

9

CLUSTER OR WHIRLWIND? THE NEW MEDIA INDUSTRY IN VANCOUVER

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INTRODUCTION

Few forms of economic organization have caused as much controversy as clusters. One might expect firms to distance themselves from competitors, but anyone who has walked through a garment or diamond district or driven through the industrial valleys of Europe knows that this is often not the case. This pattern of agglomeration is pronounced, even setting aside firms that cluster around access to raw materials or power sources.

Silicon Valley, located south of San Francisco on the west coast of the United States, is the common example of a successful cluster of firms, but others abound, ranging from the “Route 128” computer and biotechnology clusters near Boston (Saxenian 1994; Braczyk, Fuchs and Wolf 1999; Lievrouw and Livingstone 2002) to the light manufacturing and textile firms clustered in Italy’s Emilia-Romagna region. These and similar cases attract regional governments that would like to replicate the success in their own areas. Regional governments also appreciate the fact that they control many of the policy mechanisms that promote cluster development. Canada’s federal government has been significantly influenced by the cluster model since it commissioned a study of the country’s economy in the early 1990s. The concept was further entrenched by the more recent work of the Cluster Mapping Project at Harvard (Porter 1991; 1998a). The 1991 study replicated for Canada earlier work by Michael Porter on national competitiveness in a variety of developed countries. It

identified local or regional cooperation as a factor in the subsequent international competitiveness of nations. Subsequent federal policy introduced several measures to improve competitiveness in Canada, including policies to promote economic clusters. One consequence of such measures has been support for new research on the role of clusters within national systems of innovation.

WHAT IS A CLUSTER?

It is uncertain when firms first perceived the benefits of clustering with other similar firms. The existence of regional reputations for excellence in various industries around the world suggests this pattern has long been part of the economic landscape. The increasing interest in clusters originated in a number of social science disciplines. The earliest modern description goes back to the turn of the nineteenth century when Alfred Marshall (1890) described the phenomenon of industrial districts. The study of clusters also stems from critical analyses of economic organization, particularly the identification of the market-hierarchy spectrum that linked organizational forms and the boundary of the firm to the nature of economic transactions (Coase 1937; Williamson 1975). Relatively uncertain and frequently recurring transactions that required substantial investments were said to be most efficiently carried out within hierarchically organized firms. In contrast, relatively straightforward, non-repetitive transactions not requiring investments were said to take place most efficiently across the market. All other forms of economic organization were said to be hybrids of these two. This framework has shaped much of economic and business thought, but it has also been criticized for ignoring the extent to which economic action is embedded in a cultural and social context. Many historians and sociologists contend that the market is not an amoral self-subsistent institution, but rather, a cultural and social construct (Reddy 1984). Networks such as clusters are now regarded as distinct forms of economic organizations that confer substantial economic advantages, especially in unpredictable and rapidly changing environments. From a management and economics perspective, Porter defines clusters as “geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standards agencies, and trade associations) in particular fields that compete but also cooperate” (1998a, p. 78).

Clusters are now more prominent than they have ever been. Porter (1998a) claims they are critical to a region's competitive capacity. In the first instance they lead to increased productivity by enabling better access not only to skilled labour, suppliers, institutions, and public goods such as government funding, but also to specialized information, made possible through the development of trusting relationships. When small firms cooperate they are able to increase productivity by leveraging economies of scale that they cannot access individually. Proximity also allows firms to compare themselves directly with competitors. Clusters are innovative milieux within which proximity and trusting relationships facilitate the exchange of knowledge. Moreover, proximity raises the pace of innovation as companies compete to maintain a competitive advantage. Finally, Porter notes that it is not surprising that the dynamic environment of clusters gives rise to many new companies. As suppliers are drawn to a concentration of customers, the barriers to entry may become lower than elsewhere. Porter likens this dynamic to a positive feedback loop, in which the advantages of an expanded cluster benefit all firms within the cluster.

The success of Silicon Valley has spawned a flurry of cluster-formation initiatives (Wolfe and Gertler 2003; Cooke 1999). In a thorough critique of cluster studies, Wolfe and Gertler (2003) identify four characteristics of a cluster: inflows, outflows, local social dynamics, and historical path dependences. *Inflows* are the most readily accessible and measurable of the indicators listed. They identify three different forms: capital, people, and knowledge. *Outflows* are arguably "the best indicator[s] of wider recognition of ... a region" (Wolfe and Gertler 2003, p. 30), as they measure not only goods and services, but also intangibles such as intellectual property. *Local social dynamics* concerns the presence of both collaborating and competing firms, as well as the presence of supporting institutions, public, private, and hybrid. *Historical path dependences* are possibly the best test of "true" cluster dynamics because they assess "the alleged cluster's resilience and robustness over time in the face of severe shocks" (ibid., p. 31), which is one measure of a cluster's ability to adapt. A cluster's success depends on both economic and social dimensions (Piore and Sabel 1984; Pyke and Sengenberger 1992) with emphasis on the social and cultural embeddedness of clusters. Amin claims that "for industrial districts to develop, it is necessary that such a population merge with people who live in the same territory, and who in turn possess the social and cultural features (social values and institutions) appropriate for a bottom-up industrialization process" (2000, p. 14).

Further, Becattini maintains that “the firms become rooted in the territory, and this result cannot be conceptualised independently of its historical development” (1990, p. 40). Successful clusters such as the Italian industrial districts and Silicon Valley cannot truly be understood without reflecting on their cultural and historical dimensions.

Clusters appear to be more closely bound up with dynamic relationships than is the case with other forms of economic organization. Theories provide heuristic relationships between factors and characteristics, rather than black and white normative descriptions. For instance, Porter (1998*b*) explains how proximity between firms enables a cluster to function. Cooke makes the point that many cluster definitions are static, “whereas the key feature of clusters is that they are dynamic” (Cooke 1999). He defines a cluster as “geographically proximate firms in vertical and horizontal relationships, involving a localised enterprise support infrastructure with a shared developmental vision for business growth, based on competition and co-operation in a specific market field” (*ibid.*, p. 292).

