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THE CONCEPT OF CLUSTERING

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ABSTRACT

This paper provides an overview of the concept of industry clustering and its value to enhancing innovation and enterprise. The success factors associated with regional clustering are described, highlighting the critical importance of local networking between industries and firms. A series of case studies are provided including regional development using clustering principles in Adelaide, Cairns and the Newcastle-Hunter region of NSW. Finally, the paper concludes with recommendations for future action. These include the following: i) undertaking a cluster mapping and environmental scanning process to provide base-line data for future policy and planning activities; ii) enlisting the support of the local business community to participate in a development strategy, particular 'anchor' firms in each cluster; iii) identify regional development projects that can channel the energies of key industry and community stakeholders, but that offer mutual benefits to the region; iv) formation of a Regional Development Board to coordinate projects and source funding.

Key words: regional economic development, clustering, Australia.

INTRODUCTION

Industry clustering is a concept that has become well established within economic development literature since at least the 1980s (Anderson 1994). It has been used as a framework for assisting the creation of new enterprises, as well as enhancing the sustainability of established ones. Within Europe and North America it has become a favoured instrument for directing economic policy seeking to target small to medium enterprises (SMEs) (Humphrey and Schmitz 1995). From a regional development perspective, clustering is viewed as offering potential for enhancing economic growth due to the perceived ability to concentrate firms in a geographic area and in doing so increase productivity:

> *"The benefits of locating in a cluster (or industrial district) are related to the availability of skilled labour and intermediate goods suppliers, and also the easy transmission and discussion of new ideas" (Baptista 1998).*

While industry clusters have probably existed for centuries, the concept of industry clustering appears to originate from the 1970s example of the "Third Italy" (Isaksen 1996). At a time when the Italian economy appeared to be divided between the large conglomerates and more traditional micro-businesses, a third group of SMEs emerged. Frequently family owned these firms demonstrated a strong capacity for innovation and globalisation, successfully adapting to changing technology and increasing market competition. Italy's northern regions were the location of dynamic enterprise clusters in textiles, apparel and footwear (OECD 2000).

An example of the "Third Italy" clustering process was the women's stocking and hosiery industry in Castel Goffredo, Lombadia. With a population of only 7,500 the town hosted over 200 SMEs engaged in a range of mutually supporting and related activities (e.g. dying, knitting, design, packaging and yarn manufacture and labelling). Although most firms employ less than 100 people (commonly around 20 staff), they have demonstrated a high level of innovation intensity, investing in high technology production equipment, and

collaborating with each other to support technology diffusion and industry training. During the 1980s and 1990s this cluster had secured around 30 per cent of Europe's stocking and hosiery market (Rosenfeld 1997).

During the 1980s and 1990s the importance of enterprise clustering became widely recognised with a variety of countries demonstrating similar enterprise regions to those found in Italy. Examples were cutlery industries in Solingen, Germany, silk manufacturing and carbon fibre in Japan, and the technology cluster of Silicon Valley in the United States (OECD 2000; Gordon 1998; Kenney 2001). The term was being used in the United States in the late 1980s by consultancy firms assisting local government authorities with regional development (Anderson 1994). However, Harvard University economist Michael E. Porter further promoted the concept in his book, *Competitive Advantage of Nations* in the early 1990s (Porter 1990). According to Porter (2000) industry clusters are:

> *Geographic concentrations of interconnected companies, specialised suppliers, service providers, firms in related industries, and associated institutions (e.g. universities, standards agencies, trade associations) in a particular field that compete but also cooperate.*

From an economic development perspective the boundaries of a cluster can span a city, a region, a state, a country or even several neighbouring countries. Of importance is not the geographic boundaries encompassing the cluster, but the links that exist between firms and the capacity for such interaction to (e.g. via transfer of information, products, finance or ideas) create value or enhance efficiencies. The analysis of clusters suggests that a substantial amount of the competitive advantage that may be generated by a firm may actually lie outside these companies and occur through the interaction between firms and across industries (Porter 2000). Focusing on clusters of industries and firms rather than the individual industries or firms themselves is preferable because cluster behaviour is more aligned with the reality of industry competition and the formation of sources of competitive advantage. Cluster analysis enables the facilitation of innovation and coordination for mutual enhancement of all industries in a given region (Porter 2001).

TYPES OF CLUSTERS

Several different types of clusters have been identified. These include *regional clusters, business clusters*, and *technology clusters*. While in reality the differences between these clusters may be marginal, with significant overlap, the process of classification has proven useful to policy formulation. Each of these cluster types can be defined as follows:

REGIONAL CLUSTERS

The *regional cluster* as its name suggests encompasses a particular region and comprises industries or economic sectors that derive competitive advantage for them and the region as a whole through interaction, resource sharing and mutual support. Industries located in a particular region may interact within each other for mutual benefit and might use common assets or services (Lagendijk 1999). Governments, in particular local governments, may facilitate regional clusters through the provision of common services and infrastructure, as well as assisting with policy that encourages mutual sharing and collaboration.

Regional clusters can become a focal point for new venture creation and investment (OECD 2000). There is opportunity in regional clustering for substantial participation from local industry agencies, local government administrations and local universities. Due to the overall scale of the cluster (e.g. spanning several towns or cities) there is frequent opportunity for the leveraging of commercial market research that might collectively benefit firms or industries within the region. Investments in infrastructure (e.g. transport and communications) undertaken by government can mutually enhance the entire region, as can investments in training and

education services. Regional clusters have also spawned successful spin-offs through the sharing of information, supply chains and marketing support.

While it is problematic as to what a 'typical' regional cluster may look like, there are several common characteristics usually found in such entities (Isaksen 1996). The first is a concentration of firms located in particular sectors and locations, usually within a small geographical catchment area. The identification of a cluster is often undertaken on the basis of labour market concentration, in other words a high concentration of employment (relative to the national average) in particular industries are found in the region. Such firms are usually dominant in a particular industry or industries and they interact with each other to form localized networks for supply and support. Many firms in regional clusters are SMEs that employ flexible production techniques and use relatively high levels of sub-contracting and networking to fulfil their orders while remaining within manageable scales. There is usually a strong social and cultural environment that assists the owner-managers of SMEs in the cluster. In this context 'know who' is more important than 'know how'. Owner-managers of SMEs can leverage social and professional networks to acquire support and resources leading to enhanced innovation.

BUSINESS CLUSTERS

A *business cluster* is a grouping of geographically proximate firms with different but related activities. Such firms gain competitive advantages through joining together to create processes of mutual learning and synergy (Lagendijk 1999). For SMEs the benefits of a business cluster is the ability to leverage resources, expertise, skills, capital and capital from other firms within the cluster. Such clusters can develop spontaneously or be facilitated by government or enterprise development agency.

TECHNOLOGY CLUSTERS

One type of cluster that has attracted significant interest in recent times is the *technology cluster*. California's Silicon Valley exemplifies such a cluster although others have emerged elsewhere in the world during the last twenty years. High technology clustering usually involves a concentration of firms (some large, many small) employing highly skilled workers and closely associated with research institutions such as universities. The advantage of the cluster is its capacity to facilitate the adoption and diffusion of technology, pool intellectual resources and access venture capital (Devol 2000).

