

Understanding the ISRN conception of clusters: How metaphors both reveal and conceal

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Introduction: The “Cluster Craze”

Clusters are geographic concentrations of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and any other entities important to competition.... Many clusters include other institutions-- such as universities, standard-setting agencies, think tanks, vocational training providers and trade associations-- that provide specialized training, education, information and technical support. (Porter, 1998, p.78)

This definition is taken from the work of cluster enthusiast Michael Porter who is recognized as having inspired most of the scholarship around clusters that is prevalent today (Martin & Sunley, 2003). While Porter is most commonly associated with the cluster concept, many of the ideas he has popularized were first articulated over a century ago in Alfred Marshall's *Principles of Economic* (1890) in which he discusses “the concentration of specialized industries in particular localities” (Martin & Sunley, 2003, p. 7). In the past decade, the number of studies on clusters has exploded (Malmberg & Maskell, 2001; Martin & Sunley, 2003; Wolfe & Gertler, 2003). For instance, academics across a wide range of disciplines have embraced investigating clusters (Forsman & Solitander, 2003). Moreover, international bodies such as the Organization for Economic Co-operation and Development have expressed a growing interest in how cluster formation and growth can help foster national systems of innovation. In addition, national, regional and local policy-makers across the globe have become increasingly concerned with identifying and understanding clusters, as clusters are viewed as contributing to both competitiveness and economic development. Consulting firms have also begun to appear willing to contribute to this rising fascination with clusters. (Martin and Sunley, 2003)

Canada has not remained immune to the recent “cluster craze”. In 2001, the Social Science and Humanities Research Council (SSHRC) approved a \$2.5 million five-

year initiative, *Innovation Systems and Economic Development: The Role of Local and Regional Clusters in Canada*. This project provides the funding for the Innovation Systems Research Network (ISRN) to examine the “impact and importance of cluster-driven innovation in Canada” (ISRN web, nd). Identified as “the first of its kind in Canada”, this study is designed to “investigate how local networks of firms and supporting infrastructure of institutions, businesses and people in communities across Canada interact to spark economic growth” (ISRN web, nd).

Despite this renewed enthusiasm, some work has emerged which attempts to explore the cluster concept in a more reflexive manner. For instance, both Malmberg and Maskell (2001), and Martin and Sunley (2003), highlight some of the contradictions implicit in the theoretical assumptions guiding recent studies of clusters, indicating also some of the measurement problems that this “elusive concept” can introduce at an empirical level. This paper is inspired by this sort of critical scholarship, as it encourages a careful appraisal of how language can work in helping to shape material outcomes in the social world. Since the word “cluster” can function metaphorically the insight supplied by current theories about metaphor serves as the primary departure point for this analysis.¹ More specifically, this discussion considers how the cluster metaphor is presented within the texts of the ISRN project. Key questions that are addressed include: how does the cluster metaphor function within ISRN documents; how do metaphors help to shape particular methodological and theoretical approaches to the study of clusters; and how might metaphorical constructions be modified to permit different spaces for future research and avenues of policy development in Canada? Accordingly, this paper gives a brief background into the ISRN study for those readers unfamiliar with the

project. Justification as to why contemporary theories of metaphors may be useful for evaluating the ISRN project is then supplied. A brief review of the methods used to explore the ISRN texts is provided next, followed by a presentation of the research results and an interpretation of the findings. Finally, some possible areas for future research, informed by theories of metaphor, are identified.

Background: The ISRN Cluster Study

The ISRN is an integrated network of scholars within Canada that also involves international collaborators and domestic partners from all three levels of government, the private sector and not-for profit organizations. One of the central goals of this research network is to “enhance Canada’s innovative capacity for the 21st century” (ISRN proposal, nd). An understanding and appreciation of clusters as sites where innovation occurs thus forms a critical part of the ISRN research agenda.

According to the ISRN proposal on the cluster project, the research agenda draws inspiration from two central bodies of literature. The first is the current work on regional innovation systems (RIS), which emphasizes how “the institutional and cultural environment of a region interacts with the activities of private firms to influence the innovation process” (ISRN proposal, nd). A regional focus is considered critical because “space and proximity contribute to the sharing of tacit knowledge and the capacity for learning” which is recognized as essential to the innovation process (ISRN proposal, nd). Innovation is positioned as a system “rooted” in a complex set of relationships between inter firm dynamics and the broader context in which these relationships and dynamics are embedded. The RIS perspective presents innovation as an “interactive, social and

learning process” (ISRN proposal, nd). The other body of work that the ISRN study engages with, not surprisingly, are discussions around clusters. More specifically, from the cluster literature they draw upon those scholars who are trying to unravel why the shift towards a more knowledge-based economy is increasing the tendency for firms to cluster and become more specialized and interdependent (ISRN proposal, nd).

