

**Extending knowledge creation in cyber ba:  
connectivity, networking and regional development in  
an Australian context**

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This paper discusses the potential of cyber ba to function as the agent for networked knowledge creation and competitive advantage in regional Australia. We have been engaged in regionally based action research (AR) towards the adoption of networked information and communication technologies (ICT) by small and medium size enterprises (SMEs). While we discuss regional connectivity and inter-firm networking contexts, it is not our intention to share detailed project experiences in this paper. Rather our aim is to fuse our own regional perspective and learnings vis-à-vis the use of ICT in regional network formation with prevalent AR, knowledge creation and regional growth theories to broaden the understanding of (virtual) knowledge creation environments.

### **Regional Innovation in Australia**

The new economy is a strategic combination of many factors with knowledge platforms and relationships underpinning competitive advantage (Davis and Meyer 1998). Networking and network structures, often in the shape of individual actor or inter-firm network formations, are considered essential regional development requirements (Chisholm 1998; Martinez-Fernandez 1999; Milton-Smith 1998; Tapscott 1998).

In line with the regional innovation trend, Australian Commonwealth and State-based regional innovation policies are strongly focused on building strategies and initiatives towards regional connectivity, the expansion of regional and rural business, technology-enabled capabilities and e-commerce. The Commonwealth 'Networking the Nation' policy has been in place since 1997. In our region, Victoria, the State Government policy 'Connecting Victoria' is similarly aimed at improving technology infrastructure and access; boosting e-commerce and growing industries of the future; connecting communities and building a learning society (Multimedia Victoria 1999). To achieve these objectives, the Victorian Government has been working cooperatively with industry, regional universities and local communities to create IT-savvy connected communities.

Many of these programs are aimed at small and medium size enterprises (SMEs). Australian SMEs make up 96% of all business enterprises in the private non-agricultural sector (ABS 2000). To date many Australian SMEs have hesitated to invest their time and money in a rapidly changing economy (NOIE 2000). Apart from fear of competitors' use of the Internet and uncontrolled growth, many also lack technology skills and a strategic sense of how to move forward (NOIE 2000). Internet

access, unreliable service and lack of bandwidth in regional and rural areas are also significant ICT and e-commerce uptake barriers (Opticon Australia 2001).

Australian industry sectors that will most likely benefit from networking and e-commerce are expected to be those that offer products and services that are receptive to e-commerce. These sectors include information technology, tourism, entertainment, banking and finance (NOIE 2000). There has also been much talk of the need for cooperative approaches to regional tourism development. Recognising the contribution a viable and innovative regional tourism industry can make to the economic, social and environmental wellbeing of Victoria, The State of Victoria is keen to maximise the potential of regional tourism through cooperation, community building and sustainability although it also seeks to minimise the cost of implementing such cooperative strategies (Tourism Victoria 2002).

It was within this context that our AR project took place, the main objective of which was to develop a portal with regionally dispersed small and medium size tourism enterprises (SMTEs) to encourage adoption of ICT technologies and enhance sector network building. AR based network development (Chisholm 1998; Finsrud 1999; Gustavson 2001; Hanssen-Bauer 1998) is of particular interest in our work and will be discussed in a learnings from the project context. Mainstream theoretical underpinnings vis-à-vis regional development, ICT uptake and network trends both in Australia and abroad are briefly highlighted first.

## **The projects theoretical base**

### **(a) Regional Networking for Growth**

Enabled and driven by connectivity, the so-called new economy or knowledge economy is fundamentally challenging our government frameworks, business practices and learning institutions. In order to compete in the knowledge economy, companies of all sizes must be prepared to use technology-mediated channels, create internal and external value, formulate technology convergent strategies, and organise resources around knowledge and relationships (Rayport and Jaworski 2001). Governments must seek to define appropriate combinations of technologies, policy settings and capacity building based on networked information technologies (APEC 2001). Learning institutions must collaborate with their regional communities to exchange theoretical and experiential learning towards applicable knowledge creation (Brulin 2001).

