency (productivity) overall.

Examination of the changing occupational structure within Australian manufacturing provides similar insights to the 'unbundling' process. Table 2 draws on Australian Bureau of Statistics Census data and provides a proportional break down of employment in Melbourne's manufacturing enterprises (identified using ANZSIC) by broad category of occupation (identified using the Australian Standard Classification of Occupations – ASCO). It shows that in 1986, most workers in the manufacturing sector were 'on the factory floor', in process operator roles. These 'blue collar' employees made up 57% of the manufacturing industry work force. The situation changed quite dramatically between the 1986 and 2001 censuses. According to the 2001 count, only 40% of manufacturing workers in Melbourne were in the blue-collar category. Almost 36% of manufacturing employment was in 'office jobs' compared to 27% in the 80's.

Table 2 Occupational Structure – Melbourne's Manufacturing Sector – 2001 and 1986

Employment in the Manufacturing Sector	1986	2001
Factory occupations	57.0%	40.8%
Office occupations	27.2%	35.9%
Other occupations	3.9%	3.1%
Sales occupations	3.8%	4.7%
Transport occupations	8.1%	15.5%

Source; Spiller, M. and Hrelja, A. (2003)

This trend is consistent with the replacement of generalists by specialists in the production process. As well as increases in the knowledge intensity of factory floor operations, the shifts evident in Table 2 may reflect the emergence of enterprises that are classified as manufacturing but which undertake a much more narrow and specialised range of production activities, for example, testing and quality control, design development and trialing, production chain management and so on. They also confirm the findings of other studies that the distinction between production and services in Australian manufacturing firms is increasingly blurred. For example, Kennedy (2002) reports that many manufacturing companies offer a range of services in conjunction with, or separately from,

their product lines. Such services typically include engineering, prototyping, design and testing, maintenance, training and information/help desks. Kennedy concludes that Australian manufacturing firms are more focussed on providing 'solutions' rather than traditional fabrication and product assembly.

The 'Clustering' Effect

While unbundling unlocks innovation potential through specialisation, better risk management and economies of scale, industry clustering, in effect, creates complementary economies of scope and agglomeration.

It is important to explain exactly what is meant by 'cluster' in the context of this paper. The term is much used in the regional development and business strategy literature but a touchstone definition is yet to emerge. The greatest area of confusion in this regard relates to the geographic scope of an industry cluster. Most writers on the subject place considerable weight on the fact that the inter-firm relationships in question must take place within a particular spatial frame and that this spatial driver remains crucial even in the age of e-commerce and instant communication of large volumes of data internationally and inter-regionally.

But when one examines some of the clusters referred to by Porter (1996) and others of his school (the IT cluster in California, footwear in Northern Italy, the aerospace industry in Arizona), it is clear that the *'local'* interactions in question can take place over considerable distances, often measured in hundreds of kilometres.

At the same time, the architects of applied cluster policy often implicitly assume that the cluster interactions in question generate synergies because the firms are, in effect, co-located. Thus, for example, the City of Melbourne and the Victorian Government speak of an 'aerospace' cluster at Fisherman's Bend, an industrial precinct in central Melbourne of no more than 6 square kilometres.

The notion of 'cluster' most relevant in the current discussion regarding processes of innovation is that popularly attributed to Porter (1996). Rather than taking a sectoral perspective on industry classification, the cluster model envisages networks of firms from differing sectors but sharing a common goal or complementary roles in building export sales. A generic representation of these relationships is shown in Figure 3, while Figure 4 provides a provisional 'map' for Victoria's automotive cluster. Thus, a patent attorney specialising in bio-tech intellectual property – a member of the 'Property and Business Services' *sector* within standard industrial classifications - could well be a key agent within a pharmaceutical products *cluster*, led by a drugs manufacturing firm that has directly developed export markets. Similarly, a medical research institute attached to a university – sectorally classified as 'Education' – may be an integral component of the pharmaceuticals cluster. This is further evidence that traditional industry classifications do not reflect unbundling and provide rather blunt tools for analysing clusters

While the notion of clusters can be applied to any form of inter-regional export, those of the Porter school generally focus on regional clusters that are engaged in international exports. This is an implicit acknowledgement that global competitiveness is the only sustainable long term source of new income for a regional community.

Effective clustering is a form of antidote to the innovation 'down side' of value chain unbundling. In its purest form, unbundling can be conceived in terms of dispassionate allocation of production, distribution and enterprise management contracts with a view to maximising access to economies of scale (specialisation benefits) and mitigating the risks associated with investment in fixed