A cluster’s capacity to adapt may be regarded as the outcome of the interplay between three sets of grouped factors: environmental factors, knowledge factors, and society factors. *Environmental factors*, which relate to the environment in which the cluster is embedded, include the market that the cluster is addressing, demand levels and their relative predictability, the pace of change of technology, numbers of competitors, stage in the technological life cycle, and importantly, the overall size of the market. *Knowledge factors* relate to a cluster’s ability and means of access to knowledge. These include the levels of research and development, the levels of exploitation of knowledge, the micro-diversity of cluster players, and the rate at which knowledge decays and is superseded. *Society factors* relate to the ability of actors within the cluster to share knowledge and to coordinate resources, which is often facilitated through the development of trustful relationships. Such factors include the levels of cooperation and competition, the acceptance of common social norms such as reciprocity, the importance of reputation, and the effectiveness of agency. The success and longevity of a cluster depend on the interplay between these factors. Constant change and adjustment are a significant part of this dynamic picture, both at the level of the cluster and the individual actor.

Clusters are also dynamic at further levels of analysis. They are socio-economic phenomena whose effectiveness is linked to a specific technology. As the technology moves through its life cycle, so the cluster changes

accordingly. When the technology becomes defunct, or is superseded, the social identity of the cluster may outlive its economic function. It then may serve as a mature start-point for the exploitation of a new technology. Studies of Silicon Valley (Saxenian 1990, 1994) and in the Italian districts (Sengenberger and Pyke 1992; Coro and Grandinetti 1999) show that successful clusters move through a series of different technological waves. They respond to both continuous and discontinuous change. Some regard clusters as a specific stage of development in the process of industrialization (Dimou 1994). In this view a cluster is not stable and static, but continually changing (Garofoli 1991). We can speculate that a cluster evolves in response to its environment in order to survive. Clusters that evolve successfully become more mature and resilient. Most empirical studies of clusters focus on established and successful clusters and relatively little is known about very young clusters. Our current study concerns a cluster so new that it is difficult to say whether it is a cluster at all, or whether it is a temporary, economic phenomenon focused temporarily around British Columbia; in short, whether this is a cluster or a whirlwind effect.

UNDERSTANDING THE NEW MEDIA INDUSTRY

The new media industry is difficult to define. Multimedia, the original term for the industry, made more sense a few years ago when it was easy to distinguish between new and traditional forms of media. While traditional forms still exist they can no longer be separated from new media because they have been strongly affected by the innovations in information and communications technologies. There is scarcely a newspaper without a Web site, a television network, a “streaming media” counterpart, or a publisher without CD-ROM versions of its book lists. This process of merging media forms, referred to as media “convergence,” has been extensively studied (Olson 1988; Gilder 1993; Castells 2001).

Defining “new media” is an ongoing challenge. In Canada, the BC government now faces that challenge as it attempts to quantify the industry. BCStats, in conjunction with the Ministry of Competition, Science and Enterprise, issues annual reports, the latest of which is entitled, *Profile of the British Columbia High Technology Sector 2002 Edition*. The report, which attempts to map North American Industry Classification System (NAICS) codes to new media job categories, found that many job functions within new media are either not described by these codes or fall under multiple codes. For example,

because new media companies focus on both content and computing their work can be coded as both a product and a service.

To illustrate the variation in definitions of new media, we present the following examples. The Vancouver Public Library, which created a directory of “new media” firms in 2001, used a definition of new media that is similar to ours but has greater emphasis on communication. New media is defined “not so much an industry as a set of applications, software, skills and techniques that are adaptable to a variety of fields. The underlying theme is communications: digital, interactive, wireless, convergent, networked, mobile business and personal communications” (Housser and Vancouver Public Library 2001, p. 3). The Canadian Radio-Television and Telecommunications Commission (CRTC) defines new media as encompassing, singly or in combination, and whether interactive or not, services and products that make use of video, audio, graphics and alpha-numeric text, and involving, along with other more traditional means of distribution, digital delivery over networks interconnected on a local or global scale. Each new publication about the industry seems to introduce a new definition. A new book from MIT press titled *The New Media Reader*, for example, contains eight definitions (Wardrip-Fruin and Montfort 2003).

For this study, we sought to avoid the problem of presenting an overly inclusive definition of new media, but we also wanted to have a definition that was more than a simple list of “approved” technologies or media forms. We argue that the key feature distinguishing a new media firm from one that is merely using new media technologies as part of its business is the extent to which the firm can be said to be innovating in *both* of the two defining aspects of new media, namely “content” and “computation.” Without the presence of both of these elements, the potential for new media does not exist.

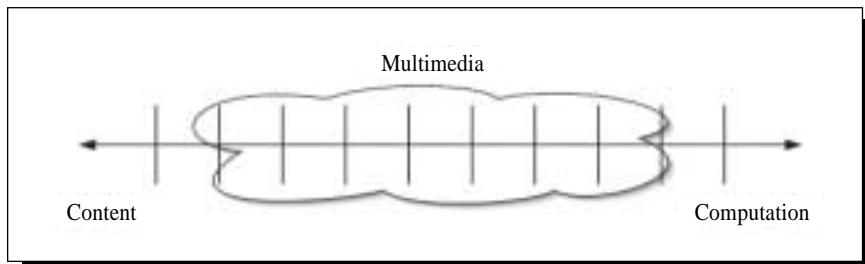
During our interviews with industry members one interviewee maintained that there is not a new media industry per se, but only a group of traditional media companies integrating new technologies into their existing business models. This raised the question of whether or not new media acts as a new business model, rather than a traditional product or service. Despite this unorthodox view, the interviewee supported our working definition of new media: “firms located in the space between content and computation.” This definition helps put a boundary on a traditionally “fuzzy” industry. It also reinforces the notion that there is a value chain in the industry (Porter 1985).