The ISRN project proposal suggests that most of the work to date on clusters has adopted a relatively static framework oriented around “the compilation of lists of factors contributing to the development of innovative economies” thus not effectively capturing the dynamics and historical evolution of how clusters have emerged (ISRN proposal, nd). In addition, most cluster studies today remain focused on the success stories of high tech industry, paying minimal attention to those areas struggling economically but still showing some tendency to cluster, or to non-technology related clusters. To remedy these gaps, the ISRN approach attempts to provide a more balanced view of clusters across Canada by studying a range of clusters in different industries. They also intend to try and capture some of the historical dimensions of clusters that are commonly overlooked.

The ISRN study of clusters is designed to examine “wherever possible the same type of industry in two or more regions in Canada” and also to document “multiple industrial cases in the same region” (ISRN, 2000). Based on the knowledge and expertise of ISRN members, over twenty clusters were “selected” across the country to be studied.² These regional case study clusters include: biomedical ((Montreal, Toronto, Vancouver, Ottawa, London, Saskatoon and Halifax); information and communication technology, photonics, wireless, and e-commerce (Vancouver, Calgary, Waterloo, Ottawa, Quebec

City, New Brunswick and Cape Breton); mechanical engineering, aerospace, and steel and auto parts (Montreal and Southern Ontario); multimedia (Montreal, Toronto and Vancouver); food and wine (Southern Ontario, Niagara Region and the Okanagan); and resource industries including wood products (British Columbia) and mining supplies and services (Sudbury).

The methodological approach for the project includes administering a survey to compile data on these clusters (Wolfe & Gertler, 2001, p.5). In addition, the initiative employs a case study approach in which in-depth interviews are used to capture the following cluster characteristics: the size and composition of the cluster; the history of the cluster; the relationship between firms; the relationship between firms to a research infrastructure; the geographical structure of these relationships; the role of financial and social capital; and other factors contributing to the growth of the clusters (Wolfe & Gertler, 2001, p.5). At present, the ISRN has published two major books documenting the project's findings: *Clusters Old and New: The Transition to a Knowledge Economy in Canada's Regions* (2003) and *Clusters in a Cold Climate: Innovation Dynamics in a Diverse Economy* (2004). As the project concludes, the ISRN is moving into the final phases of its research dissemination. This paper acknowledges from the outset that the ISRN work provides a much needed contribution to cluster research in Canada; however the central task of this discussion is to critically examine how "cluster" metaphors functions in specific ISRN texts and consider how these metaphors might be reformulated to offer additional insight.

Theoretical Considerations: What is Metaphor and Why is it Important?

Metaphor is one of the many “twist and turns” of both speech and written texts that constitute a play on words—the tropes (Tilley, 1999, p.3). Other tropes that are often studied in rhetorical analysis include metonyms, synecdoches and irony. Nevertheless, metaphor is considered by many to be the most complex and therefore the most appealing figure of speech open to investigation (Tilley, 2000, p. 4). The Greek roots of the term are *meta* which means “over” and *phereras* which means “to carry” (Foss, 2004, p.), thus encapsulating what it has come to represent in more modern terms: “a device for seeing something in terms of something else” (Burke, 1945, p.503) or “understanding and experiencing one kind of things in terms of another” (Lakoff & Johnson, 1980, p. 5). Lakoff and Johnson (2003) suggest that one of the best ways to describe a metaphor is as consisting of three parts: the source domain, a more concrete object generally based on sensory experiences in the material world; the target domain, an abstract concept not easily expressed in literal terms; and the mappings, or the bridge in between the target and source domains, which permits individuals to cognitively appreciate the juxtaposition of the two domains (p.265). Thus in the example **LOVE IS A JOURNEY** the target domain is “love” and the source domain is “journey”.³ The conceptual correspondences, or mappings, between the source and target domains include: the travelers as the lovers; the vehicle as the love relationship; the destination as the purpose of the relationship; the distance covered as the progress made in the relationship; and obstacles along the way as the difficulties encountered in the relationship (Kovecses, 2005, p. 6). Put another way these conceptual mappings (i.e. the travellers, vehicles, destinations and obstacles) all

contribute to “codifying” the metaphor of **LOVE IS A JOURNEY** into a concept we can understand.⁴