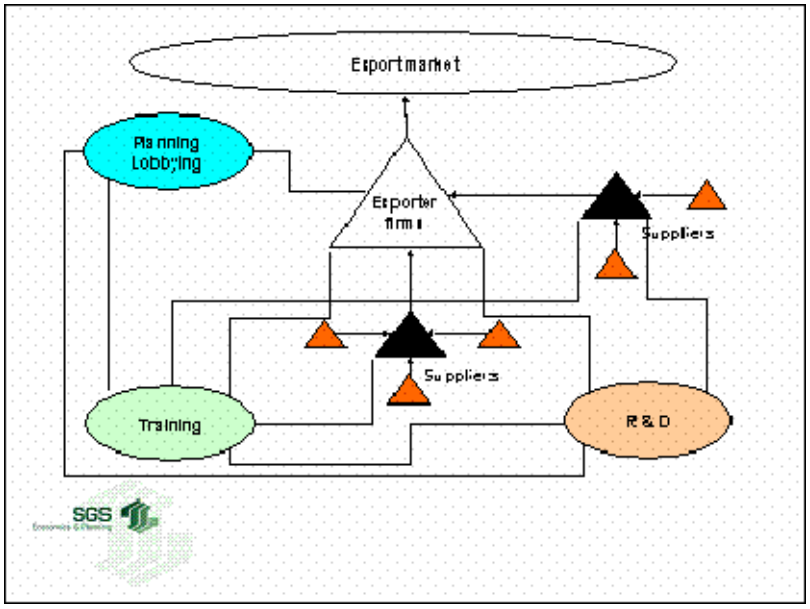


Figure 3 Industry Cluster Schematic

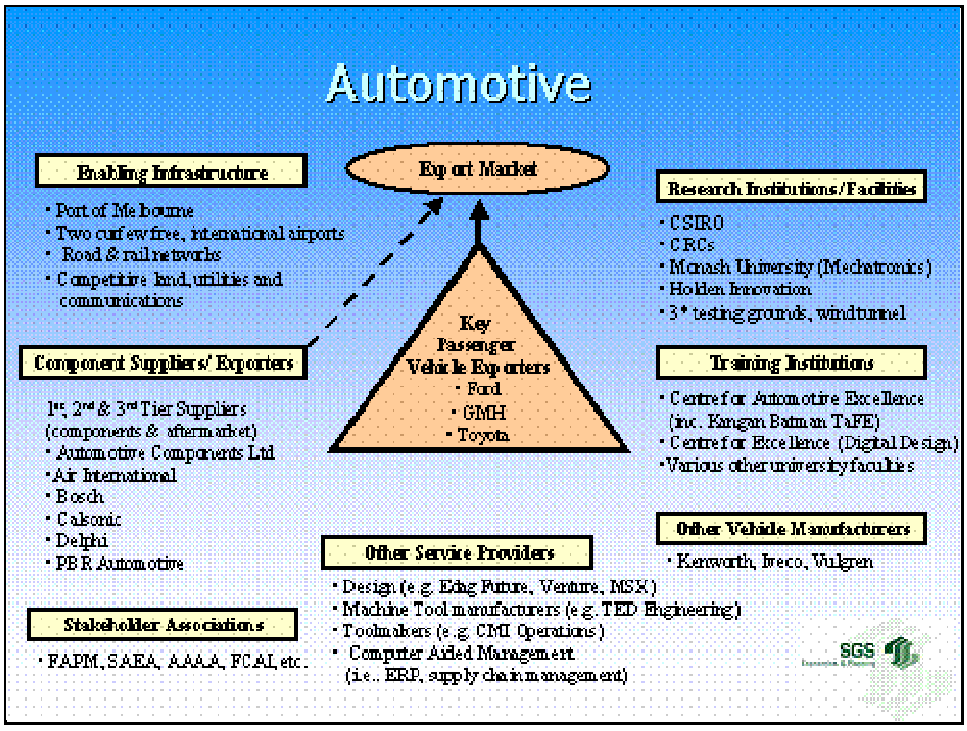


Figure 4 Provisional Cluster Map - Automotive

production plant or personnel. If contracts are solely assigned on the basis of price and quality, unbundling of this nature forfeits trust or loyalty based economies. These can include the unpriced flow of information between long term purchaser and provider partners, regarding improvements in how these sourcing contracts might be operated, or how new markets might be tackled, or how proposed new Government regulations can best be managed. Similarly, the outsourcing 'purist' may forego the comfort of switching between suppliers at relatively short notice and with minor cost penalty and no threat to quality – an option that can be cultivated over time by building relationships with a stable of collaborative firms. An outsourcing approach focussed exclusively on a global supply network may ultimately limit the capacity of the outsourcer's host region to produce

the types of skills, competencies and market intelligence required for corporate sustainability. Finally, an outsourcing philosophy which is disengaged from the local region may quash business options for co-marketing and complementary production with regional firms which might otherwise be full time competitors.

Thus, clusters involve a kind of 'rebundling' of the value chain elements to re-instate some of the economies of scope which firms enjoyed when more of the value adding process was physically effected in-house. This is not to say that clustered firms turn their backs on wider global opportunities for outsourcing. Rather, they seek to benefit from the 'best of both worlds'. They build strong local or regional relationships which add to the bank of 'tacit knowledge' regarding competitive operations while adopting a 'value for money' and globally oriented approach when competitive circumstances dictate.

In the context of unbundled value chains, clustering implies a boost to innovation capacity because agglomeration economies are meshed with scale economies.

ROLE OF ADVANCED BUSINESS SERVICES IN INNOVATION

To recap, the innovation process may be distinguished in terms of whether it involves a strategic leap in product or service offer, or more incremental improvement. Moreover, the quest for productivity improvement and competitive advantage may be analysed from the perspective of business to business relationships – characterised by value chain unbundling – rather than putting the innovating firm at the centre of things.

Against this background, Advanced Business Services can be seen to play a critical role in innovation albeit with different emphases depending upon which of these conceptual lenses are applied.

From the Classical Perspective

Taking a traditional or Schumpeterian view of innovation, Advanced Business Services are of strategic significance, as they fulfil the key roles of intellectual property definition and protection. Moreover, they are crucial to the marketing and business formation process itself. Figure 5 summarises the key steps from the discovery of commercially valuable and patentable knowledge in, say, a university, to full commercialisation via an enterprise that is floated or made available to the market in a trade sale. Several Advanced Business Services, as defined in this paper, are likely to become involved in this pipeline either as critical or support players. In the early stages of commercialisation, legal recognition of the research in question is the vital issue. As the idea progresses through the pipeline, the attraction of venture capital, the brokering of partnerships with sympathetically minded enterprises, the development of effective business models and marketing strategies and the capture of large scale investment become more important.

A similar mix of business service support is likely to be required if the break-through idea emerges from corporate research rather than publicly funded institutional research. The emphasis on venture capital and partnerships in the early stages of commercialisation may be less, depending on the resources of the innovating enterprise.

In the Context of Unbundled Value Chains

<u>Advanced Business Services and Productivity</u>

As value chains become 'unbundled' and then 'rebundled' in various forms of clustering reflecting the search for incremental innovation and/or the best way to exploit a new technology, Advanced Business Services would appear to become more important to enterprise competitiveness. Specialist services which are able to give manufacturing and other primary value providers an edge in the

market, through better design linked to better intelligence regarding customer needs, or through more efficient engineering of the production process, are likely to be in greater demand. Rapid unbundling, particularly under the accelerating force of ICT advances, is likely to generate demands for new skills and services focussed on supply chain management and co-ordination. Moreover, new forms of brokerage are likely to be required to optimise the partnerships between the various participants in the value chain.

Although not explicitly referring to 'unbundling' as a driver of growth in producer services, Sassen (1991) cites growing specialisation – which is an outworking of greater outsourcing – and the feedback effects of adopting new technologies in managing distributed supply and distribution processes, as key factors. Moreover, she sees the potency of these factors escalating in line with increasingly globalised value chains.