The capacity of such clusters to generate significant innovation has been highlighted in the case of Silicon Valley in California (Gordon and Kimball, 1998). Given the profile of high technology industries during the 1990s, considerable attention has been given to creating high-tech clusters, usually around science parks. Evidence from the United States suggests that regions with high-tech clusters achieved superior economic growth rates than those without (Devol 2000). However, despite the high profile of Silicon Valley technology clusters, innovative industry clustering models can be found around the world even within otherwise 'low-tech' industry sectors.

INNOVATION CLUSTERS – A TYPOLOGY

Whether a cluster is located at a regional or business level the most important element of clustering is whether this agglomeration of firms' results in enhanced innovation and productivity. Hart (2000) has proposed taxonomy of innovation clusters with three generic types: 1) cohesive clusters, 2) new industrial district clusters, 3) innovative milieu clusters, and 4) proximity clusters. Each is described briefly below.

TYPE A – COHESIVE CLUSTERS

Usually located in urban (particularly inner-city) locations, the cohesive cluster is one of the oldest forms. The formation of cohesive clusters is based on the need for firms to group together within a specific location to reduce costs. For many firms the cost of transport, storage and handling, or the cost of acquiring skilled labour made it desirable to locate close to a seaport, airport, rail terminal or other facility. The main motivation behind such cluster formation was a desire to reduce *transaction costs*, although over time, cluster members learnt to collaborate to reduce risk and leverage resources (Hart 2000). The fishing industry located at Fremantle is a possible example of a cohesive cluster. Proximity to the seaport and its transport infrastructure, skilled labour and associated industries (e.g. food processing and distribution, and boat building firms) provided a logical basis for clustering. Over time this cluster has begun to attract education and training support services, scientific and research activities, restaurants and tourism firms.

TYPE B – NEW INDUSTRIAL DISTRICTS

Firms with high levels of innovation intensity and who are largely knowledge-based define the New Industrial Districts. The Silicon Valley model of high-tech firms engaged in such industries as computer science, information technology or microelectronics is typical. Such clusters rely upon knowledge intense R&D for the generation of new products, and require speed of product development to maintain competitiveness. Unlike the firms of 'cohesive clusters' these 'new industrial district' firms are not particularly concerned over transportation costs. Their products are generally lightweight and delivered just-in-time requiring limited storage problems. Of greater concern to such firms is speed of transactions and this makes them interested in gaining access to communications infrastructure, but especially highly skilled employees (Hart 2000). The rationale for geographic location clustering for such firms is less associated with physical infrastructure, and more to do with the ability to access human capital. Such clusters have tended to locate on the fringes of large cities, or close to universities or science parks.

TYPE C – INNOVATIVE MILIEUX

First identified by European-based academic researchers this type of cluster places much higher emphasis on social capital than the other two (Camagni 1991; Maillat 1995). Like the cohesive cluster, many firms in the 'innovative milieux' are SMEs, but their relationships are motivated not by access to transaction cost reducing infrastructure or facilities, but a desire to cluster due to personal networks between the owner-managers or others within the firms. The key to innovation within such clusters is a willingness to learn and adapt. Learning is an outcome not from formal education, but social interaction between the entrepreneurs, managers or technicians within the firms. Key elements to such relationships are empathy, understanding and trust usually created from experience over time. Such human interaction is critical to the creativity that leads to enhanced innovation, and requires geographic proximity to facilitate the process of social exchange (Hart 2000). The packaging industry of Bologna and hosiery industries of Lombardy in Italy are examples of this type of cluster.

TYPE D – PROXIMITY CLUSTERS

A fourth cluster type identified by Hart (2000) is the 'proximity cluster'. This is quite different to that of the other three outlined above. Each of these is defined by the internal linkages that develop between firms within the cluster sharing suppliers, customers, transport, skilled labour, knowledge, venture capital or information resources. In this way these clusters generate a Local Production Network (LPN) with transactions taking place between the firms to add value or lower transaction costs. By contrast the firms in the 'proximity cluster' are located together in a geographic sense, but have little direct interaction with each other in terms of those activities found in other cluster models. The firms in 'proximity clusters' have stronger links outside the cluster

area than within it. While less easy to identify than the other three, the 'proximity cluster' is typically found outside major cities and comprised of micro-businesses. An example is that of Hertfordshire in the United Kingdom, where such micro-businesses are clustered just north of Greater London.

THE IMPORTANCE OF RELATIONSHIPS TO CLUSTERING

Of importance to the success of business clusters is the quality of the relationships that exist between firms located within the cluster. The types of relationships that are likely to be important are:

BUYER-SUPPLIER RELATIONSHIPS

A typical model involves a set of 'core companies', which produce goods and services for distribution to buyers and source components from a range of suppliers. Depending on the nature of the industries involved, enhanced productivity or innovation can be created through strengthening the relationship between these 'core companies' and their buyers and suppliers (Anderson 1994). This has been evidenced in the Australian agribusiness sector with the successful development of buyer-supplier relationships as key ingredient in global supply-chain management. Critical to the success of such supply-chains is mutual trust between the suppliers and buyers. This is particularly important in the farming sector where significant time can elapse between initial ordering and delivery, and where significant risk is involved. According to Agribusiness Advisory Group of Rabo Bank, Australia, the buyer-supplier relationship must evolve from one of independence to interdependence; but not from independence to dependence (O'Keeffe 1998). Both parties must retain the ability to move into and out of the relationship, but to remain within it due to mutual rewards and trust.

COMPETITOR AND COLLABORATOR RELATIONSHIPS

Firms located within business clusters that produce similar goods and services have the opportunity to enhance their productivity and innovation through the exchange of information. For clusters seeking to compete globally, there is frequently more to be gained by firms within the same geographic cluster collaborating (e.g. via sharing market intelligence and innovation ideas), than working competitively against each other (Anderson 1994). Government policy is generally opposed to collusion and anti-competitive behaviour within industries. However, legal strategic opportunities that seek cooperative behaviour can be found where otherwise rival firms collaborate to achieve win-win outcomes. The education sector in Western Australia is an example of such a process. Despite the sometimes intense rivalry that exists between institutions, there remains a collaboration between universities and colleges in sharing strategic marketing resources leading to the formation (albeit with State Government assistance) of the WA International Education Marketing Group (WAIMEG).

SHARED-RESOURCE RELATIONSHIPS

There are many cases where firms that might otherwise sell into quite different markets share a common source of supply for raw materials, skilled labour, communications, information or technology. Such relationships can be leveraged to enhance the overall supply chains of the entire cluster, rather than working against each other for incremental advantages (Anderson 1994). A possible example of this within Western Australia is the maritime industry sector, which has served as an incubator for several industries that might be identified as a potential cluster. Commencing with the fishing industry with its antecedents dating back to the 19th Century, there grew a successful boat building industry with a focus on aluminium construction leading to the emergence during the 1990s of the high-speed aluminium catamaran ferry industries (e.g. Austal Ships, Oceanfast, and Image Marine). The ferry construction industry has led to the emergence of additional enterprise in the design and manufacture of seating for high-speed ferries (e.g. Beurteaux). In addition to ship

and boat construction, the WA fishing and maritime industries have spawned new industries specialising in sea rescue equipment, aquaculture and live seafood exports (Barnett 2001).

CLUSTERS AND COMPETITIVENESS

Economists have identified clustering as offering potential enhancements to industry competitiveness by concentrating physical and human capital to produce both economies of scale and scope, and the innovation that can flow from interaction between individuals and firms. Porter (1990) has described the process in terms of a 'diamond model' (see Figure 1), in which four elements – 1) enterprise strategy, structure and rivalry; 2) factor conditions; 3) demand conditions; and 4) related and supporting industries – come together within a regional economy with indirect influences from both government policy and historical chance, to create dynamic clusters.