To better understand our definition, it is helpful to think of a continuum (as reflected in Figure 1) that extends from a “pure” content firm (such as a script writer), to a pure “computation” firm (such as a designer of microelectronics). These extremes of the new media spectrum would be outside our area of interest, even though microelectronics, for example, is used in the creation of new media products. The challenge, therefore, is finding firms that make a realistic contribution in both areas and are not merely using pre-formed content or pre-existing computation (hardware or software) solutions. As we found in our study, it is necessary to have a fairly relaxed attitude to what constitutes a “contribution” in order to have a sufficient number of firms to study.

While all the above definitions are helpful, they fail to reflect the new ways in which people engage with these technologies and the implications for their future use. There is a further dimension to understanding the new media industry. New media technology offers the possibility of “two-way” engagement that did not previously exist. This potential for interactivity was stressed by Rice and Associates who define new media as “those communication technologies, typically involving computer capabilities that allow or facilitate interactivity among users or between users and information” (1984, p. 35). This modifies our definition to the extent that we intend new media to be understood as holding the potential for such interactivity, in contrast to the existing media that only send messages, such as radio, television, and newspapers.

Several of the industry players we interviewed were concerned about the perception of new media as cultural industry and not an economic industry. They thought new media should be seen as an industry that needs private

FIGURE 1
New Media Defined as a Continuum



investment rather than public support; in contrast to the way that government usually views cultural industry. According to these respondents, money needs to be invested in every facet of the new media industry. Examples include the need to build large staging areas for post-production work and to finance content that does not fit within the Canadian Content rules required of government programs.

One interviewee remarked, “we can’t expect a kid with a grant to produce a cultural CD-ROM product about the fur trade in Canada to turn around and launch a new media company.” The change in the funding structure for an evolving industry like new media is dependent on a shift in the definition of new media from a cultural industry to an industrial sector.

THE NEW MEDIA INDUSTRY CLUSTER IN BC

The debates over definition reflect the fact that the industry is changing rapidly. Studies of the new media industry will therefore reflect a young and fast-moving business environment. This is certainly the case with two recent, major studies of the new media industry in BC, used for the purposes of this chapter.

The New Media BC (NMBC) Association conducted a report in consultation with government, industry stakeholders, and the Centre for Policy Research on Science and Technology (CPROST) in the spring of 2003. New Media BC (NMBC) is a non-profit industry association serving BC multimedia companies. Located in downtown Vancouver, NMBC was founded in 1998 and currently has a membership of more than 135 companies (Simmons 2003) and is sponsored by the Western Economic Diversification Fund, a federal agency. Taking a quantitative approach the NMBC survey was comprised of 32 questions that were posted on the New Media BC Web site. An invitation to visit the link was e-mailed to more than 700 new media companies, almost 40 percent of which responded, representing more than 260 companies. Survey participants were asked to provide information about their company’s age, geographic location, core activities, target markets, human resources, innovative activities, financing and ownership, revenues, export activity, collaboration, industry challenges, and reasons for remaining in British Columbia. Responses in each section were then cross-tabulated by age, sector, revenues, and location. While some of the responses simply corroborated findings from previous industry surveys, others revealed significant change and growth in the industry during the past five years.

Carried out under the auspices of the Innovation Systems Research Network (ISRN) our study is the second recent attempt to better understand the new media industry in BC. In contrast to NMBC's quantitative methods, our study focuses on a qualitative approach using a detailed questionnaire to conduct in-depth interviews. An extensive literature review was used to help build up a picture of the industry as a whole. To date, we have completed approximately 70 interviews: 51 with companies and individuals and 19 interviews with representatives from the industry associations and the government agencies.

The NMBC study identified a geographic clustering of companies in the BC Lower Mainland, centred on certain areas of Greater Vancouver: Yaletown, Gastown, and central Burnaby. The industry is still in its infancy: over half of the companies (61.8 percent) surveyed have been in operation for less than six years. This figure compares to earlier statistics from a study conducted in 2000 by PriceWaterhouseCoopers in which 54 percent of new media companies were found to be four years old or younger. Today's new media industry in BC is comprised of more than 700 companies and provides full-time employment for approximately 14,000 people. This is a significant increase from 1998 when PriceWaterhouseCoopers reported that new media employed 1,800 people. Although 79 percent of BC's multimedia companies are located within the Lower Mainland, the industry is beginning to flourish in other areas of the province such as the Okanagan and Kootenay regions and Vancouver Island. The boom period of the late 1990s is reflected in the age of the companies. Nearly one-third of the companies started in that period and more than half (62.9 percent) are less than six years old. The typical Lower Mainland company is slightly older than its counterparts in the rest of the province. A majority of BC's multimedia companies, 87 percent, are privately owned, 8.8 percent are public companies, 2.3 percent are subsidiaries of Canadian parent companies and 1.5 percent are subsidiaries of foreign parents. Regardless of the location, the majority of new media companies, 52.5 percent, employ less than six people. The statistics show that as companies mature their employee count also increases (NewMediaBC 2003).

The NMBC survey divided the multimedia industry into three subcategories according to function: content providers, enablers, and delivery. Content providers are those companies that develop digital content such as games, animation, Web design/development, e-learning, visual effects, streaming media, and Internet publishing. Deliverers provide the "pipelines" for digital

content and include Web hosts, Internet service-providers, and telecommunications companies. Enablers provide the tools and resources necessary for the delivery of digital content such as software development, Internet applications, digital compression technologies, security software, and e-commerce applications. In contrast, we distinguish between firms according to products and markets. Our interviews and discussions revealed that rather than being a single cluster, the industry in BC is composed of four different sub-clusters. Although they carry out some similar functions, they are distinguished by their markets and products. In essence the sub-clusters correspond to different new media product areas.