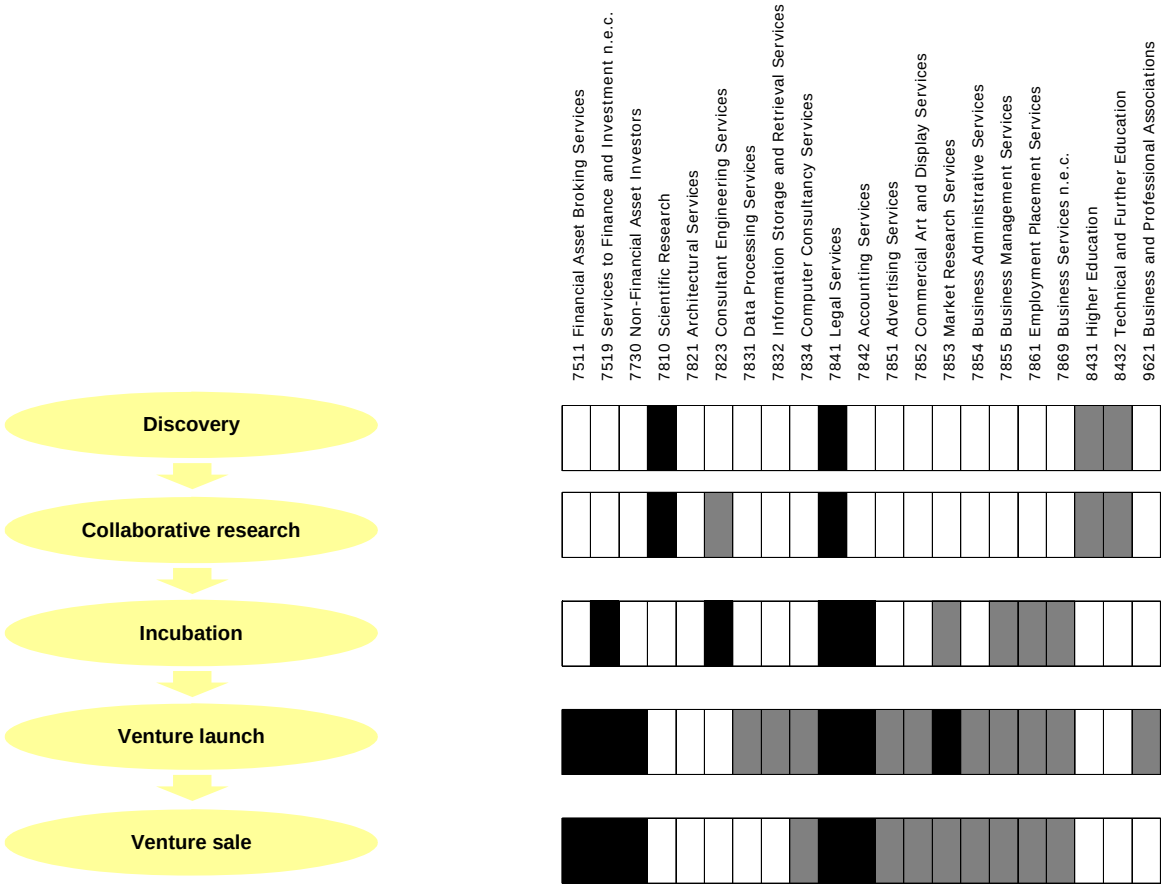


Figure 5 Involvement of Advanced Business Services in Research Commercialisation

In his citing of 9 key reasons for the expansion of producer services in modern times (Table 4), Daniels (1985) also highlights the link to accelerated unbundling of value chains (or outsourcing) in knowledge based and competition-exposed economies.

As noted, unbundling of value chains eventually creates an imperative for innovative 'rebundling' of production activities. Eraydun and Koroglu (2004) point out that business service growth partly reflects the tendency for 're-integration' of value chains in business clusters. 'These clusters can be expected to generate several service firms that will give service inputs to the emerging vertically disintegrated production system'.

There is evidence of this greater 'service intensity' with production unbundling in the changing input output multipliers within the Australian economy. Table 4 shows the change in the Type II

multiplier by sector for the Australian economy between 1986/87 and 96/97. With few exceptions, Australian industries demonstrated comparatively large increases in their direct and indirect input requirements from the 'Finance, Insurance, Property and Business Services' per $ of output, over the 10 years in question. This both adds to the body of evidence about rapid unbundling and suggests that the competitiveness of Australian firms became more reliant on producer services.

Table 3 Reasons for Growth in Producer Services (after Daniels, 1985)

Factor promoting growth in producer services

	Explanation
Cost competitiveness - the desire on the part of firms to arrive at the existing level and quality of output at lower cost	External services will be sought if a specific function can be performed at lower cost and with no loss of quality. Since the external labour force used in providing such a service will specialise in providing the required input, it represents a saving in terms of better productivity. These external providers benefit from their 'continuing and diverse experience with the specialism' and can therefore 'offer the most up to date and comprehensive service'.
Product differentiation	Firms wishing to improve the quality or quantity of their output using in-house resources may find it easier to achieve this goal by engaging specialists in market research, IT and advertising.
'Hiving off' unpopular tasks	These tasks might include those 'involving unsociable working hours or low status and repetitive work'.
Economies of scale	Many small and medium-sized enterprises cannot justify the cost of retaining specialised staff on a full time basis and will therefore look to outside agencies
Flexibility	Outside suppliers of services are able to respond to erratic labour requirements, both specialised and routine.
Human resource management strategy	Many firms believe that they should retain small, compact and relatively homogeneous labour forces. This keeps down training and retraining overheads and reduces the chances of costly labour disputes. In these circumstances, it may be easier for such firms to introduce technological and organisational innovations of the kind supplied by producer services.
Risk management	The need to imitate competitors and the need to cope with uncertainty, especially in relation to technological change and obsolescence, also generate demand for producer services.
Independent advice	Most firms require, at some time, independent guidance on their growth prospects, thus creating demand for financial auditors and consultants, management consultants, or market research firms.
Competitive advantage through mergers and acquisitions	These create very large and complex organisations which require specialist advice in the design and implementation of robust management models

This is a theme that is explored in some detail by Cetindamar-Karaömerlioglu and Carlson (1999). In an article suggesting the decline of manufacturing in the US economy is really a matter of statistical definition (that is, non allowance for outsourcing) rather than shrinkage in production related activity, these authors argue that a healthy manufacturing sector is dependent upon, indeed inextricably linked with, producer services because:

- Producer services can improve productivity and (or) value added in manufacturing;
- Producer service firms play an important role in innovation, especially in small manufacturing firms, by providing information and expertise that may not be available elsewhere;
- Producer service firms are critical in providing rapid feedback from the marketplace to manufacturers; and
- Incorporation of services with physical product offerings provides manufacturers with an important way of differentiating themselves in the market.

The innovation contribution of Advanced Business Services within unbundled value chains can be analysed in terms of their often intertwined roles as:

- brokerage and control agents in supply chain management; and
- generators, assessors and transmitters of substantive ideas for business process improvement.

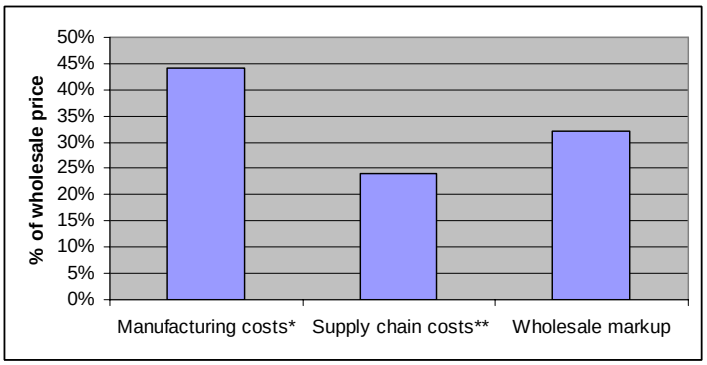
Role of Advanced Business Services in supply chain management

Notwithstanding the productivity benefits promised by, and generally delivered by, unbundling as highlighted by Carter (1970), the great numbers of players involved in taking a product or service from manufacturer or originator to end user means that there is a significant cost element in the supply chain – an element which is susceptible to strategic management.

Table 4 Change in Multiplier Effects – National Input Output Linkages – 1986/87 vs 1996/97