Regional innovation and growth theories in particular are focusing on the emergence of networks and the development of regional economic communities, whereby policy makers concerned with the performance of regional economies are seeking to foster a networked community culture (APEC 2001; Chisholm 1998; Martinez-Fernandez 1999). Networking, learning and regional development are being portrayed as pivotal linkages for regional development and growth (Amin 1999; Cooke and Morgan 1998; Diez 2001; Henderson 2000; Storper 1997). It is believed that the prime driving force behind regional economic growth is no longer just the physical attributes of a region, but the social capital embedded within the region (Diez 2001). Recognising that economic growth is accomplished by designing regional policy initiatives that stimulate learning, regions are being turned into so-called learning regions in which socially a variety of agents and institutions take part in interactive learning cycles (Morgan 1997; Henderson 2000). Thus, by entering into an interactive learning process, regions can create competitive advantage. Indeed, what was once endogenous regional development has evolved into an exogenous network or associational development paradigm (Amin and Thrift 1995; Cooke 1996; Cooke and Morgan 1998; Morgan 1997; Diez 2001). Measuring the success factors of such linkages as networks, learning, and regional development is still in its infancy. Despite this popularly adopted regional development agenda, little empirical evidence is available as to its merit (Maskell 1997).

#### **(b) Networks of Interaction**

A network is a collection of interconnected elements, the nature of which is determined by the relationships connecting the elements. For example relationships can be economic, informational or social while elements may be individual, firm, group based or regional (Wasserman and Faust 1995). As a result, networks can be studied in an array of elemental and relational varieties (Biggiro 1999) with formations varying from cluster consortia in industrial districts to loosely coupled regional service networks, online networks and emerging grass roots economic community developments.

Depending on organisational needs network structures started to take various forms ranging from long-term stable supplier-producer-distributor relationships, to internal networks, to more dynamic looser coupling contractual arrangements (Miles and Snow 1986). Drucker (1988) referred to this new organisational structure as a 'networked organization'. Indicative of the learning curve for businesses in the

evolution of an industrial society, Senge (1992) first coined the term 'learning organization'. An advocate of the networked organisation concept, Senge (1992) advanced the practice of shared vision, team approach and continuous enlightenment through lifelong learning. Davidow and Malone (1992) preferred to call networked organisations 'virtual corporations', referring to the loosening of well-defined hierarchical company structures into a more flexible and shared approach towards the delivery of products and services to match customer desires. With an eye towards future connectivity and inter-firm networking Nagel and Dove (1991) took the virtual corporation concept to mean the synthesizing into a single business entity of organisational resources from different companies. Snow and Miles (1992) identified stable, internal and dynamic virtual network forms as well as a movement in certain industries towards network formations with Japanese *keiretsu* characteristics – organisational collectives based on cooperation and mutual shareholding amongst value chain actors. Nonaka and Takeuchi (1995) progressed the shared vision and lifelong learning into the knowledge-creating company. No matter what the format, generally their aim, and the aim of current regional policies, is to develop a more effective and prosperous business sector through cooperation, knowledge and resource sharing (Chisholm 1998; Diez 2001).

Connectivity and electronic commerce opportunities are adding new externalities to the concept of the networked enterprise. With new technology enabling access to resources, business actions, reactions and transactions, virtual enterprises and horizontal and/or vertical inter-firm networks have become ubiquitous. There is an ever-growing body of literature on value creation in today's inter-firm networks and virtual environments ranging from trust to community building to information and knowledge management (Biggiero 2001; Brown and Duguid 1998; Chesbrough and Teece 1996; Evans and Wurster 1999; Fukuyama 1995; Hagel and Armstrong 1997; Nonaka, Toyama and Nagata 2000; Porter 1998; Wenger and Snyder 2000).

Within the texture of interdependence, connectivity is facilitating the information and knowledge-based network infrastructure imperative for today's competitive advantage (Porter 1998). But connectivity is more than infrastructure. Connecting to and within networking environments is subject to ICT adoption and actor willingness to network. Hence business networks are subject to both exogenous factors, such as a transformation in the economic and technological climate, and endogenous ones, such as network actors initiating changes in the business relationship (Hakansson and Snehota 1995).