E-learning Sub-cluster

Companies in this sector specialize in producing and developing content and tools to facilitate online learning. It is the youngest sub-cluster in BC's new media industry and most of its companies are very small, often one-man shops operating out of home offices. BC's first e-learning companies developed in response to a need for distance learning. E-Learning BC, a volunteer-based association for the e-learning industry started in April 2000, currently has 70 active member companies throughout the province. Initially operating under the New Media Association, E-Learning BC separated from NMBC in early 2002 and formed a separate association. E-Learning BC actively markets its members and their services within Canada and internationally. They also provide opportunities for their members to collaborate. The biggest challenge in the industry, however, is that the small size and limited resources of most companies impedes their ability to reach international markets. Exactly how much support the government should provide to the e-learning companies remains a point of contention. Some interviewees suggested that the government should provide minimal support and allow the "cream of the crop" to rise to the top and avoid creating an artificial economic environment. Others argue that because other jurisdictions are directly supporting their new media industries, BC and Canada need to do the same.

The Gaming Sub-cluster

Don Mattrick, President of the Worldwide Studios at Electronic Arts, played an important role in the formation of Vancouver's gaming industry. The success

of his first game, *Evolution*, allowed him and his former partner, Jeff Sember, to start their own company, Distinctive Software, in the early 1980s. The firm grew to 80 people and in 1991 it was bought by Electronic Arts (EA). EA continued to grow and by 2003, its revenues had reached \$2.5 billion. Today, the company has offices in BC, the United States, and Europe and develops, publishes, and distributes software worldwide for video game systems, personal computers, and the Internet. As Distinctive Software and later EA evolved, a number of employees chose to start their own companies, including Radical Entertainment, founded by Ian Wilkinson and Rory Armes, and Relic Entertainment, founded by Alex Garden. These companies, in turn, spun out more companies, such as Barking Dog Studios and Black Box Games, which contributed to the vibrancy of Vancouver's multimedia industry. EA has since bought Black Box Games (in June 2002) to gain downtown presence in Vancouver. The majority of companies in this space develop computer games for various platforms such as PlayStation®2 computer entertainment system, the PlayStation®, Xbox™ video game console from Microsoft, the Nintendo GameCube™, the Game Boy® Advanced and PCs, which they then sell to publishers.

The Animation Sub-cluster

The first BC-based animation companies were founded in the late 1980s, providing service work for major Hollywood companies and large animation companies such as Nelvana and Cinar, in Toronto and Montreal. The first companies, Bardel Entertainment and Studio B, gave rise to more animation companies and the sub-cluster grew through the 1990s. The nature of the activities evolved from doing service work for the US-based companies to producing indigenous content through co-production with other Canadian and international companies. Producing and selling their own content is important to animation companies because it complements revenue, adds value to the company and contributes to a portfolio that can be showcased to prospective clients. In 1994, several key players formed the Association of British Columbia Animation Producers (ABCAP) to voice the concerns of the sector. In 2001, ABCAP conducted a survey of some 60 firms either directly working in or deriving some portion of their business from the global animation industry. According to the survey, in fiscal year 2000, the revenues of the sector exceeded \$460 million, a significant increase from \$27 million in 1991 and \$286

million in 1998 (ABCAP 2001). Today ABCAP has 30 member companies, most of them located in the Lower Mainland.

Web Services Sub-cluster

This final sub-cluster is different from the other three in that its companies engage in very diverse activities. Their main products are a combination of services such as the preparation of various materials for e-commerce, Internet marketing, and the development of transport technologies. Some of the pioneers in the transactional aspects of the Internet were located in Vancouver. The majority of these companies are small and privately owned, some working on a contract basis. Most of the companies operate locally but some, such as Blast Radius, have achieved a worldwide reputation, and have a portfolio of clients that includes some of the world's largest firms: Nike, Nintendo, and Heineken.

Characteristics of the New Media Cluster in BC

The nature of the new media concentration or cluster in BC is best described by four key factors: innovation, financing, the marketplace, location, and what we have called the cluster milieu. These are each discussed below.

Innovation

Innovation is important in any industry because it serves as an indicator of future growth and profitability. This is particularly so with new media (and indeed in any high-tech industry) where business is about intangible, intellectual products, as opposed to tangible, physical products. Most of our interviewees reported that during the last three years their company had developed new products and services and/or made significant improvements to their current products and services. Many said that a company needs to constantly innovate to stay competitive. The following quote is representative of the innovation strategy laid out by the majority of companies: "Yes. We're in the technology business. If we did not [innovate], we would not be around" (Asgari 2002). The NMBC survey used the production of intellectual property (IP) as the key measure for assessing the innovative climate in the cluster. The survey asked participants whether their company produces its own IP and the majority

of survey participants (80.5 percent) indicated that they did. The survey also asked participants to specify what kind of IP the company produces. The majority of the IP takes the form of products (66.8 percent), for example, hardware, software, and copyright materials such as photographs or artwork. Significantly less is produced in the form of trademarks (23.6 percent), patented inventions (14.4 percent) and industrial design (13.5 percent). Within the overall picture, we found great complexity, as companies move fluidly, sometimes within one transaction, between the different sub-functions of enabler, service provider, and delivery (NewMediaBC 2003).