Change 1986/87 to 1996/97		Agriculture, Forestry, Fishing and Hunting	Mining	Meat and milk products	Other food products	Beverages, tobacco product	Textiles	Clothing and footwear	Wood and wood products	Paper, printing and publishing	Petroleum and coal products	Chemicals	Non-metallic mineral, products	Basic metals and products	Fabricated metal products	Transport equipment	Other machinery and equipment	Rubber, plastic and Miscell manufacturing	Electricity, gas, water	Construction	Wholesale and retail trade	Repairs	Transport, storage and communication	Finance, insurance, property and business services	Ownership of dwellings	Government administration and defence	Health, education, community, recrational services and restaurants
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Agriculture, Forestry, Fishing and Hunting	1	4.1%	-16.5%	-13.0%	-14.3%	50.9%	0.8%	19.8%	-7.7%	-21.7%	-46.4%	-13.7%	-17.9%	-17.1%	-14.3%	-28.0%	-18.8%	-39.1%	-28.0%	-9.9%	26.8%	-34.2%	-16.4%	-4.9%	-42.1%	-6.4%	-6.7%
Mining	2	-17.9%	1.9%	-11.4%	14.5%	-22.4%	20.0%	-7.2%	-19.9%	-17.5%	57.7%	6.4%	30.0%	4.0%	-17.6%	9.4%	1.9%	-20.7%	-17.8%	-8.9%	9.3%	-32.1%	-1.5%	-18.7%	-59.1%	-16.2%	-12.5%
Meat and milk products	3	-20.3%	-23.8%	-4.5%	-2.5%	-33.1%	-7.2%	41.1%	-31.8%	-26.7%	-52.2%	-41.2%	-28.8%	-28.2%	-24.4%	-37.7%	-31.2%	-72.6%	-37.2%	-26.9%	23.0%	-42.0%	-27.7%	-19.8%	-53.0%	-20.3%	-18.3%
Other food products	4	-2.1%	-13.1%	-11.3%	-3.7%	-52.7%	4.3%	-10.7%	-14.4%	-23.3%	-43.5%	-31.0%	-16.4%	-16.2%	-10.9%	-24.7%	-16.4%	-19.7%	-28.1%	-12.4%	19.3%	-33.8%	-15.0%	-6.5%	-44.2%	-4.6%	-12.0%
Beverages, tobacco product	5	-5.6%	-25.1%	-6.6%	-3.3%	-0.5%	4.1%	-15.6%	-20.3%	-15.8%	-43.9%	-15.1%	-21.6%	-21.7%	-16.4%	-28.1%	-20.6%	-15.9%	-32.6%	-18.5%	3.9%	-38.6%	-19.4%	-10.5%	-47.9%	-8.7%	13.1%
Textiles	6	-39.8%	-35.4%	-34.6%	-23.7%	-44.7%	-6.5%	-13.3%	-81.1%	-37.7%	-73.4%	-14.5%	-35.1%	-40.0%	-53.3%	-60.5%	-49.8%	-45.4%	-44.8%	-37.9%	-7.8%	-52.3%	-37.9%	-24.7%	-52.0%	-29.1%	-27.7%
Clothing and footwear	7	-47.0%	-53.6%	-50.0%	-52.2%	-56.2%	-53.0%	-6.8%	-57.9%	-57.3%	-69.8%	-53.5%	-58.0%	-57.3%	-40.9%	-61.6%	-55.7%	-40.8%	-63.7%	-56.8%	-43.4%	-64.4%	-57.1%	-53.6%	-71.3%	-54.1%	-51.9%
Wood and wood products	8	-27.2%	-50.8%	-29.1%	-30.7%	-37.3%	-40.5%	-39.7%	2.1%	-24.2%	-67.0%	-41.9%	-45.7%	-48.5%	-23.0%	-31.8%	-53.7%	294.3%	-56.9%	-18.8%	-38.1%	-68.3%	-54.4%	-60.1%	-19.4%	-52.4%	-64.2%
Paper, printing and publishing	9	1.5%	5.1%	23.5%	-6.2%	-29.1%	11.8%	19.4%	-19.2%	-2.8%	-52.6%	-6.4%	-44.8%	-3.8%	-1.3%	-18.2%	-14.3%	0.9%	-8.3%	-8.8%	2.2%	-26.8%	5.9%	-13.7%	-41.9%	1.0%	-4.2%
Petroleum and coal products	10	-61.8%	2.6%	-59.9%	-56.9%	-56.3%	-53.2%	-55.2%	-56.6%	-55.2%	-7.4%	-48.0%	-46.6%	-65.7%	-61.2%	-61.8%	-61.0%	-56.8%	-61.7%	-59.7%	-46.3%	-69.5%	-40.7%	-58.8%	-75.6%	-58.6%	-59.9%
Chemicals	11	-9.5%	-16.9%	-21.1%	-38.9%	-35.2%	-20.3%	-31.8%	-27.9%	-0.5%	-69.1%	-1.8%	-43.1%	-9.7%	-23.8%	-3.7%	-30.2%	-44.6%	-1.7%	-35.2%	-19.5%	-42.8%	-37.4%	-31.0%	-57.9%	-30.9%	-34.0%
Non-metallic mineral, products	12	24.8%	5.0%	-38.9%	1.4%	-63.9%	19.4%	-17.9%	-12.6%	-17.8%	-43.5%	-55.5%	-0.4%	47.5%	21.7%	-25.8%	-10.7%	0.0%	136.1%	-2.1%	21.0%	-18.9%	-27.5%	-11.6%	-22.3%	16.3%	-21.0%
Basic metals and products	13	-11.3%	-26.0%	-0.4%	-33.1%	-31.3%	12.6%	-12.0%	-53.4%	-2.7%	-69.2%	-60.2%	-47.6%	-1.5%	-27.8%	27.4%	-1.2%	97.1%	-16.9%	-40.0%	10.3%	-14.3%	-4.4%	-11.2%	-40.7%	-7.8%	-18.8%
Fabricated metal products	14	56.6%	45.4%	42.6%	-24.2%	-2.8%	75.0%	10.4%	48.7%	43.8%	0.0%	15.1%	123.0%	-8.6%	1.6%	-20.6%	26.4%	67.4%	35.1%	-13.6%	39.8%	-12.7%	41.4%	10.5%	-4.5%	-3.3%	-3.5%
Transport equipment	15	5.9%	3.1%	2.5%	2.2%	-9.6%	12.4%	-5.1%	-2.3%	-3.3%	-49.2%	-1.8%	4.3%	-11.2%	-6.7%	-6.3%	3.0%	5.7%	-18.9%	-6.7%	22.1%	-25.3%	-26.3%	-2.0%	-35.6%	-15.4%	-4.9%
Other machinery and equipment	16	44.4%	45.9%	29.0%	30.7%	2.6%	27.9%	7.2%	16.3%	-3.5%	-4.8%	14.0%	5.9%	27.0%	10.4%	24.5%	-0.1%	24.3%	27.4%	-1.4%	25.0%	13.7%	11.6%	8.8%	-34.4%	-15.1%	6.3%
Rubber, plastic and Miscell manufacturing	17	6.5%	-1.2%	39.9%	13.9%	-20.1%	33.4%	-65.3%	-53.8%	22.4%	-45.4%	-3.0%	-14.9%	24.2%	5.0%	-36.8%	-34.0%	-4.6%	2.3%	-27.3%	0.5%	-39.5%	-10.3%	0.3%	-35.2%	20.8%	-5.6%
Electricity, gas, water	18	-39.8%	-26.1%	-14.8%	-26.3%	-40.5%	-11.6%	-25.7%	-28.2%	-34.5%	-47.0%	-32.4%	-29.5%	-27.4%	-30.5%	-28.8%	-19.9%	-30.0%	-12.0%	-32.3%	-15.5%	-48.1%	-29.3%	-39.9%	-84.3%	-42.5%	-33.1%
Construction	19	21.8%	-26.1%	-25.7%	-41.3%	-48.0%	-29.8%	-49.4%	-47.9%	-52.7%	-61.1%	-49.5%	-51.8%	-45.8%	-51.5%	-54.7%	-54.7%	-50.9%	-46.4%	-0.6%	-31.5%	-63.8%	-62.9%	-42.7%	-63.8%	21.4%	-51.5%
Wholesale and retail trade	20	7.2%	5.8%	4.2%	8.2%	-12.9%	11.6%	-15.1%	-15.0%	-0.4%	-51.2%	-2.5%	-10.0%	-19.9%	-8.3%	-17.6%	-14.4%	-4.1%	-7.3%	-9.3%	3.1%	-22.1%	-5.3%	-2.2%	-36.4%	-3.0%	-6.5%
Repairs	21	23.3%	28.8%	27.6%	55.7%	24.0%	63.4%	40.8%	65.2%	68.8%	-14.3%	53.4%	32.3%	35.1%	43.5%	28.3%	27.5%	60.3%	39.1%	58.5%	63.8%	0.2%	42.0%	51.7%	64.6%	38.4%	58.0%
Transport, storage and communication	22	56.6%	38.1%	65.5%	52.0%	45.0%	57.4%	52.5%	62.0%	42.8%	-29.7%	41.6%	63.7%	24.1%	39.0%	16.8%	34.0%	41.0%	0.4%	26.0%	92.7%	0.3%	7.3%	28.1%	-20.3%	28.5%	24.7%
Finance, insurance, property and business services	23	70.8%	73.8%	69.1%	55.5%	30.9%	90.2%	68.6%	34.7%	57.2%	-24.5%	69.8%	32.6%	93.6%	58.1%	50.4%	43.3%	55.9%	77.6%	86.3%	104.7%	29.0%	74.6%	23.6%	-11.3%	72.8%	60.4%
Ownership of dwellings	24	7.8%	0.4%	6.9%	2.5%	-8.6%	18.6%	-6.6%	-4.6%	-2.1%	-31.6%	-0.4%	-4.9%	-6.6%	-0.9%	-16.2%	-7.2%	0.9%	-20.6%	-2.9%	21.5%	-28.1%	-6.7%	4.7%	-1.1%	4.3%	-2.3%
Government administration and defence	25	-14.6%	67.5%	-20.8%	-9.6%	-28.6%	-14.8%	-5.8%	-24.6%	-8.7%	-66.5%	-22.5%	-20.7%	-2.8%	-15.2%	-19.1%	-23.2%	-15.8%	-28.5%	-22.0%	16.0%	-35.9%	74.9%	4.3%	-43.5%	6.3%	-13.8%
Health, education, community, recrational services and r	26	19.7%	19.0%	19.5%	19.3%	50.5%	35.3%	23.3%	5.0%	16.1%	-22.6%	23.4%	6.3%	9.3%	18.3%	-0.8%	5.9%	12.9%	-3.1%	10.2%	37.4%	-19.8%	8.4%	17.1%	-29.4%	18.0%	1.2%
Compensation of employees	27	6.5%	-0.8%	5.6%	1.3%	-9.7%	17.2%	-7.7%	-5.8%	-3.3%	-32.4%	-1.6%	-6.1%	-7.7%	-2.1%	-17.2%	-8.4%	-0.3%	-21.6%	-4.0%	20.1%	-29.0%	-7.8%	3.5%	-39.5%	3.0%	-3.5%
Total Multipliers	T	6.8%	8.0%	2.8%	3.0%	-1.4%	8.7%	0.5%	-1.1%	3.2%	-17.1%	2.8%	1.5%	0.6%	-1.0%	-4.7%	-1.1%	-1.3%	-6.7%	0.8%	23.3%	-12.2%	4.8%	10.0%	-14.6%	7.2%	1.6%

