Clusters and Strategy in Regional Economic Development

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Abstract : Many economic development practitioners view cluster theory and analysis as constituting a general approach to strategy making in economic development, which may lead them to prioritize policy and planning interventions that cannot address the actual development challenges in their cities and regions. This paper discusses the distinction between strategy formation and strategic planning, where the latter is the programming of development strategies that are identified through a blend of experience, intuition, and analysis. Cluster theories and analytical tools can provide useful informational inputs into a strategy making effort and they can also be helpful for programming specific interventions (i.e., strategic planning). However, they should not be used as the exclusive or even predominant framework for filtering information about the competitive advantages of a region or for formulating strategy. To do so forces strategy making into a conceptual box defined by only one highly stylized theory of regional growth and development.

Keywords : Economic development strategy, industry clusters, strategic planning

요약 : 많은 지역개발 관련 정책결정자들이 클러스터 이론과 분석을 지역경제개발을 위한 일반적인 어프로치로 이해하는 경우가 많다. 이러한 관점은 흔히 정책결정자들로 하여금 실제 자신들의 지역이 처한 고유한 환경과 도전을 무시한 일률적인 정책 개입을 야기시킨다.
본 연구는 지역개발 정책에 있어 이론 뿐 아니라 경험과 직관, 분석 등을 종합적으로 중시하는 전략기획의 중요성에 초점을 맞추고 있다. 클러스터 이론과 분석은 이러한 전략기획의 과정에서 유용한 정보를 제공한다. 그러나 이것이 전략기획 과정을 아우르는 유일한 프레임이 되어서는 안된다는 점을 유념할 필요가 있다.
주제어 : 경제개발전략, 산업클러스터, 전략기획

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1. Introduction

The industry cluster has become an extraordinarily popular concept in economic development practice and research. In their ideal form, clusters are essentially the empirical manifestation of the mutually reinforcing influences of first-mover effects, conventional business agglomeration economies, localized technology spillovers, and geographical path dependence. Economic development strategies focused on clusters seek to leverage such forces to the advantage of a community, region, state, province, or nation. More than simply picking "winners," cluster policies attempt to marshal diverse resources and programs behind groups of related industries that have demonstrated some evidence of local competitive success (Rosenfeld 2002). The idea is to acknowledge the high degree of interdependence between firms, as well as between firms and supporting institutions (e.g., colleges, universities, industry associations), in the making of local economic development policy. It is hoped that doing so will reveal ways to maximize competitive synergies among businesses while minimizing barriers to entrepreneurship, innovation, and growth.

While some localities are trying to create wholly new clusters, most are trying to use cluster concepts and cluster analysis to help them capitalize on existing or nascent local industry strengths, perhaps by encouraging the formation of local industry associations, developing targeted training programs in technical colleges, easing regulatory burdens, and building university R&D strengths and associated technology transfer capabilities. Some regions are attempting to arrest decline in traditional clusters by cultivating related higher technology sectors that have better growth prospects and pay higher wages.

The rise in the popularity of clusters has been accompanied by considerable criticism and debate, much of it focused on the lack of specificity in the cluster concept, weaknesses in the assumptions underlying various cluster theories, the absence of substantial empirical evidence verifying the role clusters play in driving regional growth in income and employment, and concerns about the various methodologies that have been developed to analyze clusters. Cortright (2006) offers a recent systematic review of this extensive literature. He argues that scholars have been overly fixated on the lack of precision in the cluster idea and that clusters should be viewed as a useful "umbrella concept" for understanding how regional economies work, one that reminds development practitioners that firms and industries are related in multiple significant ways that have implications for economic development. Importantly, argues Cortright (2006, p. v), "cluster policy and practice are not...a one-size-fits-all approach to economic development."

I believe Cortright is basically correct in his assessment of the cluster literature and his interpretation of the value of cluster theories and cluster analysis for development practice. His perspective may portend a level of maturation in the academic and policy communities in which the flexibility of the cluster concept will be embraced as an asset rather than decried as a liability. However, I am not convinced that cautioning development organizations and the regions they serve to avoid viewing clusters as the sole or even predominant guide to economic development is enough. Development practitioners must understand *how* to prevent the theory of industry clusters—which is, after all, only one among many competing theories of regional development—from inadvertently and unduly determining development strategy. That requires practitioners to think carefully about how economic development strategy is made, specifically

how the process can be effectively framed, organized, and implemented.