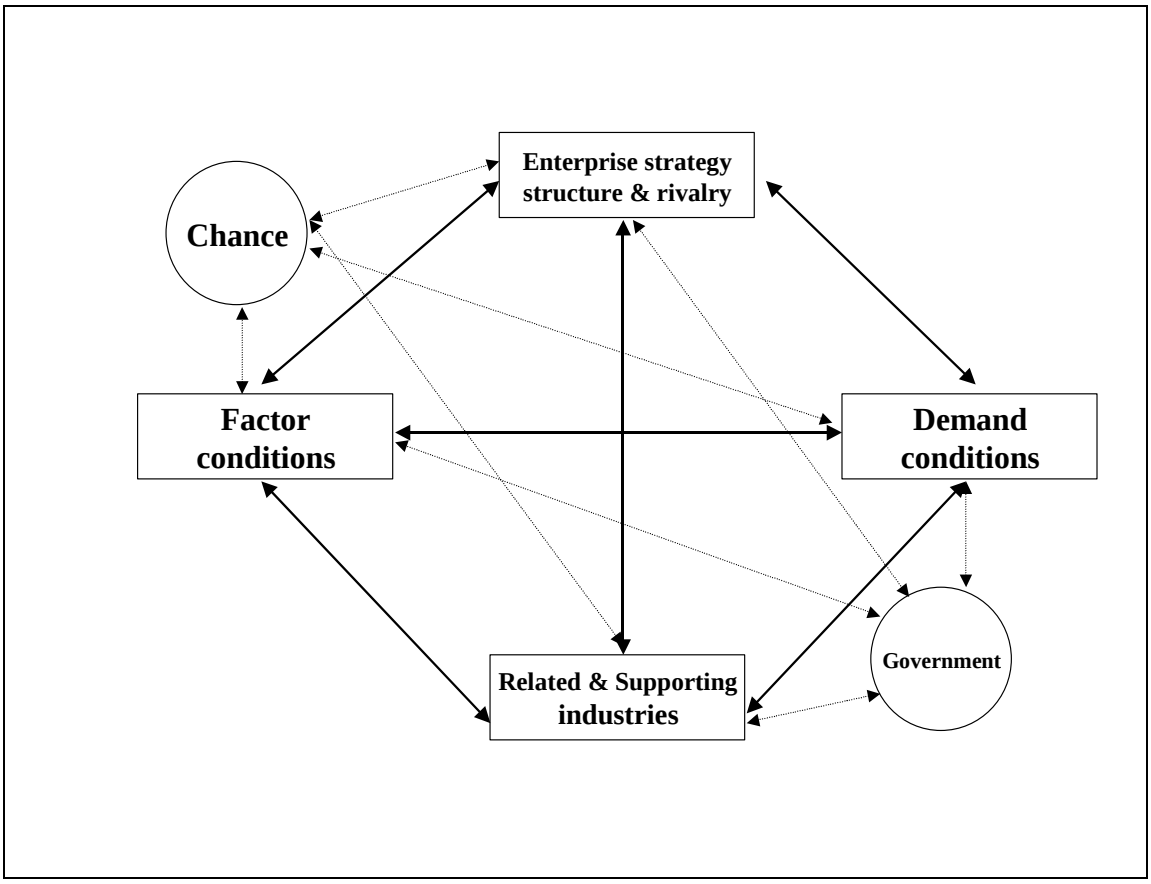

Figure 1: The Competitive Diamond

Source: Porter (1990)

Two key drivers within this model are domestic inter-firm rivalry and geographical concentration. The level of domestic rivalry that exists among firms within a region is important to the level of productivity and innovation that may be generated in these industries. A geographic concentration of firms in a particular area can also assist in increasing the intensity of the interactions within the system (Baptista 1998).

Factor conditions (e.g. natural resources, availability of skilled labour and venture capital) are clearly important to the creation and sustaining of industries within a region. On the supply side, geographic concentrations through clustering can assist by enhancing the quantity and quality of such factors. Krugman (1991) has

suggested that this stems from three sources. The first is through **labour market pooling** in which the existence of many firms from the same industry in a single location can support specialised labour. For example, industry concentration in the mining and resources sector in Western Australia has enabled the state to support a high proportion of specialist engineers, geologists and other professionals (including environmental scientists) that might not otherwise have been able to find steady employment here.

The second source of supply-side benefits stems from **intermediate inputs** where the concentration of particular industries allows the creation of a series of related and supporting industries that supply to the core industry. Once again, the mining and resources sector in WA has supported many manufacturing, engineering, finance and professional service firms that may not otherwise exist were it not for the core industry.

The third source of supply-side benefits flows from **technological or innovation spill overs** in which ideas, knowledge, products and processes can transfer from one firm or industry to another via formal and informal networks. Although geographic proximity is not essential to this transfer, there is some evidence that concentration of firms in regions can enhance the process. This appears to be particularly important to industries in their formative stages where the cost of transfer is easier to absorb where geographic distances are not too great (Baptista 1998).

On the demand side the conditions that are necessary for dynamic growth are the capacity of the region's industries to offer competitive products or services that can offer sustainable advantages over time. Unless the local market within the region is sufficiently large and growing to sustain industry concentration and growth, the majority of successful clusters will need to target markets outside their regional boundaries. Firms that can position their products or services into global supply chains, have significant growth potential. Such firms will need to benchmark their products and processes against international best practice, and are unlikely to survive over the long term if they don't continue to remain responsive to demand conditions. Clustering can assist such firms achieve and sustain international competitiveness by encouraging positive inter-firm rivalry within industries, and securing enhanced access to factor conditions and related and supporting industries.

CLUSTERING AND REGIONAL DEVELOPMENT – SUCCESS FACTORS

The application of clustering to regional economic development is well recognised in both Europe and North America (Isaksen 1996). As noted earlier in this report, the success of regional industry clusters in Italy, Germany or the United States has attracted the attention of government policy makers seeking ways to enhance the international competitiveness of their own local economies. One of the key aspects of cluster theory is the recognition that successful, healthy economic regions are only as good as their weakest or slowest members. Like a convoy of ships seeking to transit enemy infested waters the regional economy risks being damaged if fast moving firms leave slower ones too far behind. Many economies possess an industrial landscape, in which there are a few large firms (some of which may be global), surrounded by a very large number of small to medium enterprises (SMEs). Increasingly many of these SMEs are micro-businesses comprising firms in which the only employee is the owner-manager.

Some regional economies become dependent on a few dynamic industries or even individual firms. The WA economy is an example of this where the mining and resource sector comprises around 55 per cent of all merchandise exports from the State (TIAC 2000). The State's mining and resources sector is undeniably a world-class industry cluster, but is more than 75 per cent larger than the next largest sector (manufacturing) and more than twice the size of the third largest sector (construction) (TIAC 1998). If the overall balance within an economy becomes unstable the region becomes vulnerable to economic swings that impact adversely on these key industries. Greater diversification in a regional economy is therefore more likely to provide stable economic performance over time. It should therefore be recognized that the overall health of a regional

economy is contingent on the level of productivity and innovation inherent in **all** its industries not just a few (Porter 2001).