Robertson (2003) reports estimates by KPMG that about 24% of Australian import costs for TCF items is due to supply chain activities, which includes distribution, warehousing, goods handling and inventory. This makes supply chain management in itself a key target for cost control and innovation.



* Manufacturing costs include raw materials, design, production labour and overheads.
** Supply chain cost includes distribution and warehousing.
Source: KPMG (quoted by Robertson (2003))

Figure 6 Components of Wholesale Price – Imported TCF Items

Robertson (2003) also quotes a research paper from Monash University entitled "Integrated Supply Chain Management from the Wholesaler's Perspective" (author not named) which argues that the internet will revolutionise management of the supply chain, and indeed the way business is conducted in some industries. Alluding to the industry cluster concept, and echoing the theories of Hagel cited earlier (Cisco Systems 2003), the paper suggests that *"there will be a shift to groups of companies representing a new competitive force in markets with common strategic goals"*.

As Lawson (2003) puts it, quoting Alan Dabbiere of US based consultancy 'Manhattan Associates',

"the future challenges will be (co-ordinating) multiple companies across a supply chain – and often in different countries – acting seamlessly like a single company to respond to newly introduced technologies and customer demand" (p3).

This is not to say that the execution of this integrated approach is a straight forward matter. The financial press often contains commentary that the 'B2B internet revolution' (e-market places) has taken longer to take hold than expected. Dissatisfaction with outsourcing of warehousing and, to a lesser extent, transport functions, also receives regular coverage, including the deliberations of companies that from time to time consider bringing these functions back in house (Australian Financial Review, 2003). But there is little doubt that extensive, often globally oriented, unbundling is present and gathering force, requiring sophisticated optimisation and brokerage skills, most of which are likely to be drawn from the Advanced Business Services sector.

Notwithstanding the occasional failure and disappointment, the outsourcing industry has now matured to the point where cost savings are no longer the sole or major criterion by which the success of an outsourcing contract might be judged. Other performance standards might be set, for example, on the extent to which the outsourcing partner can 'add value' to the client's operations in other ways (eg greater product delivery reliability, better information about customer requirements, a more engaged workforce etc). Accordingly, outsourcers are increasingly looking at the 'cultural fit' between their operations and those of prospective contractors. This can extend to conducting interviews several tiers down in the executive ranks of the tendering firm (Lawson, 2003). This resonates with the earlier discussion regarding clustering as a means of reinstating agglomeration economies in a world of unbundled value chains.

Against this background, it is not surprising that a further niche has opened up for specialist advisers in the establishment of outsourcing contractors, creating yet another field of development for Advanced Business Services. Quoting statistics generated by the UK Management Consultancies Association (MCA), whose members account for approximately 60% of the UK market, Roberts (2004) shows that 'outsourcing related consulting' and 'business process re-engineering' account for almost 40% of management consultant fees amongst UK firms. This is a further pointer that Advanced Business Services have a key role to play in the co-ordination of 'unbundled value chains'.

Table 5 UK Management Consultancies Association Members' Fee Income by Service Line 2003

Service Line	Fee Income (000's)	% of Total Fees
Outsourcing related consulting	£2,108	36.3
IT related consulting	£1,374	23.6
Programme/project mgt	£703	12.1
Human resources	£543	9.3
Strategy	£497	8.6
Operations	£155	2.7
Business process re-engineering	£120	2.1
Financial	£107	1.8
Change management	£88	1.5
Marketing and corporate communications	£79	1.4
E-business	£21	0.4
Economic and environmental	£16	0.3
Total	£5,811	100

Advanced Business Services and Ideas Generation

As well as co-ordinating and inventing more efficient supply chains, Advanced Business Services can be seen to play a nodal role within innovation networks. Some business theorists argue that primary innovation, that is, the rating and preliminary working up of viable ideas, is a specialist function which cannot be handled well by 'regular' production companies.

For example, Myer and Ruggles (2002) argue that most companies cannot afford, or are not expert at, the 'reconnaissance' phase of innovation, whereas they are generally strong in the subsequent evaluation and investment phases. They claim that reconnaissance is a skill in itself which is best outsourced.

> *"Like many activities that involve talent and tacit learning, reconnaissance requires an inherent feel for the work and lots of practice. Not many companies can claim that inherent strength, nor can they devote much time to practicing, given their day to day work is exploitation, not exploration."* p 14

Myer and Ruggles (2002) also claim that one of the most fruitful sources of innovation is the recombination of perspectives from different fields – this places Advanced Business Services in a strategic position to be key agents of innovation. These authors foresee the emergence of a major class of firms specialising in 'innovation reconnaissance'.