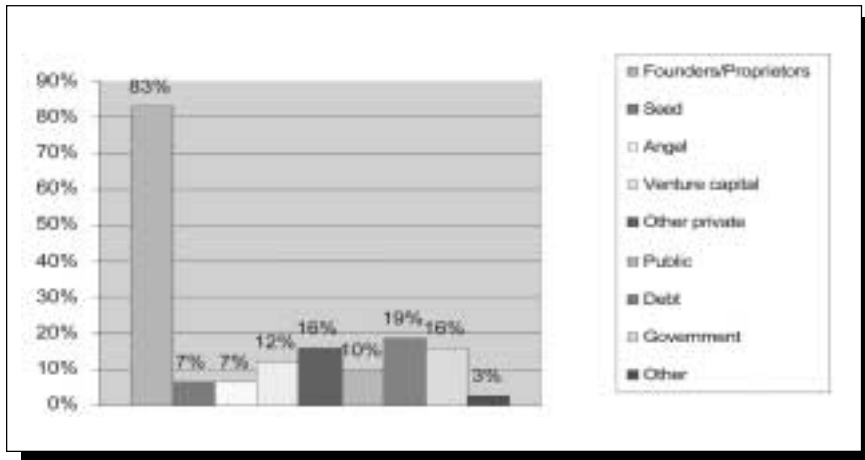
Financing

Financing is a key issue for the development of a cluster. Ready access to capital, either from private or public sources, is the cornerstone for fostering growth and the developing of new ideas. Conversely, the lack of investors and available capital has been identified as a key inhibitor of growth. The NMBC survey asked respondents about the current financing of their companies, the types of funding and percentage of total funding that each type supplied. Most of the companies (83 percent) that responded to this question indicated that they have received funding from their founders or proprietors. This is by far the most common form of funding in the industry. In comparison, the next most common form of funding is debt (19 percent). Almost half of respondents (48 percent) who receive funding from their founders/proprietors reported that this source accounts for 100 percent of their total funding (NewMediaBC 2003).

Notoriously, during the euphoria of the dot-com era, the wide availability of funding sometimes led to over-enthusiastic, if not unwise investment choices. Investors worldwide suffered heavy losses when the dot-com bubble burst. In the aftermath, investment strategies in BC for technology-based industries have become more conservative. Companies founded in or before early 2001 were able to obtain their first round of financing relatively easily, but the situation has changed dramatically since then. "November 2000 [first round] was relatively easy ... however, our second round ... we signed at noon on September 11, 2001, so you can imagine that was challenging ... we're trying to hold off right now on going back to raise money and hunkering down to conserve our capital" (Calvin 2002).

The three most common sources of funding are: founders/proprietors (23 percent), government (22 percent), and venture capital (19 percent).

FIGURE 2
The Percentage of Funding Received Across all Companies



Note: Total companies answering: 217. Respondents were allowed to choose more than one answer, therefore percentages do not add to 100 percent.

Although funding from government and venture capital were listed as the second and third most common funding sources, they were also ranked as the top two most difficult sources to access. While government funding may be seen as a reflection of confidence in the industry, it is vulnerable to time lags. This is particularly detrimental to a fast-moving, technology-based industry such as new media.

The most common types of government funding received by respondents (see Table 1) are those from the Industrial Research Assistance Program (IRAP) (15 percent of respondents) and the Scientific Research and Experimental Development (SRED) tax credit system (13 percent of respondents). It should be noted that these two programs are highly agent-driven, well-connected and embedded in the social network of the region. For instance, one of the most popular workshops in the region is the regularly held SRED seminar on how to gain government funding and deal with tax issues. As a result, the firms pursuing these as funding sources have to engage with the networks in the region. In the process, they are gaining expertise and becoming more linked with the cluster.

TABLE 1
Government Sources of Funding

| <i>Choice</i> | <i>Count</i> | <i>Percent of Answered</i> |
|--|--------------|----------------------------|
| Industrial Research Assistance Program (IRAP) | 33 | 15.00 |
| Scientific Research and Experimental Development | 28 | 13.00 |
| Advanced Systems Institute (ASI) | 8 | 4.00 |
| Technology Partnership Canada | 1 | 0.40 |
| Precommercialization Assistance (PA) | 2 | 0.90 |
| Community Futures | 11 | 5.00 |
| Science Council of BC | 6 | 3.00 |
| Telefilm Canada New Media Fund | 14 | 6.00 |
| Canadian Heritage | 9 | 4.00 |
| Program for Export Market Development (PEMD) | 3 | 1.00 |
| CANARIE | 10 | 5.00 |
| Other (please specify) | 16 | 7.00 |
| None | 148 | 66.00 |

Notes: Total companies answering: 223. Respondents were allowed to choose more than one answer, therefore percentages do not add to 100 percent.

Despite the relative importance of public sources of funding, the companies had a mixed response to the impact of government programs on the development of the new media cluster. Some made the point that because government funding often favours products, many new media companies which are service-focused do not qualify.

Export Activities and Available Markets

It is important for any industry to protect itself against adverse local economic conditions by maximizing its export potential and expanding its revenue base. According to the NMBC survey, more than 75 percent of BC's multimedia companies currently export products, services or both. Seventy-six percent of respondents plan to increase or expand their export activities in the next 18 months. Canada and the United States are the most important markets, with the United Kingdom ranked a distant third. Approximately 43 percent of companies generate less than 10 percent of their revenue through export activities. At the other end of the scale, however, 30 percent of exporting companies

(mostly larger companies) generate more than 50 percent of their income from exports (NewMediaBC 2003).

Over half of all survey respondents (55 percent) reported that their companies attend trade shows. This activity is important for companies of all ages, regions, sizes, and sectors because it is the place for meeting potential clients and showcasing the company's work. Over 155 different shows were named with a great diversity of focus and location. Some of the more frequently named shows were Comdex, E3 (Electronic Entertainment Expo), Banff Film and TV Festival, World Education Market, and CES (Consumer Electronic Show).

Location, Location, Location

Vancouver is famous for its lifestyle, and many of the people employed in the new media industry readily admit that they are drawn here for the advantages the city has to offer. NMBC asked survey participants to rank the importance of the seven factors to their company's staying in BC and to their company's growth (lifestyle, large talent pool, access to western US, low dollar, strong sense of community in new media, and access to the Asian markets). The top three reasons for staying in BC were lifestyle, availability of large talent pool, and access to the western US (Pacific Northwest and California). The same trends were identified during our interviews.