CHARACTERISTICS OF SUCCESSFUL REGIONAL INDUSTRY CLUSTERS

Regional industry clusters that have demonstrated successful track records appear to possess several common features (Rosenfeld 1997; Isaksen 1996):

1. They are **specialised** into a few key industries;
2. They possess effective **local networks** usually in the form of supply chain or production systems;
3. They include the active participation of **R&D institutes and education institutions**;
4. They possess a **skilled and productive work force**;
5. They have access to **competent financial institutions** including venture capital;
6. There is **close cooperation** between cluster firms and other institutions;
7. The cluster has **networks to other knowledgeable milieus**;
8. There are **high levels of innovation** to be found among cluster industries;

Each of these eight features is important to the development of highly dynamic regional industry clusters. Understanding how they work and why they are important is necessary to the development of effective public policy designed to assist the growth of regional economies.

REGIONAL SPECIALIZATION

A feature of successful regional economies is the concentration of employment and businesses into a relatively small number of industries that engage with each other in mutually supporting and related activities recognized as clusters. Further, most of the firms in these regions are locally owned (Isaksen 1998).

Successful regional economies do not seek to 'pick winners' or create new industries from scratch. While there are exceptions to this rule, the evidence highlights the importance of building on existing strengths and capabilities (Porter 2001). Most regions possess certain **comparative advantages**, usually in the form of natural features, location-specific or historical. For example, the original founding of WA was motivated by an assessment that the Swan River region and adjacent hinterlands offered fertile soils to support agricultural settlements (Green 1981). The discoveries of gold in the 1890s provide a significant boost the State's languishing economy and led to both a substantial growth in population and a redistribution of settlement (Appleyard 1981). The development of the State's rich iron and nickel deposits during the 1960s and 1970s further enhanced the specialisation of the WA regional economy, with LNG gas exploitation continuing this trend during the 1980s and 1990s.

Because it takes decades to develop sustainable industries the focus of specialisation is frequently placed on industry clusters that have a well-established history within the region. There is also a need to invest in specialised assets that can serve as a focal point for future industry development, or facilitate the emergence and growth of industries. These specialised assets may be physical infrastructure such as an airport, motorway or gas pipeline, or intellectual infrastructure such as research institutes. Strategic investment in such assets can greatly enhance the development of regional clusters, although the impact is frequently indirect.

REGIONAL LOCAL NETWORKS

An important aspect of successful regional clusters is the ability of firms within local industries to develop useful intra-regional networks. Most of these networks form between firms as part of the production or supply-chain process (Isaksen 1998). However, while the sub-contracting of work from larger to smaller firms is a feature of many industries local networking can also be of benefit to firms seeking to leverage less formal relationships such as interpersonal networks between entrepreneurs (Ostgaard and Birley 1994).

A distinction needs to be drawn between networks and clusters in order to understand how they can interact. The following analysis from Rosenfeld (1997) provides a useful structure for this. Networks enable firms – particularly SMEs – to access specialized services at a discount because they are not required to carry the full cost of developing and keeping such intellectual or physical assets. Clustering supports this process by attracting to a region specialised services that would otherwise be difficult to secure by more isolated industries.

Networks traditionally have rather restricted access to specialised assets and services. Industries that invest in the development or securing of such assets and services naturally seek to protect this competitive advantage. Even if the exclusion of outsiders is not a conscious decision, access into the network may be difficult for those not already 'in the know'. Clustering serves to open up such networks by encouraging a mind set in which the free exchange of specialised services is viewed as desirable.

The relationship between firms within most networks is based on agreements (both formal and informal) with a strong emphasis on the legally enforceable contract. While such relationships are likely to remain important to the commercial networking within regional industry clusters, the overall shift in emphasis in dynamic innovative clusters is toward relationships based on social values and a common sense of purpose. A sustained interaction of this kind between industry participants encourages the development of trust, empathy and understanding with reciprocal exchanges based on mutual benefits.

As the complexity of business activities increases (perhaps through the application of new technologies, or the development of new products or markets) the ability of a firm to network is likely to assist its capacity to manage such increased complexity. Learning-by-doing effects within industries are critical to enhanced productivity and sustainable competitive advantage. Clustering can enhance the demand within a region for firms and industries with similar and related capabilities. Such industrial concentrations – if accompanied by open social and economic networks – can greatly facilitate the flow of knowledge between firms and industries, thereby stimulating innovation (Cooke 2001).

By their nature networks are cooperative and the participants in conventional business or industry networks usually possess common goals. It is therefore common to find peak councils or agencies providing leadership for discrete industries or professional groups. These representative bodies typically advocate for the interests of their own members and lobby governments to secure policy outcomes in favour of these interests. While such network behaviour can prove beneficial to individual industries and participating firms, it can frequently result in the development of a zero-sum game, in which industry-based networks compete with each other to the detriment of the overall regional economy. By comparison, regional industry clusters possess collective visions that seek to advance the cause of the entire region. As such the cluster can tolerate both cooperation and competition between industries with all participants seeking to secure the best outcome for their region.

REGIONAL LINKS WITH R&D INSTITUTES AND EDUCATION INSTITUTIONS

Innovation within regional economies can be enhanced through active participation between local industry networks and organizations offering research and education services. Within the United States the universities and specialised research centres have proven to be a major driver of innovation within local regional clusters (Porter 2001). This has also been the case in Europe where university-based researcher and local industry bodies have assisted the process of regional economic development (Jones-Evans and Klofsten 1997).

While much of the interaction between R&D centres and industry has focused on technology-based innovation, the process of industry innovation is not dependent solely on scientific or technological research. Technology clusters focusing on high-tech industries may be attractive but they generally account for only a small proportion of the employment and economic output of most regional economies (Porter 2001).

Universities and other research institutes can serve as facilitative mechanisms within regions, educating the industry leaders, absorbing some of the risks associated with initial commercialization of ideas, undertaking research and disseminating knowledge and technologies. By aligning their curriculum to support the needs of local industry, universities and colleges can ensure that there is an adequate supply of skilled and educated labour to supply the demand for growing firms.

The simple presence of a university within a region is insufficient to ensure that the institution fosters innovation and enterprise. Universities can provide a valuable anchor role to a region's development only if the local culture is open to new ideas and the encouragement of enterprise. Further, the region's economic and social infrastructure must be positive with good schools, attractive lifestyle and reasonable costs of living. Finally, the relationship between the university and the community should be open to all, and not dominated by large established companies and the government (NCOE 2000).

SKILLED AND PRODUCTIVE WORK FORCE

Dynamic regions are characterised by a high level of well-qualified workers with the ability to provide a range of skills from professional to technical and including both skilled and unskilled (Isaksen 1998). Access to suitable labour is not restricted only to specialists. The U.S. National Commission on Entrepreneurship reported a nation-wide study undertaken in 2000 that indicated the biggest challenge facing business owners was finding talented people to assist the development of their firms. Fast growing entrepreneurial firms were no longer finding a lack of venture capital the most significant impediment to expansion. This was now replaced by a lack of suitable labour. The report called for changes to education and immigration policy (NCOE 2000).

COMPETENT FINANCIAL INSTITUTIONS

Financial capital is critical to the successful development of regional economies. Investments in new enterprise, existing firms or the property stock within the region are all important to enhancing growth. While public money is frequently essential to the initial financing of development initiatives, the sustainability of regional economies requires the creation of a pool of venture capital with the 'competence' to understand the needs of the region and the nature of its business activities. While banks can play a crucial role in the financing of small businesses, the growth of many entrepreneurial growth companies (EGCs) – those with the capacity to grow beyond their region – frequently requires access to venture capital.