Historically metaphor has often been treated as “an interesting sidelight to issues concerning the ‘correct’ use of language” (Hamilton, 2000, p. 239). Such a view positions metaphors as “rather unimportant, deviant, and parasitic” forms of communication (Ortony, 1979, p.2). Aristotle, one of the first theorists to offer an extended treatment of metaphor, is considered an early example of this classic thinking about metaphor. Aristotle recognized the value of metaphor’s aesthetic appeal: “metaphor gives clearness, charm and distinction to style” (Aristotle quoted in Foss, 2004, p. 300). Nevertheless he presents metaphors as “primarily ornamental... and not necessary” (Ortony, 1979, p.3). In addition, like his teacher Plato, Aristotle also saw the potential of metaphor to deceive and corrupt (Hamilton, 2000, p.239). Many thinkers who subsequently wrote of metaphor continued to perceive metaphors as a “decorative” part of speech that could be easily manipulated to deceive others (Foss, 2004, p. 300). It has been suggested that this historically suspicious analysis of motives lying behind most metaphor “has done considerable intellectual damage to the concept” (Tilley, 1999, p.10).

Contemporary theories of metaphors, such as the one first advanced by Lakoff and Johnson (1980) in their seminal work *Metaphors We Live By*, offers a sharp contrast to such classic views of metaphor. For instance, in the first paragraph of their opening chapter they assert:

Most people think we can get along perfectly well without metaphor... we have found on the contrary, that metaphor is pervasive in everyday life, not just in language but in thought and action. Our ordinary conceptual system, in terms of which we both think and act, is fundamentally metaphorical in nature (Lakoff & Johnson, 1980, p. 3)

As this quotation reveals, Lakoff and Johnson (1980) see metaphor as an important analytic departure point for those interested in understanding the dynamics of the social world. Unlike previous thinkers who presented metaphors as only marginally important, they suggest metaphor is as an essential part of how of we communicate and respond to the environment around us:

Metaphor is not a harmless exercise in naming. It is one of the principle means by which we understand our experience and reason on the basis of that understanding. To the extent that we act on our reasoning, metaphor plays a role in the creation of reality. (Lakoff & Johnson, 1987, p.79)

Thus, according to Lakoff and Johnson (1987) metaphors have real material consequences. People not only think in metaphor but also the metaphors they use actually shapes their reality. For example, Lakoff and Johnson (1980) suggest that ARGUMENT IS WAR is a key metaphor within our current cultural context. Consequently, people talk about arguments using war-like terminology. This is expressed in statements such as: “your claims are *indefensible*”; “I *won* the argument”; and “he *shot down* all that I said” (Lakoff & Johnson, 1980, pp. 4-6). Moreover, individuals also act as though arguments are battles, though they are not in actual combat, by treating the people they are arguing with as opponents and by structuring their argument to try and achieve victory (Lakoff & Johnson, 1980, pp. 77-82). In contemporary theories of metaphor, metaphors are positioned as playing a pivotal role in structuring social interaction. Consequently, accepting this view of metaphor involves questioning how the metaphors about clusters used by the ISRN function; and also how these metaphors impact specific theoretical and methodological approaches to studying clusters.

Why do we use metaphors to communicate? According to Tilley (1999), metaphors are necessary because of “inherent problems in the precise relationships between a world of words and a world of things, events or actions” (p.6). Tilley (1999) offers three possible ways to think about why we have metaphors, which are not mutually exclusive. The first is the notion that metaphors provide a way of giving form to ideas and descriptions of the world that are virtually impossible to create by using literal language. Metaphors permit individuals to connect objects and events that appear empirically disparate and unconnected and link abstract ideas to concrete thoughts. In many ways metaphors allows for “imagination to be put into action” (Tilley, 1999, p.7).⁵ A second reason for using metaphor is because metaphors “provide the simplest or most parsimonious means of communication between socialized individuals” (Tilley, 1999, pp.7-8). Metaphors, allow people to put complex ideas into fewer words. Finally, metaphors may “facilitate the capturing of our phenomenological experience of the world in a unique way” (Tilley, 1999, p.8). In this sense, metaphors help to link objective and subjective realities in a vivid and memorable manner. In sum, metaphors may be required when literal words do not adequately capture what needs to be expressed; when the complex phenomenon of the world need to be translated into more simplistic terms; and when a lasting impression, or creating a vivid image, is the desired outcome. This allows us to question why in specific empirical instances, such as the ISRN study, metaphors are necessary.