### **(c) SME networks**

While there is a proliferating body of literature on network building in the corporate environment, literature on SME networks and SME inter-firm network building is comparatively scarce. In European studies on SME positioning in the new economy (Cooke and Wills 1999; Fariselli, Oughton, Picory and Sugden 1999), SME networking appears contingent on favourable economic climates, e.g. government-sponsored external networks, with such institutional factors directly affecting the relationships amongst different economic actors (Cooke and Wills 1999; Fariselli et al 1999). In Britain commercial application service providers are facing an uphill battle with British SMEs showing no signs of interest in networked technologies (Forrester Research 2001).

Australian SMEs are predominantly service sector businesses with less than 10% of SMEs operating in the manufacturing sector (ABS 2000). These statistics illustrate the significance of SMEs in the Australian economy, yet most Australian SMEs appear to be going it alone as few use external (information) networks due to resource constraints, lack of specialist expertise and size vs. perceived impact in the market place (Venkatesan and Soutar 2001). An earlier study of 2500 Australian SMEs on their involvement in business networks did note an increased level of interest in networking or formulating networks in the future, indicating that networking is likely to be important in the business future of Australian SMEs (Dean, Holmes and Smith 1997).

Two types of business networks, formal and informal networks, were identified in the network study (Dean et al 1997), whereby formal networks constituted formal arrangements between companies to consolidate resources and informal networks such as business networks and industry or regional associations were seen as loose arrangements facilitating information exchange. Service companies were notably more likely to be involved in formal and informal networking than manufacturing companies. Lack of suitable partners and lack of financial assistance were cited as inhibiting factors for collaboration (Dean et al 1997). A key social concern that impacts collaboration directly is trust (Australian Bureau of Industry Economics 1995). Trust, or the lack thereof, is more likely to be an issue in networks than in one-on-one linkages, since the latter tend to be formulated as informal rather than formal agreements (Australian Bureau of Industry Economics 1995; Laubenheimer and Carlsson 1999).

#### **(d) Tourism SMEs (SMTEs)**

In the travel industry networks and new consortia seeking aggregate selling and sourcing capabilities are largely driven by the airline industry which seeks extended global reach through strategically aligned partnerships and cost saving synergies in services such as baggage handling, catering, engineering and maintenance (Pappas 2001). In such alliances each business party has crucial roles to play, and must do so in an atmosphere of trust, unity, and collaboration. Airline alliances in Australia have predominantly been based on specific agreements that do not require the exchange of sensitive commercial information and have operated without strong commitment (Tourism Futures International 1999).

In a decentralised industry climate with low entry barriers, tourism SMEs (SMTEs) generally operate in isolation. Strongly interdependent network structures tend to exist only within a single destination or region based on complementary product, e.g., activities, accommodation, transport and food, whereby clients are referred from one organisation to another to provide a comprehensive tourist experience (Grefe 1994). SMTEs that exclude themselves from these linkages may end up disadvantaged as such inter-firm connections often results in market visibility and strategic leverage (Pavlovich 2001). The structure of the destination network and the manner in which the linkages between SMTEs are formed and maintained can therefore be critical.

Tourism network formation in the form of cooperative tourism marketing has been in place in Victoria since a Regional Cooperative Marketing Program (RCMP) was set up by Tourism Victoria in 1993 as part of its strategic direction to develop integrated marketing campaigns for all its Product Regions and attain competitive advantage through regional cooperation (Tourism Victoria 1993). Each Product Region in Victoria has a Campaign Committee, made up of representatives from local industry and local government. The Committee is responsible for the marketing of the Product Region and maintaining communications with tourism industry stakeholders in their region.

#### **Learnings from the regional project**

Our AR project was undertaken with one such regional marketing committee, Grampians Marketing Committee Inc. (GMI), faced with expanding its traditional media marketing range to include an online presence. The Grampians are considered one of Australia's renowned tourism attractions, drawing in excess of 1.2

million visitors annually (Ritchie 2001). The current boundaries of the Grampians Product Region cover a vast geographical area stretching hundreds of kilometres across a diversity of landscapes and nature-based tourism experiences including several National Parks, rivers, lakes, wetlands and desert. The Grampians Product Region embraces some 900 SMTEs, seven major townships, numerous villages and seven local government shires. GMI was interested in creating an innovative e-commerce and e-marketing portal to increase the number of visitors to the region and provide the geographically dispersed SMTEs with an affordable web presence that they could market and evolve in their own right.