It is important to recognize that venture capital follows a distinct cycle with increasing levels of investment, risk and anticipated return. Further, the venture capital process requires not only the provision of financial

capital, but the provision of experienced business mentoring able to assist in the development of the new ventures that emerge to produce and market the new technologies or innovations. At least five broad stages of venture capital financing can be identified (Humphrey 2000; Golis 1998):

1. **Seed capital** – provided in the initial stages of the product or business life cycle, with high levels of risk but low levels of investment. It typically operates in the $50,000 to $500,000 range. Sources of such capital are frequently internal 'boot strapping' or private 'business angel' investors.

2. **Start-up capital** – provided at the point where the new technology has been developed to full commercial status and a business structure put in place that can commence trading. This level of funding is typically in the range of $0.5 million to $2 million. At this stage there is an increasing focus on institutional venture capital funds (VCFs) and government or industry support funds.

3. **Early expansion capital** – provided at a stage in the business growth cycle where the firm requires more investment to assist with business, market and product development. The typical level of funding at this stage is in the order of $2 million to $10 million. Within this funding range VCFs and corporate investors are more common.

4. **Development capital** – provided at the point where the firm has a fairly well established track record and the technology has become established in the market, but substantially greater market or product development is required. Similar to early expansion capital it can range from $2 million to $10 million.

5. **Mezzanine capital** – at this stage the firm seeking the capital requires funds in the range of $10 million to $20 million. These funds are required to prepare the company for initial public offer (IPO), a process that frequently costs substantial amounts of money and requires the business to expand significantly.

It is worth noting that not all EGC enterprises require venture capital funding throughout their life cycle. Many firms can grow successfully without seeking external equity support although much depends on the nature of the business and its industry (NCOE 2001). From a regional perspective the availability or lack of investment funds and how easily small business can access such capital (and its associated mentoring support) can be critical to economic development.

CLOSE COOPERATION BETWEEN FIRMS AND INSTITUTIONS

As discussed earlier in relation to networking and clustering, the success of regional cluster economies is often linked to the level of formal and informal cooperation and exchange between business firms and other participating institutions. To achieve a meaningful level of such cooperation requires the existence of a climate of mutual trust and understanding, a common vision or sense of purpose, and the opportunity for people to meet and exchange via social exchange arenas (Isaksen 1998). Such collaboration was critical to the success of regional clusters in Italy (OECD 2000) and the United States high technology clusters (Kenney 2001).

Entrepreneurs, in particular small business owner-managers, require the ability to regularly access collaborative networks of both a social and professional nature. Such networks are important to linking venture capital to enterprise initiatives, source professional advisors (e.g. lawyers, accountants), and share market intelligence and innovations. Formal business chambers and industry associations can supply such social exchange arenas or milieux. However, these agencies are frequently either too formal or too narrowly focused to encourage the level of exchange required in a dynamic cluster.

Informal networks of entrepreneurs have been sourced to the existence of two key factors (NCOE 2000): 1) the scale of enterprise within a region – large numbers of entrepreneurs within a particular area can increase the opportunities for networking; 2) attitudes or culture – in which the culture operating within the region is conducive to information sharing and networking.

NETWORKS TO OTHER KNOWLEDGEABLE MILIEUS

Successful clusters are also observed to possess well-established networks to other clusters located elsewhere in the national or international economy (Isaksen 1998). Not only do such clusters establish links via conventional supply chain relationships, but they also source links that can provide access to new ideas, technologies and markets. The role of migrants can be critical to this process. For example, Chinese and Indian engineers working in California's Silicon Valley, forged successful links with their home countries to the advantage of the U.S. economy (Saxenian 1999).

HIGH LEVELS OF INNOVATION

A further feature of successful cluster economies is the presence within their industries of a high level of innovation intensity (Isaksen 1998). Innovation is related not just to the application of technology, but also applies to processes and human systems. Definitions of innovation vary. Porter (1990 p. 45) defined it as an attempt "to create competitive advantage by perceiving or discovering new and better ways of competing in an industry, and bringing them to market." VanDenVen (1986 p. 590) viewed its as "the development and implementation of new ideas by people who over time engage in transactions with others within an institutional order." It has also been defined as the development of significant technical advances within a given industrial context (Thwaites and Wynarczyk 1996). Innovation is frequently seen as involving the generation and the implementation of new processes and products in order to develop competitive advantage (McIntyre 1982). At least three distinct forms of innovation have been identified, namely: Incremental - gradual changes to products or processes; Synthetic - combining existing ideas in new ways, and; Discontinuous – the creation of radically new ideas (Tushman and Nadler, 1986).

Within a regional economy the manifestation of innovative activity can be determined by such measurements as the number of patents and patents per worker generated from the industries within the cluster. The rates of new venture start-ups and their overall growth rates. The level of venture capital investment in enterprises within the cluster industries and how many firms within the region proceed to IPO status. Another indicator may be the number of fast growing EGC enterprises within the region and whether any have been recognised within fastest growing company lists or "INC500" registers (Porter 2001).

REGIONAL ENTERPRISE DEVELOPMENT USING CLUSTER PRINCIPLES

Regional economic development is frequently associated with strategies designed to encourage growth in employment, investment, business productivity and wealth creation. At the heart of such initiatives is the need to generate new enterprises and encourage the growth of existing ones. The previous discussion has examined the nature of regional enterprise clusters and their critical success factors. This section deals with the Australian experience of regional clusters and offers several case histories. It also examines the issues likely to facilitate new venture creation and growth. It draws from Enright and Roberts (2001) recent overview of Australia's experience with industry clustering, and work already undertaken in the area of enterprise development in regional areas (Mazzarol 2000).

THE CASE OF CREDC PENNSYLVANIA

To illustrate the potential for an agency such as the EMRC to play a significant role in regional economic development, the following case study is provided on the Capital Region Economic Development Corporation (CREDC) of the United States.

South Central Pennsylvania in the United States is the home of the Capital Region Economic Development Corporation (CREDC). Like many regional economic development agencies CREDC seeks to assist the growth of new enterprise and the enhancement of the region's overall economic well-being. It offers a range of services designed to assist the economic development of the region including export development assistance, low-interest financing, and commercial site selection and marketing support (Surridge, Dewit-Martin and Kilko 1997). For example, in the late 1990s CREDC was a principal participant in a US$1.8 million state economic development program for central Pennsylvania targeted at retaining 2,584 existing jobs and generating 507 new ones. CREDC secured US$500,000 as part of an infrastructure development program aimed at constructing access ramps to link local firms to the state freeway system. This infrastructure project enabled Phoenix Contact, a manufacturer of modular terminal blocks, to embark on a US$10 million expansion program constructing a 40,000 square foot office building and creating 187 new jobs (Morgan 1997).

To achieve its mission of facilitating new enterprise formation and economic growth, CREDC follows a facilitative approach. In the early 1990s CREDC formed the Susquehanna Alliance, a regional 'umbrella' organization designed to represent the interests of the region's business community. During the mid-1990s CREDC established a Marketing Research Task Force (MRTF) as a means of achieving its strategic goals. Drawing on the participation of local business leaders and the academic community the MRTF undertook market research to assist in shaping its future regional development strategies. A study was commissioned that reviewed existing literature on regional development, and examined the potentiality of the Capital Region's economy, life-style, geographic location and infrastructure. A targeted industry cluster strategy was subsequently prepared that enabled CREDC's services to be better tailored to meet the needs of specific industries (Surridge, Dewit-Martin and Kilko, 1997).