While metaphors have many positive uses, another key dimension that contemporary theories of metaphor have highlighted is that metaphors always mask or hide specific components of how we interact. As Lakoff and Johnson (1980) note,

metaphorical structuring is always partial and never total: “if it were total one concept would be the other, not merely be understood in terms of it” (p. 13). Or as Burke (1966) states, no matter how much individuals believe they are representing reality, they are only ever able to offer a “selection a reality” (p. 45). With each metaphorical exchange, people are involved in the process of directing intentions in a particular manner.⁶ Lakoff and Johnson (1980) also assert that metaphors have the ability to become such a natural part of our conversation, so self-evident, that we often forget that alternative metaphors and language is available (pp. 17-18). Finally as Black (1993) notes, metaphors have the potential to “self-certify” by generating the very reality to which they seem to draw attention (p. 35). These observations highlight some other areas requiring reflection which include: what might be missing in the partial picture of the metaphors around clusters that are being examined; and, are the cluster metaphors so powerful in the ISRN work that they now help generate the very reality that researchers want to observe? Remembering of course that metaphor is not implicitly a direct misrepresentation or manipulation of the social world but rather “a mode of representation that can be used, abused and contested” (Tilley, 1999, p. 10).

Similar to cluster research, there has been a growing interest in metaphors across various academic disciplines in the past decade (Hellsten, 2002, pp. 13-15). Limited not only to the domain of cognitive linguistics (Stern, 2000), discussion of metaphors can be found in recent work in a wide range of areas including: archaeology and anthropology (Tilley, 1999), communications (Smith & Tuner, 1995), education (Nicoli & Edwards, 2000), health (Hellsten, 2002), information technology (Gozzi, 1999; Hamilton, 2000), innovation and knowledge creation (Nonaka & Takeuchi, 1995), law (Winter, 2001),

management (David & Graham, 1997; Kirby & Hunter, 2002) and political science (Lakoff, 2002; Santa Ana, 1999; Straehle et al., 2002). Each of these works diverges slightly in their approach to the study of metaphor. For example, some studies begin with a particular metaphor in mind that is circulating in popular discourse and try and understand and interpret how this metaphor functions. Such a method is evident in Kirby and Hunter's (2002) exploration of the "managing diversity" metaphor in practitioners-orientated texts and consultant websites and Nicoli and Edwards's (2000) examination of how the "lifelong learning" metaphor is taken up in a United Kingdom government Green Paper. Another strategy involves searching for existing metaphors within a specific type of discourse. For example, David and Barker (1997) investigate the "epic metaphors" found in a management speech, and Santa Ana (1999) identifies the "anti-immigration" metaphors circulating in the mass media during a Californian political campaign. While the metaphors studied and the avenue pursued in each of these articles varies, this research taken collectively provides a convincing and engaging account of how metaphors function to guide both thinking and actions. This discussion is intended to provide another example of the value of exploring metaphor by examining how this trope functions in the ISRN's investigation of Canadian cluster.

Methodology: Guidelines to Metaphor Analysis

The central question guiding this paper is what metaphors to describe clusters can be found in the ISRN texts? Overall, the method that helped answer this query came from the guidelines offered by Gozzi (1999) regarding how to do a metaphorical analysis. The steps which Gozzi (1999) recommends include: identifying the metaphor; exploring

how the metaphor works and its implications; considering alternative metaphors; and reflecting upon why the metaphor is used (pp. 70-74).

In order to follow the first step in Gozzi's (1999) formula, identifying how the cluster metaphor functions, some specific texts had to be reviewed. The three documents selected for analysis are identified and described below:

Document Name	Year	#of references to cluster
Initial Project Proposal	nd	93
Introductory Chapter to <i>Clusters Old and New</i>	2003	33
Introductory Chapter to <i>Clusters in a Cold Climate</i>	2004	193
		Total: 319

The first document analyzed was the ISRN Initial Project Proposal. This twenty page document outlines the research objective, the context of the project (which includes a review of relevant scholarly literature, the relation to on-going research and a theoretical framework) and also offers details about the team, training, collaboration, management and networking. The second document reviewed was the introductory chapter to *Clusters Old and New* (2003) by Wolfe and Gertler, entitled "Clusters Old and New: Lessons from the ISRN Study of Cluster Development". In just over thirty pages this chapter provides an introduction to some of project's specific case studies. This chapter also looks at methodological approaches to cluster studies, pulls out some key themes in the literature and then discusses some lesson learned. The final document that was examined is the introductory chapter to *Clusters in a Cold Climate* (2004) by Wolfe and Lucas, "Introduction: Clusters in a Cold Climate". This chapter is a ten page reflection upon the status of the ISRN case studies within the context of a changing policy environment. The

mixture of documents was intended to provide a relatively balanced sample of how the ISRN discusses clusters.⁷ Upon initial evaluation the sample selected appeared to offer a rich source of data. As Table 1 indicates, in total 319 examples of how the word cluster was used in the texts were reviewed and considered.