Wolpert (2002) shares the view expressed by Myer and Ruggles (2002), that, despite the rhetoric of modern firms, pledging devotion to continuous improvement, many firms struggle to keep up their commitment to innovation. For these firms, the demands of innovation can even be a distraction from the main business model of generating revenue from existing products, and is one of the first areas to be cut when market conditions tighten. Also, many firms do not know what to do with some of their innovation discoveries when these are outside their regular fields of business, or do not fit their strategy or corporate capabilities.

Certainly, innovation, even that of an incremental nature inspired by the day to day experiences of the firm, can be a highly complex business requiring a rigorous approach to evaluation and implementation. Carnegie and Butlin (1993) offer the following model of innovation behaviour. In time-poor, competition-exposed firms, many of these steps become obvious candidates for outsourcing to specialists.

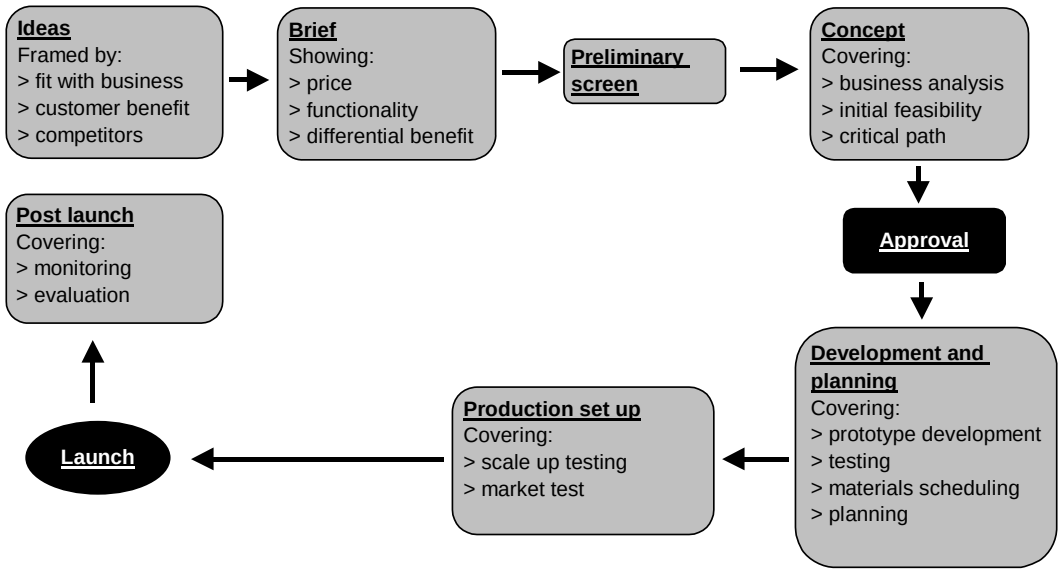


Figure 7 The Innovation Cycle for Products and Services

Wolpert (2002) also highlights the need for innovation brokers to facilitate transfer of innovations between firms for mutual commercial benefit.

> *"What we need is to make innovation a natural element of the commerce that takes place among businesses. Finding ways for two or more companies to actively share ideas, technologies and other capabilities early and often is the best way to protect projects from the swings in interest and funding that inevitably occur in individual organisations. If we could find a way to do this without risking the unauthorised appropriation of intellectual property, businesses would be able to more quickly spot and exploit new growth opportunities. The answer lies in a practice that has long been a central element in commerce: the use of independent intermediaries to facilitate the exchange of sensitive information among companies" p80*

Wolpert goes on to say that some management consulting firms (Accenture, Cap Gemini), investment bankers and specialist lawyers are well placed to perform this role. Indeed they are already involved in this process.

As noted earlier, the 1996/97 survey of innovation behaviours in Australian manufacturing undertaken by the Australian Bureau of Statistics (1998) confirmed much of the commentary in the literature that competitors, customers and front line workers are the primary source of innovation ideas. A somewhat different picture emerged regarding the importance of internal and external agents in the innovation process when firms were probed regarding how they gained the capacity to follow through with technological innovations. Internal sources and strategies – for example, redeployment of existing skilled staff, using existing equipment in different ways and undertaking research – were again prominent, but they were not dominant. Interestingly, over a third of the survey companies indicated that they used consultants to gain these capabilities (see Table 6).

Table 6 Implementing Innovations – Australian Manufacturing

Method of acquiring innovation capability	%
From within your business group	
Skilled staff	35.5
Equipment	42.4
Technical information	43.9
Research results	31.2
Rights or licenses of inventions	8.7
Results of R&D (external)	9.2
Consultants	34.6
Take-over of company	4.6
Equipment	57.2
Skilled employees	28.1
Conferences, fairs, exhibitions, journals, publications	55.5

Source: Australian Bureau of Statistics (1998)

These views regarding the role of Advanced Business Services in innovation are of particular interest in the context of the now rapidly evolving theory of how clusters operate in building competitiveness at the enterprise level. As reported by Berry (2003), not all writers agree that networking and clusters necessarily support innovation. Networking and clustering can reinforce old ways of doing things, blinding firms to leap-frog or radical innovations. Berry cites the slowed performance of the so-called 'Third Italy' regions in this regard. These had demonstrated the power of flexible production systems, based on intricate inter-firm collaboration (or, more correctly, associations), but were now struggling to keep up with regions which had dominant mega companies capable of 'break through' innovation.

Those networks or clusters which are conservative tend to have relatively few players and are vulnerable to the loss of key agents. Meanwhile, those that are most supportive of innovation are likely to be more open to making fresh connections.

Advanced Business Services are, in effect, paid 'collaborators' or 'cluster builders'. Their role, by definition, is to transmit innovative thinking, often garnered at the expense of, or in the service of, other firms in the same and related industries. Firms making use of such services may be engaging in networking without even knowing it. Thus, Advanced Business Services could be seen to be key network players, both in terms of occupying a stable and central role in established clusters, and by rendering clusters more open to outside ideas.

Marceau, cited in Berry (2003) alludes to similar inter-enterprise dynamics in her critique that innovation policy in Australia has been too focussed on flagship research activity, rather than supporting the linkages and brokers between the key players (researchers, major corporations, innovative SME's etc). Although Marceau does not directly reference Advanced Business Services, it is difficult to imagine how her call for greater emphasis on 'collective activities' could be put into practice without extensive involvement by marketers, lawyers, financial analysts and management specialists.

In its analysis of national innovation systems and how they differ from country to country owing to variations in industry specialisation, market size and institutional arrangements, OECD (1999) makes clear that R&D driven innovation is but one source of firm 'innovativeness'. Firms can 'learn' and apply this learning in a variety of ways other than formal research, notwithstanding the traditional pre-occupation with this in the literature and policy circles. Importantly, OECD (1999) explicitly identifies 'knowledge intensive services' as key innovation agents in modern economies based on unbundled value chain links.