GMI approached one of the researchers to work with the Committee and the designated portal design group to help define an appropriate portal model. As it was deemed inappropriate to define a portal model *for* the stakeholders rather than *with* the stakeholders, an action research (AR) methodology was proposed and the Committee was supportive of this approach. The AR objective was to develop the best possible online solutions for regional tourism operators whereby representatives of the regional tourism industry would 'own' the portal design and the portal would be tailored to regional tourism stakeholders' needs. The project was divided into a three phases and encompassed a reconnaissance phase, a strategic planning day, and a review phase.

As a result of the work undertaken the underlying social, business and governance issues that were identified include: (i) actors lacked understanding of networked technologies; (ii) actors lacked time and involvement to adapt to techno-economic changes and adopt new relationships; (iii) actors lacked trust and learning interest to take pro-active action; and (iv) top-down drivers such as providing funding towards cooperation were found to be non-sustainable without holistic support structures.

Campaign Committees are voluntary organisations. Committee members who represent SMTEs from seven different shires, each with their own agendas and competing tourist attractions, are aware that they need to support regional networking solutions, but appeared to have little interest or time to devote to championing regional networking, especially when it did not advance their individual sub-region. Throughout the project, actors adopted single loop learning behaviour with feedback in the review phase reflecting longstanding grievances on sub-regional competition. Committee members chose not to participate in decision-making processes such as the design of the portal and a wider regional group of potential

actors (represented by the Committee) were therefore excluded from the process. Instead, portal decisions were outsourced to a third party (the advertising agency), which was task and dollar oriented rather than learning focused. As a result, ongoing reflexive learning cycles suggested by the researcher were not engaged in and the knowledge creation function of the AR process was arrested.

We learned that in a geographically dispersed, multiple destination region such as the Grampians the network of relationships is very complex. Anecdotal evidence of SMTEs in regional Victoria suggests that trust relationships among regional actors are parochial and built on long-term relationships. Steeped in socio-cultural ties, the level of socialization and externalisation appears to depend on individual SME positioning and its access to embedded information channels. Since the actors we worked with predominantly operated locally, value adding to their business through the uptake of ICT technology and regional partnership building to create competitive advantage was not a priority. Since State policy links collaboration to funding, increased cross-region marketing efforts are now being made by shire tourism managers (Ritchie 2001), but it appears that the adoption of networked technologies and collaborative learning region policies remain a top down incentive and that on the grass roots level individual actors still go it alone.

We also learned that problems occur when learning networks are not sufficiently structured to accommodate different actors' perspectives. Learning regions need to be sustained by more than funding as they cannot be expected to succeed without fulfilling particular attractions, usefulness or business needs for the actors within the learning region. There is too little social glue between regional actors, while the role of the regional university remains limited in the regional knowledge creation process. We believe that learning region and business network incentives will need to be appropriately resourced in a more holistic manner.

Whereas in the Australian community sector the need for such network strategies has started to be recognised, e.g., the funding of the Stronger Families Learning Exchange which provides AR training and support and acts as a clearinghouse function to organisations funded to undertake projects aimed at strengthening family functioning and developing collaboration between community agencies (Institute of Family Studies 2002), too few attempts have been made to analyse regionally embedded traditions and work with the SMEs on those regional drivers that can best lead to ICT adoption and relationship changes.

We agree with Storper (1997) and Maskell and Malmberg (1999) that it is the capacity to learn and adaptation rate to change that defines the success of a region. More important perhaps are the evaluation methods of regional drivers themselves, which are in need of re-assessment. Evaluation models such as measuring ICT adoption, its economic impact or monetary cost-benefit ratios are conspicuously traditional for this new generation of pluralist innovation policies and should be supplemented by innovative, e.g., interactive and participatory regional evaluation processes (Diez 2001).