In terms of following Gozzi's (1999) next step, deciding how metaphor works and considering its implications, Foss (2004) provides some useful methodological guidance about how to proceed. Her first suggestion is to examine the artifact "as a whole" to gain a sense of the "complete experience" (p. 303). Secondly, Foss (2004) recommends "isolating" and "sorting" the metaphor and looking for patterns in metaphor use (pp. 303-304). According to Foss (2004), the implications of the metaphor can emerge through a consideration of how the various patterns fit together factoring in the principles of "frequency and intensity of use" (p.303). Thus identifying the different uses of the word cluster and attempts to see what sorts of patterns emerged in the documents formed an essential part of the methodology that was followed. In addition, Lakoff and Johnson's (2003) insight that metaphors should be thought of as including both a target domain and a source domain was instrumental for deciding how best to present the results. After specific cluster metaphors were identified in the texts, an effort was made to map the relationship between the source and target domains that were present within the ISRN documents.

To complete the final steps recommended by Gozzi (1999) -- considering alternative metaphors and reflecting upon why the metaphor is used-- some ideas emerged when interrogating how complete the conceptual mappings of the cluster metaphors actually were in the ISRN texts. Moreover, beginning to think about the

cluster metaphors in a more critical fashion also helped to highlight some possible areas for future research about clusters.

Research Results: Examining the Cluster Metaphors

The ISRN project uses Porter's (1998) definition of a cluster, which is a geographic concentration "of interconnected companies and institutions in a particular field" (p.78), to help clarify what is meant by the term cluster. Nevertheless, a detailed analysis of the cluster language within the ISRN documents indicates that there are at least four prevalent metaphorical conceptions of clusters which also help to explain this relatively abstract concept in more concrete terms.⁸

In the ISRN texts reviewed, one of the most evident cluster metaphors was that of **A CLUSTER AS A PERSON**. Word choices within the documents clearly illustrate that clusters are often imagined to exhibit very human motivations, characteristics and activities. For example, the introductory chapter of *Clusters in a Cold Climate* discusses the "*youth* and instability of many of the clusters" (Wolfe & Lucas, 2004, p. 4). This chapter also notes:

The central role of large public sector research institutes both in *giving birth* to the cluster and *sustaining* knowledge *flows through it*. (Wolfe & Lucas, 2004, p. 7)

Moreover, in the opening chapter of *Clusters Old and New* more discussions of clusters in quite personal terms are evident:

The most discerning test of a "true" cluster dynamics is one that assesses the alleged clusters *resilience* and *robustness* over time, in the face of severe shocks and dislocations. (Wolfe & Gertler, 2003, p.31)

Additional examples of how clusters characteristics were mapped against specific human qualities in the ISRN texts reviewed are summarized and presented below:

Table 2.
EXAMPLES OF THE MAPPING OF A CLUSTER AS A PERSON FOUND IN
ISRN TEXTS

PERSON (Source)	CLUSTER (Target)
Traits	Dominant, Bona fide Case, Impostor,
Life Cycle	Born, Grow, Develop, Evolve
Activities	Perform, Innovate
Personality- Has Characteristics	Weak, Strong, Celebrated, Resilient, Robust, Innovative
Diversity	Local, Regional, talk of the individual cluster as part of a larger group of clusters
History	Origins
Parents	Research Institutes and Firms
Source of life- Blood	Source of life- Knowledge Flows

An interesting observation that can be drawn from this table is the generally positive human qualities given to clusters within the texts. Examining this metaphorical usage also highlights an advantage of the ISRN methodology, in its aim to investigate the origins and life-cycle of a specific cluster if offers more than simply a snapshot of a cluster at a specific moment in time.