> *"Innovation requires more than R&D. The emergence of a knowledge based economy is often associated with the growing share of R&D industries and the increasing use of*

> *advanced knowledge in hitherto 'low technology' industries. This view is far too narrow. The production of goods and services is becoming more knowledge-intensive but not necessarily more R&D intensive. Many rapidly growing new service activities (eg software, venture capital funds etc) employ highly qualified labour and are highly intensive in immaterial investment but not in formal R&D. They belong in the most innovative activities, are based on technological progress (especially in information technology), but do not appear among the 'high tech' sectors." p16*

In terms of policy implications, OECD (1999) echoes the call of Marceau (2003) and others that in the current phase of innovation dynamics, it is the connections and interactions between the various players in the innovation system which count most, as opposed to individual elements, for example, investment in R&D. The paper bemoans the fact that governments have "used measures aimed at increasing the volume of R&D, without giving enough consideration to improving the effectiveness and efficiency of existing R&D……In practice, many science and technology policies remain piecemeal, with insufficient attention given to fostering interactions and spillovers at national and international levels".

In this context, OECD (1999) further acknowledges the importance of business services in the innovation process…

> *"Technology policy has paid insufficient attention to the growth and needs of the knowledge intensive services sectors. In the OECD area, two thirds of production and 70% of jobs are in services, where the nature of innovation is somewhat different than in manufacturing. It is less driven by direct R&D expenditure and more dependent on acquired technology, organisational change and the quality of human resources…..p 65*

More specifically in respect of the role of Advanced Business Services in product innovation, OECD (1999) notes…

> *"Strategic research and technology development alliances among firms are multiplying as R&D costs increase and no single enterprise, no matter how large, has all the necessary knowledge and expertise in-house or within its home country. Firms rely more on their relations with suppliers, customers and even competitors for complementary competencies in the innovation process. And importantly, manufacturing firms are increasingly interacting with knowledge based services" (p65)*

SYNTHESIS AND IMPLICATIONS FOR FUTURE RESEARCH

A Typology of Innovation

Much of the classical literature on business innovation implicitly if not explicitly reflects the Schumpeter perspective characterised by the notion of 'creative destruction'. That is, innovation in market economies revolves around the periodic introduction of new products or production processes which, more often than not, are derived from fresh knowledge created through scientific enquiry and deliberative research. These new products and approaches to production ultimately overwhelm competitors and establish a new platform for further innovation.

Business innovation featuring distinctively new products involves a 'strategic leap' in the market place that is readily measurable and open to study. As recorded by Berry (2003) many commentators have examined what it takes to maintain a healthy flow of new knowledge and, perhaps more importantly, to harness this flow and turn it to commercial advantage. Even amongst those writers who recognise that innovation systems vary with cultural and governance characteristics across nations, there is a tendency to focus on the crystallisation of new knowledge in new product offerings.

Recent commentary on the Australian innovation system, and more particularly, the performance and prospects of the Australian manufacturing sector, breaks with this tradition. The Australian Expert Group (2003) has documented the subtle but highly significant shift in Australian manufacturing since the dismantling of generic protection in the early 80's. Many of these firms, especially those in the industrial machinery, transport and scientific instruments segments of the sector which have enjoyed relatively strong growth in export markets, see themselves as providers of 'solutions' to customer needs, rather than simply as designers, builders and shippers of discrete products. Thus, for example, a manufacturer of specialised industrial equipment is also likely to provide consultancy services on how best to capitalise on this investment, how to train operatives in the use of this machinery and how to monitor performance with a view to improving the next round of equipment purchases. This establishes a mutually beneficial relationship between manufacturer and customer which supports continuous product and service improvement.

These observations regarding the re-invention of Australian manufacturing bring into focus the prospect that a great deal of the innovation occurring in competitive economies is of an 'organic' nature, as distinct from the 'strategic leap' phenomenon that has historically captivated commentators on the knowledge economy.

Organic innovation is nurtured and supported by business networks. These are expanding as value chains unbundle rapidly under the influence of improved communication technologies, and as they rebundle in regional clusters.

Meanwhile, analysts and policy commentators have revisited the 'strategic leap' phenomenon itself. Contemporary interpretations of this process emphasise that it requires much more than quality R&D and an efficient venture capital market. Firms need to be part of 'learning networks' that will often stretch out to include a multiplicity of suppliers and customers, and key advisers from within the business services sector. In these interpretations, 'strategic leap' innovation is not as sharply differentiated from organic innovations as it might have been in classic texts.

Based on this literature review, three constructs for thinking about innovation emerge. These include; ***organic innovation*** which is most likely to flourish in a network environment; ***Schumpeterian strategic leap***; and '***contemporary' strategic leap*** (see Table 7).

Schumpeterian strategic leap and 'contemporary' strategic leap are distinguished, firstly, in terms of the core drivers of innovation. In contemporary accounts, innovation is closely geared to proven market opportunities. In the more classical account the technology break-through in question is what sparks the innovation process, creating product possibilities in search of a market (the challenge of 'commercialising' research). Secondly, these two notions differ in terms of the scope of the supporting business relationships required to successfully deliver the innovation. As discussed, classical analyses focus on a narrow group of transactions, as opposed to the wider opportunities to garner strategic knowledge.

Organic innovation differs from both the strategic leap forms in that it need not involve discrete, patentable knowledge.
The Table 7 elaborates on the distinguishing features of these three notions of innovation. They are not mutually exclusive; in the process of organic innovation a firm may stumble across a sufficiently distinctive idea that warrants patent protection and a research and development strategy to capitalise on this intellectual property. Nevertheless, the nature and culture of innovation in the three modes can be seen to be quite different.

Organic and contemporary strategic leap innovation are seen to prosper in a business cluster environment, where firms readily learn from each other through sub contracting and, occasionally,

co-marketing initiatives. That is, 'tacit knowledge' on new and effective ways of conducting business is gradually built up to the point where a region acquires a robust competitive advantage.

In organic innovation and even contemporary strategic leap innovation, formal links to universities and research institutes are not likely to be of critical importance, although continuous access to 'smart' workers is vital and the 'old school tie' networks sourced to particular universities may also be crucial from time to time. In this context, the preoccupation in Australian cluster policy with the creation of highly structured industry and university collaborations may be misplaced. The fact that surveys repeatedly show that linkages between dynamic businesses and universities are weak in Australia (Marceau and Davison, 2003, Econsult, 1988) may simply reflect a different form of innovation, where policy may be better directed at facilitating business to business links, and less formal interactions between 'town and gown'. Certainly, Lambooy (2004) is in no doubt that strategic information can travel in vastly different ways through networks that include universities, depending on the type of innovation being pursued and, indeed, the nature of the inter-personal relationships between the enterprises and institutions involved. After an extended review of these issues, he concludes that 'how information, tacit and codified knowledge are actually transmitted is not well known' and calls for much greater research effort into the 'cognitive' aspects of technology diffusion.

While the three notions of innovation differ in many respects, they share one important characteristic; Advanced Business Services are vital to their success. Innovation based on formally protected intellectual property under both the classical and contemporary notions of 'strategic leap', requires extensive involvement by patent attorneys, research institutes, business strategy consultants and design engineers or scientists. Later in the innovation cycle, marketing and business development consultants play a major part as the host firm seeks to maximise the commercial advantage from its break-through product or service offering.

In the case of organic and contemporary strategic leap innovation, Advanced Business Services play a different and/or complementary role. Instead of devising strategies to trap and optimise the monopoly rent attaching to a new discovery, they become carriers of new ideas between businesses. For example, specialist business analysts engaged to assist a small manufacturing firm with its cost accounting system will, if successful, both deliver this service and put themselves in a position to replicate the strategy, perhaps in a significantly improved way, for the next client.

The innovation process may be viewed from many angles, but in each of these the literature points to a prominent role for Advanced Business Service firms. As Roberts (2004) declares, "business services have become increasingly recognised as of considerable significance to the competitiveness of enterprises generally and an important factor driving long term growth".