A mild climate, proximity to the ocean and the mountains, and orientation toward healthy living foster a creative environment and attract people who like to "work and play" where they live. According to one respondent "we are located in Kits¹ because we find that the region offers a balance between work and leisure that appeals to our staff and clients. Vancouver itself, as a location, offers many business opportunities for smaller companies to interact with larger companies. There is competition but there is also a lot of trust from clients" (E-MediaDesign 2001).

Vancouver has several educational institutions that supply a high-quality workforce for the cluster. Many companies fill entry positions by hiring local graduates from Simon Fraser University, Vancouver Film School, British Columbia Institute of Technology and UBC: "I would say that looking at our staff they're a pretty unique bunch ... Vancouver and the surrounding area has a lot of institutions that offer fantastic training programs like the universities and colleges and there's often workshops as well as simply self-training and gaining insights on trends from other companies and colleagues and friends" (Dave Olsson 2001).

When asked whether the local labour market possesses distinctive or unique sets of skills, knowledge or capabilities, many interviewees indicated that creativity, flexibility in terms of services and products, and relevant industry experience are notable attributes in the Vancouver labour market. "People here are balanced between having a very strong work ethic but also a very strong sense of creativity" (Act360Media 2001). The president of a medium-sized company, who worked in Canada and the US, identified a strong work ethic as an important quality of the local workforce: "The work ethic is a lot stronger here [in Canada] in an interesting way. They are good about creating a workaholic workforce and Canadians are more selfless in terms of contributing to the business ... in the US people are more focused on their own careers and values ... Canadians in this perspective are more balanced" (Cotichini 2003). Multiculturalism was also mentioned by a number of interviewees: "Because Vancouver is a multicultural society, which has different industries and clusters, it provides a varied source of skilled workers" (Faber 2001).

When asked about employees who had left their company within the last three years, interviewees identified three reasons: downsizing, personality fit, and contractors. As companies go through different stages in financing, they have to adjust their budget and downsize; however, they often end up hiring the same employees back if a new wave of financing is set. Also, many companies have a very strong culture and new employees sometimes find it difficult to fit in. When asked how many downsized employees are hired by other firms within the region, the interviewees claimed that the majority were able to find work locally.

Finally, due to the project-based environment, some companies prefer to hire contract employees or/and consultants: "Animation is a global and nomadic industry; most of the people that work in it move; unless you've been working for 20 years in Nirvana. Most of the employees are hired on a contract basis except the core group and they like it ... they travel and they bring experience. It is the lifestyle choice" (Ward 2003). Experienced consultants provide knowledge-transfer and promote an innovative climate within the industry: "People like myself ... who have all those skills ... there are small companies that need help in getting started, with market research, introductions ... and we help them. It is important to have floaters like me ... we know everybody" (Haman 2002).

Responses to the question of finding replacements for key employees were varied. The majority stated that employers have an advantage in today's

market environment: “There is a very large pool of knowledge workers here. The last technical support position we advertised for we received a little over 250 applications” (Edis 2002). Other interviewees said that it would be difficult to find replacements due to the specific set of skills required and/or the personality fit: “It would not be easy to replace key people and so we work hard to keep them here. It is the culture – their contribution to it and their understanding of our business, they are passionate about what we are doing. When you lose that passion, it is hard to replace it” (Cotichini 2003).

Since many companies have clients in the US, especially in California and Silicon Valley, they see the advantage of being close to the US market, while paying salaries in Canadian dollars: “Blast Radius’s business model is a near shore development model: we are almost as cheap as India (relative to cost of living) and lot easier to work with. We also provide high quality work” (Ferguson 2003). Sharing a time zone with California and the Silicon Valley was also seen as advantageous by a number of companies, especially those that specialize in game development: “It is pretty easy [to fly to San Francisco] ... I will go down to California in the morning and will be home and see the kids for dinner” (Daniel 2002).

Cluster Milieu

The NMBC survey revealed a high degree of collaboration among BC new media companies, which suggests that this activity is vital to industry growth and sustainability. Many companies actively collaborate with other BC or Canadian businesses, international organizations, universities or colleges, and research institutions. The survey showed that 40 percent have collaborated with at least one company within the province; 18 percent of the companies collaborate with other companies in Canada; 20 percent collaborate with foreign companies; and 15 percent collaborate with postsecondary institutions. The average number of collaborative partners within BC was slightly greater than five (NewMediaBC 2003). The strong sense of community was ranked as “somewhat important” in the new media industry and this corresponds with the statistics that find 44.9 percent of companies located in the Lower Mainland and 43.9 percent in the rest of BC.

Industry associations play a vital role in supporting collaboration among the new media companies. Many interviewees described them as a “supporting network” for the industry. Industry associations provide various activities and

events to help their members meet potential investors and partners, discuss ideas, find work, and learn the latest trends. One of the interviewees, who is an active member of E-Learning BC, pointed out that to serve the e-learning market it is important to have: “a network of supporting services to offer a full range of services to these clients, so what E-learning BC made possible is for these people to actually get to know each other and build a level of trust with them, so you can be in a client situation, see an opportunity and immediately react to it, knowing what you are recommending and you could in fact go so far as to take responsibility and subcontract and know that you are not putting your own reputation at risk, and that’s very important” (Stewart 2003).