A second metaphor that was prominent in the ISRN documents is that of **A CLUSTER AS A PLANT**. An excellent textual representation of this metaphor is found in the introductory chapter to *Clusters Old and New* (2003):

Other analysis place greater emphasis on the role that highly skilled labour, or a unique mix of skills assets, play in *seeding* the *growth* of a cluster. However, this process also requires a long time to *take root*. (Wolfe & Gertler, 2003, p.19)

This example helps to highlight some of the plant imagery that emerges in specific discussions of clusters. A summary of how this metaphor functions in the ISRN texts in terms of a conceptual mapping of the plant as the source domain and the cluster as the target domain is offered in Table 3, which is presented below:

Table 3.
EXAMPLES OF THE MAPPING OF A CLUSTER AS A PLANT FOUND IN ISRN TEXTS

PLANTS (Source)	CLUSTER (Target)
Life cycle	Has a measurable growth rate, viability
Come from seeds	Seeding of a cluster
Have roots	Roots and rooted
Garden	Economy
Gardeners	Policy-makers

The idea that clusters can be “grown” emerges frequently throughout the text. The use of this metaphor may help explain why there seems to be a belief that uncovering best practices about clusters may be of use; if firms or regions can replicate the specific conditions of growth then it might be possible to achieve similar levels of success across various industries or in different localities.⁹

A third metaphor that appeared in the analysis of the ISRN texts was that of the **A CLUSTER AS A FORCE**. In several instances, clusters are noted to have a particular power and strength. For example, Wolfe and Gertler (2003) state:

The cluster itself can act as a *magnet drawing* skilled labour to it.... (Wolfe & Gertler, 2003, p.21)

The conceptual mappings of how clusters were articulated in terms of being a force in the texts reviewed are summarized and presented in Table 4:

Table 4.
EXAMPLES OF THE MAPPING OF A CLUSTER AS A FORCE FOUND IN ISRN TEXTS

FORCE (Source)	CLUSTER (Target)
Directionality	Trajectories
Field	Magnetic, Attraction
Power	Boosts the economy

It is worth noting that perhaps because so little is known about the target (the cluster) a relatively abstract source (force) is still being deployed to help increase our understanding of the concept.

A final metaphor that is not as explicit in the ISRN texts about clusters but emerges from analysing the way partial sentences work together metaphorically in the documents is the metaphor of **A CLUSTER AS AN ASSOCIATION, OR AS AN “ELITE CLUB”**. Partial sentences which contribute to this interpretation are the discussions of the “benefits” of clustering, references to the “members” and or “participants” of clusters and the suggestion that clustering is a spatially bound phenomenon. Table 5 helps to capture the way this metaphor was mapped based on the contents of the ISRN texts:

FORCE (Source)	CLUSTER (Target)
Members	<i>Concrete Members-</i> Firms, Anchor-Firms, Entrepreneurs, Universities <i>Abstract Members-</i> Social Capital
Benefits	Shared resources, Technology and Knowledge sharing
Marketing	Cluster brand and Cluster marketing
Self-contained with Specific spatial boundaries	National, local, IT, bioscience, industrial, specialized, celebrated, global, telecommunications, wireless, etc.

This notion of a cluster as a self-contained association, or as an “elite club”, is an interesting one. The ISRN texts generally implies that membership in a cluster has real benefits and advantages. This seems to suggest that the boundaries of the clusters can be easily identified. In addition, it is worth noting that the members of the cluster

association that were most often discussed were the firms, as opposed to focusing on individuals.

Interpreting the Results: What the Cluster Metaphors Reveal and Conceal

These findings can start to be contextualized by revisiting the initial questions this paper raised about the metaphors in the ISRN texts. The first questions are: how do the cluster metaphors within the documents help to shape particular methodological and theoretical approaches to the study of clusters; and, how might the use of these metaphors be extended in a more critical manner? Most of the metaphorical associations attributed to clusters within the ISRN texts are positive. The idea that clusters can be born, grown, seeded, and, or developed, provides the impression that clusters are ultimately a progressive phenomenon. In addition, a cluster's noted ability to attract desirable features (such as talent) and offer benefits to members (for instance shared resources) offers a sense that clusters are generally a beneficial phenomenon. Very few negative or discouraging images were presented in the documents analyzed.

This positive tone is not however because the cluster metaphors could not be used to highlight the disadvantages associated with the cluster concept, so that this research might be of even better use to policy-makers. For instance, in contemplating the mapping of the **A CLUSTER IS A PERSON** metaphor, it is possible to note that if clusters are thought to have life-cycles then the different stages of the cluster life-cycle may impact regional development in very different ways. Efforts could be made to link the birth, growth, maturity and even death of a specific cluster, to a local, regional, national, or even global fitness landscape. Recognizing of course that measuring such