### **Where to from here**

We have sketched a picture of the context we have been working within and some of the theory, policies and practices seen to be currently influencing business network, connectivity and regional development work in Australia. A number of significant gaps and challenges have been identified:

- the relational underpinnings of effective network establishment and functioning have not received sufficient attention,
- the networks in operation generally do not function as knowledge creation or learning networks, and
- it is unclear still how connectivity initiatives might help geographically dispersed actors with limited resources (particularly SMEs) participate meaningfully in network and regional development programs.

To help us better engage with these challenges and to further our understanding of network building, we are interested in exploring some of the experiences and learnings from regional development, community building and knowledge creation work in other countries and circumstances. Such an exploration may spark useful insights and connections that facilitate our personal learning and enhance our practice as action researchers in our own situations. And, in sharing this exploration, opportunities for further learning may be created, for ourselves and for others.

### **Scandinavian and Community AR**

Recent developments in Scandinavian action research are of particular interest to us in regards of what practices and learnings elsewhere have to offer, especially in terms of collaborative work to develop learning networks and regions. Over the last decade action research work in Sweden and Norway has shifted focus from single

organisations to networks and regions (Finsrud, 1999; Gustavsen, 2001) and has included work with SMEs in regional learning networks (Gustavsen, 2001; Hanssen-Bauer, 1998).

Treating action research as primarily a communicative process, with an emphasis on face-to-face communicative tools such as dialogue conferences, this work highlights the importance of relationship building in improving capacity within networks for learning, developing ideas and taking action. It is of value to recognise how such relationship building might be undertaken and how networks might be encouraged to create knowledge and not just exchange information. Rather than getting participants to create a joint vision or shared understanding, relationship building events recognise plurality, create potential for identifying and interpreting experiences, see what visions are present, create overlapping networks, and see how different actors and actor groups can pursue their own learning needs while at the same time helping others to pursue their needs (Gustavsen, 2001:22).

Discussions take place in various groups over a limited time – usually conferences are only one or two days - so each participant has a limited “window” through which to present their experiences. The outcomes of these conferences are not agreements as such, but ‘mutual commitments to further contacts and joint efforts between the participants’ (Gustavsen, 2001:21). As a note of caution though, Finsrud (1999) argues that it is not sufficient to base network building efforts solely on developing communicative structures and the exchanging of experiences. Reviewing the outcomes of a range of regionally oriented projects, he concludes that for a network relationship to be functional and sustainable, business matters as well as the exchange of experience must be covered.

There are deep dilemmas in how “collaborative work comes about within a diverse, distributed learning community” as Senge and Scharmer have observed with their community action research work in the American context, and “self-organizing’ cannot always be left to itself” (Senge and Scharmer 2001:245). Appropriate infrastructures that support inter-organisational learning and collaborative work are necessary. Within action research approaches to network development, the inward focus of these infrastructures is on creating (generally face to face) environments for high quality conversations or dialogue (Chisholm 1998; Gustavsen, 2001; Senge and Scharmer 2001). In Scandinavian projects the infrastructure seems to typically include a so-called development or referent organisation that takes on certain

functions for the network or domain. As well as internal functions like initiating projects, supporting network formation, providing information, and supporting the exchange of experiences, the development organisation will also perform more outwardly focussed functions such as influencing policy making in the larger system, attracting resources to the domain, and establishing external links to other institutions and networks (Finsrud, 1999; Hanssen-Bauer, 1998).

These issues may be important to consider in the Australian context, where there is not a strong tradition of learning for learning's sake. With little social glue between regional actors and limited external links, there may initially be more affinity with an approach that is seen to have concrete and practical benefits – for example, addressing shared problems or opportunities. Additionally, in a regional context in Australia, it may not be feasible to rely solely on face to face communicative tools and processes for building network relationships and capacity for action. This brings us to the role of ICT in the network formation and knowledge creation process.