The research undertaken by the MRTF identified five industry clusters existing with the region embraced by CREDC. These included: industrial machinery, fabricated metals, electrical machinery and equipment, food processing and business services. Each cluster was identified as being competitive in terms of employment growth and profitability. CREDC established a **business retention and expansion program**, designed to focus services on each cluster and facilitate their development. As part of this process, CREDC served as a facilitative agency encouraging banks, state and federal government agencies and universities to join the program and assist the growth of each cluster.

AUSTRALIAN EXPERIENCE WITH INDUSTRY CLUSTERS

While industry clustering has been a key focus of regional development policy in Europe and the United States since the 1980s, Australia's engagement with the concept did not emerge until the early 1990s. The restructuring of many older industries during the 1980s, and the reduction in tariff barriers forced government policy to focus on ways to enhance the global competitiveness of the nation's industries. It was the *Australian Manufacturing Report* (1990) (Pappas, Carter, Evans, Koop and Telesis. 1990) that first introduced the concept of industry clustering into the Australian policy debate. This it did by suggesting that regional industry growth could be enhanced by partnerships in which a core or 'flagship' local industry could interact with regional firms to strengthen networks and encourage innovation, development and technology transfer (Enright and Roberts 2001).

A series of federal government sponsored reports were commissioned to investigate regional development issues and identify policy options to encourage enhanced economic growth in Australia's rural, remote and regional areas (Kelty 1993; McKinsey & Company 1994). The Federal Labour Government pursued cluster-style policy frameworks through their *Working Nation* program that was launched in 1994, but this momentum dissipated after the 1996 federal election. By 1999 the *Regional Solutions Summit* was revisiting these same issues (Anderson 2000), as did the *National Innovation and Technology Development Conference* (Ministy of Industry 2000). However, despite this tacit support, the overall level of direct Federal Government support for industry clustering has remained low, and focused primarily through the Cooperative Research Centre (CRC) program, designed to link university research with industry to enhance innovation and technology diffusion (Ferris 2001). Additional support has been given to clustering initiatives via the *Regional Assistance Program* (RAP) (Enright and Roberts 2001).

THE CAPE YORK SPACE PORT AND MULTI-FUNCTION POLIS

At the state level the most active governments have been South Australia and Queensland. The most prominent examples of such state government initiatives were the *Cape York Peninsula International Space Port* project in Queensland, and the *Multi-Function Polis* (MFP) project in South Australia. The first of these sought to create a commercial spaceport in far northern Queensland using the natural advantages of the areas proximity to the equator. Commencing in 1988 the spaceport project drew together a collaborative network of engineering and aerospace partners but failed to proceed beyond the planning stage. The MFP project sought to build a green field's site industry network built on the Japanese 'technoloples' concept (blending employment, lifestyle and urban development). Encouraged in the early 1990s by Japanese interest the MFP concept was originally targeted at the Gold Coast, but lack of support from the Queensland Government saw the project shift to South Australia with a site selected on the outskirts of Adelaide. Despite substantial studies and much concept work the MFP project was officially abandoned by 1998. While viewed as something of a 'white elephant', the MFP project has been accredited as spawning several industry clusters within the Adelaide region (Enright and Roberts 2001).

ADELAIDE METROPOLITAN INDUSTRY CLUSTER PROGRAM

By the mid-1990s the lessons derived from the MFP project encouraged South Australian planners to focus on industry clustering as a means to revive the state's flagging manufacturing sector and rising unemployment. Led by the MFP Development Corporation and drawing on the lessons of Silicon Valley, a regional development program was developed for the Adelaide Metropolitan region targeting industry clusters. This process commenced by engaging industry 'champions' and other key stakeholders who formed a 'cluster leadership group'. Research was then commissioned to map the existing structure of regional clusters, and a series of community meetings were held to foster trust and consensus on how firms within each cluster might collaborate. From such meetings action and business plans were developed for each cluster, and additional resources were sourced for industry development projects utilising the influence of the 'cluster leadership group'. The program follows up with a series of plans designed to facilitate the long-term growth of each cluster (Enright and Roberts 2001).

The Adelaide metropolitan industry cluster program was led by the MFP Development Corporation but actively supported by the South Australian State Government and the SA Chamber of Commerce and Industry. Two clusters that were successfully developed from the program were in the areas of defence and multimedia. The same methodology that was used to create the initial pilot program was replicated in the creation of these two clusters. Following some initial success a further two industry clusters were formed in the areas of spatial information and water management. Despite the collapse of the MFP project at the end of the 1990s, the

defence, spatial and water clusters continued to develop with support from the state government (Enright and Roberts 2001).

FAR NORTH QUEENSLAND REGIONAL CLUSTER

Although the *Cape York Space Port* project did not succeed, the far northern Queensland region has enjoyed some degree of success in creating a cluster model focusing on tourism and mining. Traditionally the region was dependent on agriculture, particularly bananas, tobacco and sugar. However, the area possesses abundant mineral resources (bauxite, gold and silicon), as well as World Heritage listed natural assets such as the Great Barrier Reef and tropical rain forests. Initial development commenced in 1982 with the construction of an international airport at Cairns capable of receiving inbound tourism directly from Japan and the United States. Throughout the late 1980s significant investment (estimated at over $1 billion) flowed into infrastructure projects targeted at the tourism sector. Economic growth driven by tourism grew strongly in response to such initiatives only to be severely dampened by the 1989 pilots' strike and subsequent recession of 1991.

Faced with the economic crisis of the early 1990s the *Far North Queensland Regional Planning Advisory Council* drew up a regional development strategy in 1994 designed to manage the region's growth over the period to 2010 (Enright and Roberts 2001). An important element of this process was the establishment of the *Far North Queensland Regional Economic Development Organization* (FNQREDO). This entity secured financial support from the federal government and commissioned research into mapping industry clusters. These studies identified some 16 separate industry clusters ranging from agribusiness to the arts and culture. Suspension of federal funding in the late 1990s saw the dissolution of FNQREDO and the formation of the Cairns Regional Economic Development Corporation (CREDO) in 1998 with joint funding from the Queensland State Government, and local industry. The CREDO management Board is comprised of representatives from the various local industry clusters.

CREDO's approach to cluster development has been to organize meetings – 'cluster musters' – comprised of representatives from local businesses identified as sharing common markets, suppliers or information networks. Facilitated by CREDO staff, these meetings provide information on the nature and benefits of industry clustering, and extol the virtues of cooperation and information exchange at a regional level. Firms are screened to determine what attributes they possess and how best to link them together: e.g. for growth, exporting, labour pooling, competitive advantage or joint ventures. Participating firms are all volunteers and generally have strong local networks and a willingness to collaborate. CREDO produces a strategic development plan for each cluster that seeks to identify the competitive advantages, core competencies, strategic infrastructure, regional risk and economic development opportunities. CREDO has been successful in developing strong clusters focusing on Eco-tourism, tropical fruits, agribusiness, marine technology and international education (Enright and Roberts 2001).