linkages would not be easy, as systems of innovation, economic growth and securing a competitive advantage, are not solely contingent on the presence or absence of clusters.¹⁰ Moreover, when thinking about the **A CLUSTER AS A PLANT** metaphor more critically a key issue is whether or not the ISRN work, or any research on clusters for that matter, should try and provide best practices around how to imitate or replicate the growth of a particular cluster. How helpful are best practices if the conditions for encouraging economic growth, innovation, and competition both between and across firms, are all quite context specific? A useful question thus becomes are there any generalizations that can be reached which might help policy-makers grappling with making decisions about such matters? Furthermore, when considering the metaphor of **A CLUSTER AS A MAGNETIC FORCE** it is feasible to start investigating those businesses and organizations that clusters manage to exclude as well as those they attract. Are some opportunities in regions possibly being lost because of clustering? Finally, in evaluating the **A CLUSTER AS AN ASSOCIATION OR AN “ELITE CLUB”** metaphor some questions worth examining include: should the analytic focus of membership be on a study of firms; and should local and regional policy development be largely centered on encouraging clustering or might this marginalize other non-cluster related activities?

As Martin and Sunley (2003) have aptly noted with all the “claimed advantages” of clusters (such as higher levels of innovation, economic growth, employment, new firm formation, productivity, increased profitability and competitiveness) there are “potential disadvantages” (which include technological isomorphism, labour cost inflation, local congestion, environmental pressures, institutional lock-ins, widening income disparities

and over-specialization) (p. 27). Ensuring that there is an effort to grapple with both the limitations and opportunities of clusters seems crucial if the ISRN research results are to be translated into practical policy recommendations.

A second question requiring additional reflection is what might be missing from the cluster metaphors? Here it is of use not only to think about some ways that the current metaphors can be expanded (as the preceding paragraphs have attempted to do) but also about what other sorts of metaphorical and more literal terms might be more helpful in discussing regional systems of innovation. Again, Martin and Sunley (2003) provide some direction regarding alternative terminology, drawing primarily from the work of economic geography that has been largely ignored by cluster studies thus far. Such possibilities include: “industrial districts”, “new industrial spaces”, “territorial production complexes”, “neo-Marshallian nodes”, a “regional innovation milieu”, “network regions” and “learning regions” (Martin & Sunley, 2003, p. 8). By considering other language it may become easier to evaluate whether the cluster concept is valuable or actually moves the ISRN further away from unpacking the intricacies of how innovation works. Addressing such questions may also strengthen the relevance of the ISRN’s findings for policy-makers.

A third question needing further deliberation is why it is that we need these metaphors? Perhaps, we need the cluster metaphors because researchers require a vivid way to capture people’s imagination when discussing their work. Alternately, such metaphors may be necessary since processes such as innovation and competition that are so often linked to clusters are hard to capture in literal terms--as they are a part of cluster members tacit knowledge of the world-- because they themselves are concepts replete

with metaphorical entailments and linkages (e.g. the notion of knowledge transfers and the idea of social capital). While a clear cut answer as to why cluster metaphors are required may not be easy to determine, it is still possible for the ISRN project to start thinking critically about the real value of the cluster label for explaining and interpreting the results of the various case studies they have investigated. It is also feasible to interrogate that if our knowledge about clusters is still largely tacit what sorts of factors might be needed to make our knowledge about innovation more explicit?

As the ISRN moves towards the final phase of disseminating its research results they are well positioned for a possible reformulation of the cluster metaphor. Since the ISRN represents the “expert” voice on clusters in Canada, there is an opportunity to evaluate the overall notion of a cluster and its accompanying metaphors and ask: how useful are these metaphors to our research objectives; do these metaphors limit the scope of our discourse; and how might we start to redirect our theoretical conversation to include other lines of inquiry, particularly as it relates to innovation?

Concluding Thoughts: Future Research Possibilities on Metaphor and Clusters

This analysis of metaphor is not meant to be exhaustive. As Turner and Smith (1995) note, language is always dependant on the process of social negotiation, thus a metaphor analyst should be willing to “embrace the idea of endless chains of metaphoric signification” (p. 159). Consequently this reading and interpretation of the cluster metaphors in the ISRN texts, while allowing some patterns to be identified, is not meant to be perceived as final or complete. Nevertheless, this investigation is intended to serve as a departure point for encouraging further reflection about the conceptual mappings

found within the ISRN cluster initiative texts and the value of metaphor analysis as a tool for better understanding the knowledge creation process in research and policy-making.