As well as the analysis presented above, regarding the importance of Advanced Business Services as innovation agents in a world of unbundled value chains, there is mounting direct evidence of a link between interaction with these services and propensity for innovation.

Price and Blair (1989) show that by the mid 1980's there was already an awareness of the nexus between certain producer services (principally financial brokerage), the process of business innovation and the trajectory of regional development, albeit that the focus was on 'new economy' enterprises. Quoting US evidence compiled by Florida and Kenny (1988), they put the case that:

> "….venture capital plays a critical role in technological innovation and regional prosperity by providing funds and helping to organise embryonic technology orientated industries. The active nature of venture capital investing has ensured that the industry is relatively 'fixed' spatially, although theoretically it could be footloose. Since venture capital investing is heavily dependent on information-sharing achieved through personalised, informal and

localised networks there is a tendency for the firms involved to cluster. ……. There seems to be little doubt that the existence of sources of finance such as venture capital greatly accelerates the pace of technological innovation…" pp 198-199

Table 7 Three Models of Innovation

	Organic Innovation	Schumpeterian Strategic Leap Innovation	Contemporary Strategic Leap Innovation
Business model / competitive advantage	Commercial advantage gained from marginal changes to product design, service packaging or value chain management. Innovation may not be a conscious strategy, but rather a culture of business process improvement. Individual initiatives may not warrant the label 'innovation', but collectively they signify a business which over a relatively short period 'reinvents' itself.	Characterised by the introduction of distinctively new products or production management processes, which either create new markets or substantially shift shares in an existing market. Introduction of these products and processes occurs as a business initiative in its own right, while the host organisation continues to generate cash flows from current, 'standard' products. This form of innovation can be a high risk / high return business strategy. There may be long lead times and considerable risk capital invested between conceptualisation of the innovation and its launch into the market place. This form of innovation is often placed in the hands of specialist management teams, or businesses within businesses.	As per the classical formulation
Knowledge / technology platform	The knowledge base for innovation is likely to be tacit rather than documented and commercially protected. Source of innovation may be observation and replication of best practice in similar or allied businesses. The knowledge platform is 'open'. 'Real time' experimentation with business process improvement likely to be used to hone innovations rather than formal R&D.	The knowledge base for step change innovation is likely to be patented technology. Legal recognition and protection of this knowledge base is vital to induce the heavy up-front investment required for commercialisation. This knowledge base is corporately as well as legally defended. The platform is closed even to firms that are otherwise heavily involved in collaborative networks with the host. A long-term commitment to formal R&D is a key to success.	As per classical formulation except that the innovating firm is more open to collaborative partnerships outside the R&D + venture capital links. For example, key distributors and suppliers may become party to the innovation effort.
Driver for innovation	Innovation often undertaken as a low risk / moderate return strategy to keep up with competitors rather than seize outright market superiority. Competitive advantage may be fleeting / short-lived. Businesses must maintain a constant flow of organic innovation to remain competitive.	Opportunity to *create* a market for products and services enabled by new technology	Opportunity to better respond to demonstrated market demands
Inter-firm links	Links to universities and research institutes unlikely to be important in fuelling organic innovation. But security of supply of well-trained and experienced knowledge workers likely to be critical. Observation of product design and value chain management ideas through formal and informal collaborative networks between firms will be an important portal for organic innovation. This form of innovation is more likely to be important to SME's (other than technology based start-ups). Their open, non-bureaucratic structures and their need to forge alliances to gain significant contracts sustain a higher propensity to engage in organic innovation. Advanced Business Services provide a key linkage role to the best practice elsewhere in the industry and allied sectors. Organic innovation is well aligned with 'cluster models' of regional development	Ongoing links to universities and research institutes will be vital. Physical proximity to these facilities may be helpful but is not essential. Relevant research may be syndicated to a range of providers distributed globally as well as regionally. Business cluster relationships not likely to be a key factor supporting step change innovation. SME's unlikely to play a major role, unless they are the inventors of the technology in question. Even then, their lifespan in the innovation process may be limited. Advanced Business Services likely to play an important but different role. This will be focussed on high level legal and commercial protections for the intellectual property in question. Marketing strategies, involving premium specialists, often play a crucial role in step change innovation.	Links to universities and research institutes are important but are likely to be developed simply on an opportunistic, 'as required' basis. Cluster relationships can be important by providing better knowledge of market opportunities. SME's can be strategic partners, especially in market research and financial / technology brokerage.

In an extensive review of the relevant literature, Eraydun and Koroglu (2004) conclude that ..”even the ‘classical services’ can be crucial to support innovative activities. Empirical analysis in the UK electronic and software sector reveals that there is a positive link between frequency of contacts with service providers, such as business consultants, advertising agencies, printing facilities, repair services etc. and innovativeness of firms defined as number of patents” p 13.

In their own empirical research regarding the impact of producer service usage on innovation behaviour in client firms, Eraydun and Koroglu (2004) found “a positive relationship between service linkages and innovativeness” amongst 131 firms drawn from three industry clusters in Ankara (machinery and electronics), Bursa (machinery and textiles) and Demizli (textiles). The surveyed firms were grouped into low, medium and high innovation categories based on their involvement in innovation events and activities over the previous 3 years. Only 31% of firms with weak services linkages were adjudged to be in the ‘high innovation’ category, while 69% of firms with extensive services linkages fell into this group. This pattern, of relatively strong innovation behaviour coinciding with relatively strong services engagement, was most pronounced in the Ankara cluster, which was seen by the researchers as operating at the higher technology end of the industrial spectrum compared to the two other clusters.

The findings of Eraydun and Koroglu, 2004 align well with those of Muller and Zenker (2001), who focussed particularly on the role and impact of ‘knowledge-intensive business services’ (KIBS). They found SME’s interacting relatively frequently with KIBS had a greater propensity for innovation, other things equal. Almost 77% of SME’s interacting with KIBS introduced innovations in the study period compared to 61% of non-interacting SME’s.

The Geography of Innovation

It is clear from this analysis of the literature that Advanced Business Services have a key part to play innovation, whatever pathway it takes. It is also clear from the work of Sassen (1991) and others that such Services show a strong tendency to centralise into relatively few ‘command and control’ centres at the international and national levels. Spiller (2004) shows that within Australia, Sydney and Melbourne are likely to host almost 80% of the nation’s Advanced Business Service firms.

In this context, propositions that Advanced Business Services are prone to ‘social’ models of business transaction become important from a policy perspective. In such business models networks of contacts and place specific protocols and customs for making and using these contacts are critical to commercial success (Clark, 2005). This modus operandii would imply that the quantity and quality of contacts between Advanced Business Services and their clients diminish with increasing distance from the key supply points for these Services. That is, with increasing distance the relevant social networks might be expected to become diluted and/or the transactions in question pass through into new geographic territory where different mores apply.

Should this hypothesis of distance decay in client contact be borne out, it suggests that the propensity for business innovation and sustainable prosperity will also diminish with increasing distance from Advanced Business Service supply points – because such contact is known to be vital to innovation. On this basis, the continuing geographic concentration of these services in Australia – particularly into Sydney (Spiller, 2004) – may be cementing a ‘core-periphery’ pattern of regional development, which until recent times, has largely been avoided in this country.

Thus, investigation of the distance decay hypothesis in Advanced Business Service operations is an important topic in Australian urban research.

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