NEWCASTLE-HUNTER REGION CLUSTERING PROGRAM

The decision by BHP Ltd to restructure and eventually withdraw from steel manufacturing in the City of Newcastle in the 1990s sparked a major program within the Hunter Region of NSW to seek strategies for economic renewal. With existing strengths in coal mining, aluminium smelting, steel manufacturing and wine making, the Hunter Region was launching from a sound base. Commencing in 1994 the Hunter Urban and Regional Development Organization (HURDO) was established with financial assistance from the federal government's *Working Nation* program. HURDO drafted an economic development strategy for the region and staged a major conference with input from Professor Porter of Harvard University. This was followed by a

research project designed to map the existing clusters within the region, which was funded by the BHP Development trust fund (Enright and Roberts 2001).

The research study findings were then used in a series of meetings to educate business, government, regional development agencies and the wider community on the merits of clustering. A total of 23 clusters were identified from the mapping process ranging from the well-recognized mining and wine sectors, through to emerging industries focusing on sustainable energy technologies, education and information technology. Once identified meetings were held with representatives from each cluster and commitment sought to cooperative engagement between industries. A series of strategic plans were then drawn up for selected clusters and arrangements made for ongoing management and networking. Action was galvanised by identifying specific projects through which the cluster participants could cooperate. Management of the cluster development was facilitated by the creation of incorporated entities to provide leadership and focus for each cluster. Although HURDO was dissolved in 2000 following the cessation of its federal funding, it was replaced with the Hunter Economic Development Corporation (HEDC) and the Industry Development Centre (IDC). HURDO has left a legacy of several clusters including: 1) EDNET – an education cluster (established 1999) that links the region's universities and VET colleges together to jointly market international education and develop training products; 2) Global Build Incorporated – a cluster focusing on building and construction that draws together industry, government, unions and university faculties; and 3) Hunter Tech Inc – an information technology cluster focusing on cross-industry collaboration initiatives (Enright and Roberts 2001).

LESSONS FOR FUTURE REGIONAL ECONOMIC DEVELOPMENT

The examples of Pennsylvania, Queensland, South Australia and New South Wales described above provide potential models for other states in their own regional development process. The lessons from the CREDC case are the need for any regional development agency to see itself as a **facilitative mechanism** to unite the community and draw together business, academic researchers and government agencies in a common cause. Further, the services provided by CREDC were **complimentary** rather than competitive with those already existing in the region. An initial first step in this process is to **identify the clusters** that may exist within a region and determine their needs. This is a research activity that requires care and attention if it is to be completed successfully. Once the clusters are identified a strategy can be prepared for the development of the region.

The Australian experience is consistent with that of the United States. Each case has several common features that are worth noting. First, the regions were experiencing significant economic downturn and therefore possessed a **climate of crisis** into which it was possible to inject a sense of common purpose through which collaboration was more readily achieved. Second, each case followed a similar **cluster development process**, establishing a leadership group or forum, undertaking research to identify and map clusters, and then rallying cluster members together around priority projects guided by strategic development plans for each cluster. Finally, in each case a **facilitative agency** was formed (e.g. MFP Development Corporation, FNQREDO/ CREO, HURDO/ HEDC) to provide management for the **regional strategy** and take on funding tasks.

The CREDC, MFPDC, CREO and HURDO examples illustrate how a regional development agency such as the EMRC could focus its activities on enhancing the competitiveness of its economy through the mapping and support of innovation clusters and the formation of facilitative mechanisms to stimulate economic activity.

A FRAMEWORK FOR REGIONAL ENTERPRISE DEVELOPMENT

Regional economic development strategies designed to increase employment and opportunity frequently fails to deliver successful outcomes due to a lack of cooperation and coordination between the three levels of government, the public and private sector and the academic or scientific research community and industry.

Each group has its own sub-culture, objectives and self-interest. This can result in a reduction in the overall effectiveness of all the programmes and money spent to improve the economic conditions of a region. Achieving optimal economic development outcomes requires bringing these separate groups together to achieve enterprise development initiatives able to assist the formation and growth of business ventures.

Figure 2 shows a model for Regional Enterprise Development. It suggests that the objective of achieving enhanced employment and new venture growth, increased population and a common or shared sense of community values and objectives can be achieved if consideration is given to the interdependency found between five key environments and the culture found in a particular region, namely:

THE ECONOMIC ENVIRONMENT

In formulating regional enterprise development policy consideration must be given to the economic structure of the various industry sectors currently operating within the study region. Of importance is the growth potential for such sectors and their capacity to generate new enterprise or employment within the region. Opportunities for the emergence of new industries and how such industries might be established within the region should also be considered. Productivity measures, unemployment levels, export activity and the level of new venture creation and inbound investment are all important indicators of the overall health of the region's economic environment. Collection and analysis of such data offers an opportunity for the policy maker to determine how competitive the region is in comparison to other comparable areas.

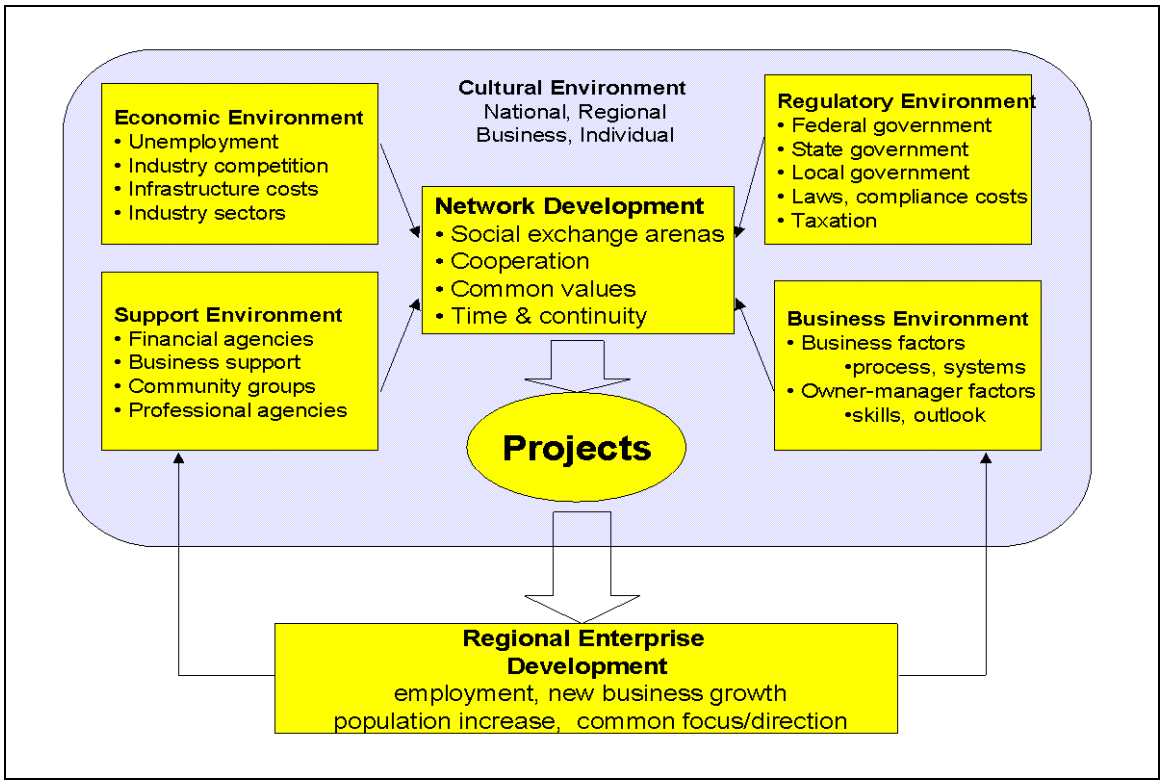

FIGURE 4: INTEGRATED REGIONAL ENTERPRISE DEVELOPMENT MODEL

Source: Mazzarol (2000)

THE REGULATORY ENVIRONMENT

This considers the legal environment into which new ventures will be created or existing ventures developed. Also important here is the activities of the three levels of government and how they interact. Government regulation and de-regulation policy is of primary concern in within this framework, as is state and local government planning. For example, within many urban and rural areas there are multiple local government authorities, each with slightly different policies in relation to business development. Competition or lack of coordination between these municipalities – while not excessive – remains a factor and potential limiter on regional enterprise development. In addition to these local government issues, the region is also subject to the policy deliberations of the State and Federal Governments. For example, State Government activities in the form of the redevelopment planning are all likely to impact significantly on the region. Seeking to coordinate the various levels of government in the interests of regional development may not be easy, but it is more likely to achieve success if a cooperative approach is adopted among local government authorities.