ANALYSIS

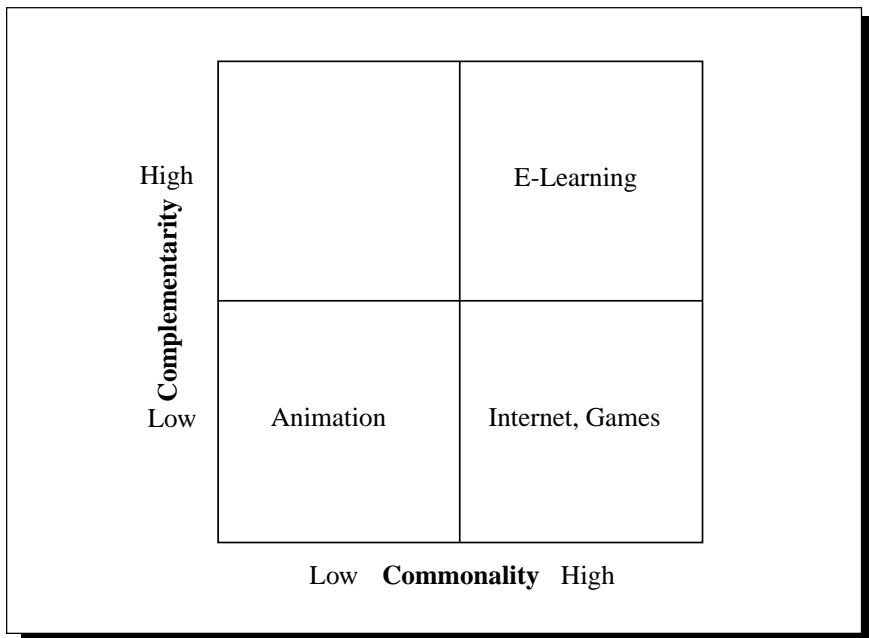
Together with the NMBC study our work provides a full picture of the current new media industry in BC. The findings indicate some of the necessary ingredients for an industrial cluster in the multimedia sector. There are a reasonably large number of firms and they are growing. There is policy awareness of the sector and regulatory (tax and other) initiatives to promote firms. Finally, the industry itself has sufficient self-organization to have created several networking events and associations. Other aspects of our work differ from common perceptions about clusters: the youth of the industry, the turnover of companies, the presence of four sub-clusters, the speed at which the industry moves. There is more to a cluster, however, than just the outward appearance. There is also the question of whether firms actually work together. Our study raises a number of interesting questions. Can we describe this as a cluster, albeit a young, immature and fast moving one, or is this in fact a different phenomenon? This final section explores some of these questions and attempts to reach some conclusions.

According to generally accepted definitions of an industrial cluster, for the multimedia industry in Vancouver to qualify as a cluster it would have to have certain “commonalities and complementarities” (Porter 1998*a*). Making an operational definition of commonalities and complementarities proved relatively straightforward. For commonalities we looked for common membership in industry associations, common “root” firms or investors in the genealogy of firms (Smith 2002), and attendance at industry-specific social and networking functions. Complementarities were defined according to the “value-chain” model of local inter-firm connections, using the horizontal and vertical linkages (Mytelka and Farinelli 2000) and Porter’s own “value-chain” model (Porter 1985).

Commonalities were assessed, in this preliminary formulation, according to a simple “high/low” descriptive variable, with the common features of firms measured relative to the industry group as a whole. Complementarities were assessed similarly, with firms measured as having low complementarities if they reported few local value-chain linkages and high if they reported several local linkages. These firm-level measures were later aggregated for the sub-industry groupings that make up the cluster as a whole, although again, these results should be considered very preliminary at this point.

A two-dimensional grid was created out of these two aspects of clustering, with commonalities on the vertical axis and complementarities on the horizontal axis (see Figure 3). The location of the various sub-sectors in Figure 3 are subject to revision as we learn more about the use of this method of understanding clusters. For now, it is illustrative, at best. That said, anecdotal evidence from the case studies provides some background for why we might place firms in one quadrant or the other.

FIGURE 3
Commonalities and Complementarities as Cluster Metrics



The animation subgroup within the multimedia cluster scores low on the commonality measure in large part because there are relatively few firms engaged in this business in Vancouver. As a result, they are more or less unique in their approach and business practices and technology. They score low on the complementarity axis because they are relatively unconnected to each other, albeit well-connected to the global marketplace and supply of animation talent. The exception to this is the moderate connections that they have to local schools and design programs.

The Internet (Web design, streaming media) and electronic games firms are relatively more numerous and more homogenous in their approach, technology, and customer profile. They are extremely well-connected to each other in industry associations and networking events, and they have deep connections into the local higher education scene. They do not have a pronounced value-chain orientation, however, and therefore score relatively low on the complementarity axis. The one exception to this is Electronic Arts, which is sufficiently large to have begun purchasing specialized services from related firms such as sound studios. This may be a prelude to a more integrated local cluster.

The e-learning group is comprised of a diverse set of firms with a high degree of commonality as evidenced by their common roots (many spinoffs from local university research groups or related firms), their extensive networking activities (there is a special interest group on e-learning within the NewMediaBC association, for example), and their collective initiatives in the areas of marketing and promotion. At the same time, the industry is more vertically linked than some of the other subgroups, with specialized firms taking up roles in service of other local firms, and some firms contracting with others to fill in gaps in their technology, market, and business practices.

The grid is useful in a number of ways. It provides a visual interpretation of some of the findings and it increases confidence in the idea of the new media industry in BC as a *bona fide* cluster phenomenon. It reinforces our conclusion about the existence of the sub-clusters by showing that they are distinct and differentiated and also how they may relate to each other. The grid is constructed according to measurable quantitative data, however, and as such, it does not take into account more intangible findings, nor does it allow us to critically evaluate the cluster as a whole.

To allow us to take a more in-depth look, we have combined the Wolfe and Gertler (2003) indicators with our environment-knowledge-society factors in an evaluation below. In terms of inflows, the studies show all three

forms identified by Wolfe and Gertler: capital, people, and knowledge. Where outflows are concerned, the studies report that more than three-quarters of companies export products or services, and that these are more than likely to be bound up with intellectual property concerns. It would seem that in those terms, this sector meets the criteria.