### **Networks & Cyber Ba**

One can view the knowledge economy as a relational space in which the synergy of cooperative behaviour (in the form of collective learning) facilitates actions in a dynamic marketplace laden with technological paradigms (Konstadakopoulos 2000). Collective learning and knowledge creation are spiralling processes of interactions fusing explicit and tacit knowledge (Nonaka and Konno 1998). Interaction creates new knowledge when actors bring their knowledge to a shared space that Nonaka and Konno (1998) refer to as *ba*. This space can be physical, mental, virtual or a combination thereof. The socialization, externalisation, combination and internalisation cycle, which represent the four characteristics of *ba* as described in the SECI model, provide the knowledge creation platform. Regardless of the environment, “to participate in *ba* means to get involved and transcend one's own limited perspective or boundary” (Nonaka and Konno 1998:41).

The *ba* space that Nonaka and Konno (1998) refer to tends to focus on corporate or single organisational structures, rather than on regional and/or SME structures. Given that regional Australian networks do not yet effectively function as knowledge creation networks and given that it is unclear how connectivity might help overcome SME's spatial and resource issues, we are interested in exploring the knowledge creation concept on a regional SME level and in particular on a *cyber ba* level.

Nonaka and Konno refer to *cyber ba* as “a place of interaction in a virtual world instead of real space and time” (Nonaka and Konno 1998:47).

We agree with Nonaka and Konno (1998) that the use of knowledge requires the concentration of knowledge resources. Explicit knowledge is indeed efficiently supported in collaborative environments such as ICT and especially useful when dealing with spatial constraints, but we argue that *cyber ba* might represent more than ‘the combining of new explicit knowledge with existing information and ... generates and systemizes explicit knowledge (Nonaka and Konno 1998:47).

ICT is still a new product for many SMEs and it will take time before they will trust it as a potential asset. However, once they have moved out of their comfort zone and trust ICT as a resource for better business practices, actors who interact and potentially socialize in *cyber ba* could do more than merely access available explicit knowledge. They might learn to utilise the explicit resources available to them and learn to understand the value of their own (firm’s) embedded knowledge contribution. Thus, we argue, *cyber ba* is a platform for both explicit and tacit knowledge creation as regional actors can use *cyber ba* to learn collaboratively through online interaction and networking. In the process of growing their existing resources, we believe that actors bring experiential regional knowledge to this platform, communicate explicit regional knowledge to other actors and experience tacit knowledge creation through virtual interaction.

In an attempt to describe this type of regional networking and resource-based learning, we introduce the concept of ***cba***, potentially encompassing such concepts as (virtual) communication ba, community of learning ba, and cooperation ba. To take account of experiential knowledge creation and the current *cyber ba* definition, we table ***cba*** as a “Nonaka Plus” proposition, whereby we draw on the need for an extended epistemology (Heron and Reason 2001), which goes beyond the primarily theoretical knowledge of academia by adding experiential knowing to presentational knowing, propositional knowing and practical knowing. In further exploring the Heron and Reason (2001) experiential theory towards our “Nonaka Plus” concept, we hope to contribute towards a shift from an economic focus towards a learning focus for regional Australian network building. In addition, in building a virtual knowledge creation network, we deem it essential to further explore the role of ICT itself. Actor-network theory (Callon and Law 1991; Latour 1986) recognises that a network

comprises both social and technical actors and that in practice actors take the form of associations between humans and nonhumans.

Since Australian networks do not tend to be structured from actors' perspectives, and "self-organizing" cannot always be left to itself (Senge and Scharmer (2001:245), a new ethos of connectivity, cooperation and networking between regional SMEs will need to be fostered. There is a role for regional actors such as the regional university to help identify regional actors' motivations for collective learning, pinpoint the drivers for collective action, aggregate regional resources for resource-based learning and help actors establish a level of mutual trust and technological comfort through participatory learning processes. Learning networks will need to be linked to tangible economic rewards, e.g., ICT cost reduction, access to industry knowledge, enhanced market visibility, global positioning and strategic leverage in the new economy. Challenging as this agenda may be, the researchers will continue to explore these issues both through their own regional work in Australia and through dialogue with and learning from international theorists and practitioners.

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