Areas of future research that might expand upon the “reflexive spirit” encapsulated in this study include an exploration of how the cluster metaphor has been articulated both within and outside of formal academic research discourse. For example, do different members within pre-determined clusters (entrepreneurs, universities, and or firms) share a common understanding of this term? Do these members draw upon the same metaphors for comprehending clusters? If not, one would expect how they interact within the cluster could vary considerably. Also do different academic discourses about clusters vary (for instance does the OECD work draw upon different metaphors to describe clusters than the work of the ISRN or that of Porter)? Moreover, has the manner in which clusters have been explored and discussed shifted over time, or have the metaphors and knowledge emerging around clusters remained relatively consistent? In addition, are clusters something that the popular press has taken up when discussing innovation and competition at a local, regional, national or even global level; or is the cluster concept almost exclusively confined to institutionalized academic exchanges?

In presenting the research findings of this analysis, this paper has raised more questions than answers about the future directions of the ISRN’s approach to “clusters”. Nevertheless this discussion has attempted to offer a more critical framework for thinking about cluster metaphors within the Canadian research context. In doing so, it is hoped that this study has also fostered a renewed appreciation for the power of language, especially metaphors, to structure and shape how we think about and investigate the social world.

Notes

¹ The definition of metaphor being used in this paper is that taken from Lakoff and Johnson (1980), “understanding and experiencing one kind of things in terms of another” (p.5). Their definition highlights the fact that certain concepts may help us comprehend the abstract notion of cluster more clearly and will also impact the manner in which clusters are studied.

² The terms “selected” is relevant here as the ISRN project treats clusters as a real phenomenon that can be easily identified for analytic purposes, when in fact these clusters are simply an arbitrary entity to which the ISRN has ascribed specific spatial and industry bound characteristics. In the initial project proposal it is suggested that the list of clusters was “developed in consultation with network members and partners from across the country” and has been designed to “reflect the diversity in composition of Canada’s various regional economies”. The implication of using quite loose categories of selection regarding what constitutes a cluster seems worthy of some additional reflection. In the ISRN’s eagerness to investigate clusters, have they done what Martin and Sunley (2003) caution against: “put the promotional before the analytic horse” (p.21)? Should more rigour have been applied to the initial selection of specific clusters in Canada? Is such rigour even possible with a concept as elastic as a cluster?

³ Lakoff and Johnson (1980) always capitalize the conceptual relationship as TARGET-DOMAIN AS SOURCE-DOMAIN.

⁴ As Nonaka and Takeuchi (1995) note there are some interesting observations that can be drawn between the conversion of tacit knowledge to explicit (or codified) knowledge and the use of metaphor. Tacit knowledge can be defined as personal context-specific knowledge that is difficult to communicate and express; whereas explicit, or codified, knowledge refers to knowledge that is transmittable in “formal, systematic language” (Nonaka & Takeuchi, 1995, p.59). Nonaka and Takeuchi (1995) suggest that metaphors are essential for encouraging knowledge conversions in organizations. They note that metaphors are often used to help transform tacit concepts into codified knowledge. However, because metaphors are only a partial representation of such knowledge they encourage interaction amongst individuals and a process of collective reflection regarding what these metaphors really mean. (Nonaka & Takeuchi, 1995, 64-67 & 225, 231)

⁵ Nonaka and Takeuchi (1995) suggest this need to “put imagination into action” is why many organizations use metaphor. They state, “through metaphors, people put together what they know in new ways and begin to express what they know but cannot say...as such metaphor is highly effective in fostering a direct commitment to the creative process in the early stages of knowledge creation” (Nonaka & Takeuchi, 1995, p.13).

⁶ Latour (1999) takes this discussion of the social construction of knowledge one step further as he illustrates quite persuasively how this process works in an empirical setting. He traces how the experience of field work can come to be translated into more formal

academic discourse. Latour highlights that as we move from experiencing matters directly in the world, to attempting to communicate such matters through language, there will always be a gap in terms of what can be expressed. Moreover, aiming to understand what might be lost in the process of knowledge transfers, and why particular selections are made, can be quite illuminating.

⁷ It is worth noting that a limitation to this sample is that it is reflective of the early spirit of the ISRN work. Also the sample does not evaluate any of the specific case studies' use of metaphor.

⁸ Two other metaphors that appeared less frequently (only once) in the texts were those of the CLUSTER AS A CAR (which could be jump started) and the CLUSTER AS AN OBJECT (requiring glue to keep it together).

⁹ It is important to note that in its more recent work, the ISRN has moved away from encouraging best practice work.

¹⁰ Here Luhmann's (1995) and also Leydesdorff's (1996) work on complexity and systems theory may provide a useful theoretical departure point.

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