The New Media Industry Environment

It is important to consider the nature of the environment in which the new media sector is embedded, namely, the new media industry, both in BC and worldwide. Our discussion of the industry reflects just how new the industry is and how rapidly it is changing. In many respects, the marketplace is still being created, so it is difficult to say much about products, services, competitors, and niches that will still be true in 12 months time. What can be said is that this is an extremely dynamic environment. Companies entering it have to “hit the ground running” and be prepared to be flexible. This is a growing market, so what does this mean for the development of a cluster? The new media marketplace represents a vast potential of possibilities to be explored. Smaller companies, as commonly found in a new industry, cannot afford to explore the market possibilities on their own. It is far more effective to do so in collaboration with others because they can cover more “ground” by sharing knowledge and experience. Clusters develop because of the efficacy of such networking behaviours for the companies. Is this efficacy reflected in the networking mechanisms and behaviours of the new media companies in BC?

If we consider the level of knowledge-related activity in this sector, the section above on innovation reflects how significant R&D and the production of IP are in this sector. It is more difficult to establish the presence of functions and mechanisms that enable varied knowledge search and creation, such as the levels of diversity between firms and the ratio of exploring to exploiting firms.

In the absence of direct research to establish the levels of such activities, we can only speculate based on available studies. Our study identified the presence of firms that acted in some respect as “incubators,” that provide training or apprenticeship opportunities for individuals to learn skills and gain experience. Once people achieve a necessary level of expertise with the incubator firms, they move on to larger firms where they can command higher wages. The role of incubator firms is crucial in underpinning the value creation of more successful firms. Each sub-cluster certainly appears to be engaged both

in R&D and in the delivery of products and services. Companies also exhibit subtle differences. Does this mean that they are able to cover enough ground to enable the cluster to be sustainable over time? This is a question of critical mass that will only be resolved through time.

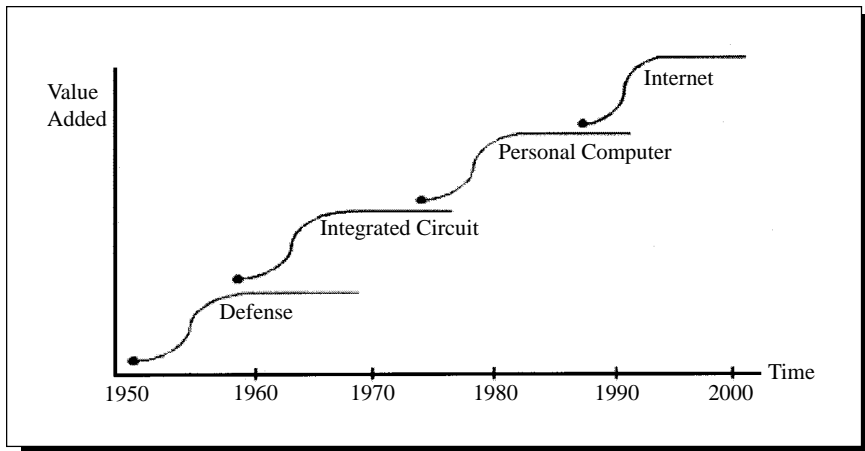
Of equal significance to these issues are mechanisms that enable knowledge or information to move through the cluster and to be shared. These are strongly linked to the movement of individuals between companies, as the studies indicate that it is a common occurrence that both freelancers and other individuals move from company to company. Such movement is an indication of an environment in which people are aware of expertise and experience, and know each other outside the boundaries of their own firms. It also helps to foster some sense of belonging, albeit a tenuous one. The presence of collaboration among competing firms also supports the evidence that the industry operates as a cluster. Our interviews suggest that firms readily engaged in collaborative relationships with both competitors and the supporting network, such as industry associations. Finally, a significant dimension of social factors is the presence of shared attitudes and value systems, which is certainly indicated by the studies, as many respondents reflected similar views about what attracted them to Vancouver, and others made reference to a unique type of work ethic.

CLUSTER OR WHIRLWIND?

From this brief analysis it certainly would appear that some of the mechanisms that enable a cluster to flourish are present among new media firms in BC. What is not clear is whether they are sufficient. The whole picture is complicated by the speed of movement of the industry itself, and the proximity to a large and powerful market in the US. The final indicator identified by Wolfe and Gertler (2003), historical path dependence, is concerned with the evidence of history. As the statistics above demonstrate, the BC industry is characterized by a fast turnover of companies. Overall, firms are fairly young and small. This may indicate that the sector is just moving too fast for a cluster to have time to develop. The proximity of the US may diffuse the attention of BC firms by causing them to focus on the US market. A further consideration of historical issues must be mentioned. The literature on clusters holds that they are not overnight phenomena — they take several decades to develop. In some cases, the cluster is the underlying socio-economic phenomenon in the context of successive technological waves. For instance, as Figure 4 shows, Silicon

Valley has gone through several such waves and is now considering what the next step should be. It is not clear whether this is also the case here in BC with the existing group of companies.

FIGURE 4
The Evolution of Silicon Valley, 1950–2000



Source: Joint Venture: Silicon Valley Network, from Web site: <http://www.jointventure.org>

The new media sector in BC exhibits some characteristics of a cluster, but it is not clear if it is developing into a cluster with enduring potential. It is possible that in fact it is not a cluster at all. We propose two possible explanations for the current phenomenon.

- This is a cluster, but one that we are fortunate enough to study during its very birth, with all the attendant difficulties and problems it is encountering. This process is further complicated by the speed of the industry in which it is operating.
- This is not a cluster, although it does have many cluster characteristics. It is a whirlwind of activity focused on the technological excitement of new media industry. It has had to develop some cluster dimensions, but in fact, it does not contain sufficient momentum or cohesion to ever become a cluster.

Is it possible to know which of these best defines the activities and the structure of the new media industry in BC? While we do not know how the evolving new media industry in BC is best defined, we contend that this short analysis is able to examine an evolving phenomenon that is not documented elsewhere in the literature.

NOTE

¹Kitsilano — a “trendy” neighbourhood in Vancouver, famous for its beaches, restaurants and shopping.

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