THE SUPPORT NETWORK ENVIRONMENT

The Support Network Environment considers the availability within the study region of sources of specialist advice and information as well as finance. Of specific importance are such networks as small business support agencies (e.g. SBDC, BECs and business incubator networks), banking and venture capital sectors, and the property market. The level of support required by different types of firm and industry will vary. Effective industry clusters have strong related and supporting industries providing an environment in which small to medium firms can acquire appropriate support when needed, and larger firms can access specialist skills or assets when required.

THE BUSINESS TASK ENVIRONMENT

The Business Task Environment encompasses the actual work place experience of the business management and employees within specific firms. The ease of 'doing business' within the region is dependent on a range of conditions encompassing both economic and social variables. Differences are also likely to be found between micro, small, medium and large firms and across industries. Access to reliable and suitably qualified labour may be one aspect of this environment. Another may be access or proximity to markets, suppliers, transport infrastructure, telecommunications networks and appropriately priced industrial or commercial real estate. The overall level of amenity within an area is also an important consideration for many firms, with passive recreation and lifestyle issues becoming increasingly important to firms when planning business location decisions.

THE CULTURAL ENVIRONMENT

The success of this framework is also likely to depend on the surrounding cultural milieux through which any economic or social development projects might be processed. A symbiotic relationship exists between entrepreneurship and culture (Morrison 2000). This relationship involves a series of 'inputs' comprising such things as religion, education, politics, family background, history, and the existence of role models and cultural and personal characteristics. These impact on the culture at national, regional, business and individual levels. They in-turn have a strong influence on the 'societal constructs' defined as including economics, government policy and institutions, organisational structures the social class system and its contexts. Cultural characteristics are evidenced by the ideologies, attitudes, attributes, behaviours, values, hopes and aspirations of individuals. Where the prevailing culture is already strongly pro-enterprise more is likely to be achieved in a shorter timeframe. However, in other areas this aspect of the model will need greater focus. Cultural change is complex and cannot be undertaken in haste. For example, pressure groups advocating environmental

protection issues must be balanced against the needs of industry to grow and develop. Finding harmony between such often-conflicting perspectives is a major challenge in regional development, but will be easier to achieve if an open communication and a climate of cooperation can be established.

THE NETWORK DEVELOPMENT ENVIRONMENT

The ability of a regional development framework to operate successfully is dependent on the ability of the various stakeholders (e.g. government, industry and community) to interact positively via **social exchange arenas** were a spirit of cooperation could be developed. The different interests of the various stakeholders need to be filtered via the network development process that allows opportunities for various stakeholders to come together and exchange ideas, cooperate in common purpose and over time develop common values. A focus on **tangible projects** is important to the effectiveness of the model. Well-defined projects with regional development objectives serve to unite stakeholders and focus resources in the achievement of collective ambitions. However, the existence of a **facilitative agency** such as a regional development corporation or organization that can assist in leading the research and policy initiatives required to formulate effective industry cluster strategies will greatly enhance success.

THE ANTECEDENTS OF REGIONAL ENTERPRISE GROWTH

As discussed earlier, culture has a crucial role to play in the creation and growth of new businesses and the generation of a healthy enterprise environment within a region. The existence of a **positive climate of opportunity** within a community that may encourage new business start-ups, or permit the sharing and trust necessary for innovation, is contingent on the culture or cultures existing at the national, regional, business and individual levels (Morrison 2000). As shown in the case examples described above, the presence of a **climate of crisis** may assist in rallying community stakeholders within a region, but this energy will then need to be channelled via a common vision for the future.

In addition to culture there must be a focus on the individual entrepreneur or what may be termed **community enterprise/innovation initiators**. It is important to recognize that enterprise and innovation must occur at both the social and economic levels. While the creation of new business ventures, or attraction of new in-bound investment is essential to regional economic growth, attention must also be given to social enterprise and innovation activities. Volunteers engaging in cultural, recreational, sporting and lifestyle activities enhance the overall vibrancy of a region and assist in attracting and retaining economic enterprise initiatives. Attention should be given to identifying and marshalling the energies of social and economic entrepreneurs from within the community who are willing to take on the responsibilities of leading enterprise or innovation projects.

Successful entrepreneurial growth regions within the United States have been identified as possessing an “enabling culture”, conducive to the generation and growth of new ventures. In particular, these regions were characterised as possessing a key entrepreneur or firm that served as a linchpin for the region’s development. Referred to as “anchor companies” these firms played a crucial role in the early development stages of the regional economy, as well as raising the overall profile of their entrepreneurs and contributing to the creation of a positive culture. Combined with this was the willingness of successful entrepreneurs and businesses to contribute to the building of community infrastructure by making philanthropic contributions, or via involvement in community improvement projects (NCOE 2000).

As well as the presence of enterprise and innovation initiators (who are usually present in most regional communities), there is a need for **enterprise/innovation facilitators** who can provide the support network environment needed for assisting new venture creation and business development, and who can participate in

building the network development environment. Such facilitators include enterprise support agents (e.g. the local government community development officer, the BEC Manager, business incubators, regional development agencies and universities). Such individuals (agencies) provide the community with support, resources and networking to other agencies or organisations outside the region

In addition to these factors the level of regional enterprise growth will also be dependent on the forces identified by Porter's "diamond model" (Porter 1990). The level of productivity and innovation intensity existing within the local industries (usually driven by industry strategy, structure and rivalry) is of critical importance. Also important is the existence of related and supporting industries, plus suitable factor and demand conditions and the role of government policy.

Regional enterprise development policy needs to devote time to **mapping the region's enterprise capabilities**. The community's optimism is likely to be enhanced if they are able to identify the opportunities that exist within their region for new enterprise creation or innovation within existing enterprise. The mapping of the economic, regulatory, can assist this process business task and support network environments encompassing the region. Research programs designed to identify existing industry clusters and determine how best to assist their future developments are all part of this process.

Finally, once the basic landscape has been mapped, the focus can shift to the development of **network exchange forums for innovation and enterprise**. The development of industry clustering within the region is likely to be enhanced by facilitating mechanisms designed to encourage intra and extra-regional linkages through which community enterprise/innovation initiators and enterprise/innovation facilitators can meet and exchange ideas or gain support. The creation of a community enterprise database and prospectus can be useful in this process by providing communications media through which individuals and organisations can be identified. Facilitative agencies in the form of regional development organizations (e.g. CREDC, CREDO, HURDO) can play a valuable role in this process.

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