I begin by discussing why development practitioners often associate clusters and cluster analysis with the making of development strategy. On the one hand, there is the close alignment that business management guru Michael Porter draws between clusters, competitiveness, and strategy. On the other hand, there is the lack of introspective attention that strategy formulation and strategic planning have received in regional economic development practice and research. Clusters seem to narrow the scope of potential data gathering and analysis in support of strategy development and planning, one important reason for their popularity among development professionals. I discuss why this is problematic and suggest some guides for using clusters and cluster analysis in strategy and planning efforts. Overall, I argue practitioners must take care that clusters do not "*become*" the strategy. Instead, clusters and cluster analysis should be used as devices for *uncovering* opportunities and for *programming* strategies arrived at with the help of multiple tools and perspectives.

2. Cluster Theory and Analysis in Development Practice

Mintzberg (1994, p. 107-8) defines "strategic thinking" as the creative and intuitive synthesis of information and experience to develop a vision of the path a business (or community) should take. Many economic development professionals have come to view cluster theory together with industry cluster analysis as a form of such strategic thinking. The reasons for this can be traced to two things: first, the influence of the most popular book on the cluster idea, Michael Porter's *The Competitive Advantage of*

Nations (1990), as well as Porter's subsequent work on industry clusters in his research (especially Porter 2003) and his busy international consulting practice; and, second, the relatively scant systematic attention paid to strategy making and strategic planning in development practice. Clusters and cluster analysis, as articulated by a very visible and convincing champion, have filled a kind of "methods of strategic thinking" void in the economic development field.

Porter's ideas were influenced by the heated debate over national competitiveness in the United States in the early to mid-1980s, a debate that came to shape substantially how states and localities in the U.S., as well as the federal government, view the proper role of the public sector in the economic development arena. Porter served on President Ronald Reagan's Commission on Industrial Competitiveness, which sought to "review means of increasing the long-term competitiveness of United States industries at home and abroad, with particular emphasis on high technology."(Executive Order No. 12,428,1983). The Commission was conducting its work at a time of stagnant U.S. productivity growth, heightened foreign competition (particularly from Japan), and a widespread perception in the U.S. that the social programs of the 1960s and 1970s had exploded the size of government, introduced excessive taxation and regulation, and generally eroded the U.S. business climate. The national mantra of the 1980s became "restoring competitiveness" by curbing regulation, reducing taxes, and increasing the flexibility of businesses to expand and contract labor in response to market forces. That federal policy mandate filtered down to the state and local levels in economic development through so-called second and third wave economic development strategies focused on small business support, entrepreneurship, technology transfer, and business financing (Eisinger 1988; Eisinger 1995;

Bradshaw and Blakely 1999).

It is in this political and economic milieu that Porter set out to investigate the forces influencing business competitiveness, measured principally by productivity. The prevailing view in mainstream economics at the time was that an individual enterprise's productivity is driven by internal business decisions, while economy-wide productivity is mainly a function of macroeconomic conditions, including factor conditions and monetary and fiscal policy (Porter, 1990). In *The Competitive Advantage of Nations*, an analysis based on extensive case studies of globally competitive industries in ten industrialized countries, Porter argued that important microeconomic determinants of productivity and productivity growth are not just internal to the firm-. They are also external, as reflected in the firm's operating environment and relations with other businesses and supporting institutions (including suppliers, but also competitors, government laboratories and universities). Porter's now famous "diamond" of competitiveness seeks to efficiently summarize those various forces and was especially novel in the degree to which it highlighted influences like a sophisticated base of demanding consumers, rivalry among competitors, and a deep mix of local suppliers as factors driving the competitiveness of specific businesses and industries.

Porter argued not only that governments should realize how important external conditions are to competitiveness, but that businesses themselves need to understand the direct stake they have in the quality of the external environment and their relationships with other businesses. It was a powerful rationale for bringing both the corporate and government sectors together to jointly resolve issues limiting business success and economic growth while simultaneously establishing restrictions on government intervention in economic affairs. Porter's perspective is distinctive

because it runs counter to the typical view in the U.S. that business should interact with government mainly so it can better communicate what business needs. In the cluster model, businesses should be at the policy table not just so that they may communicate their individual concerns, but also so that they can contribute directly and jointly to the strengthening of external (collective) conditions to the advantage of their own bottom lines and overall national productivity growth.

Porter initially claimed that globally competitive industries tend to—though do not always—co-locate, or cluster geographically. In *The Competitive Advantage of Nations*, the regional geography of clusters is a relatively small part of the story. In subsequent work Porter has defined industry clusters explicitly as "geographic concentrations of interconnected companies and institutions in a particular field" (Porter 1998, p. 78). Using his diamond theory, he argues that countries, states, and regions have much to gain by identifying their clusters and then using his model of competitiveness to identify strengths, weaknesses and growth opportunities in those clusters. His consulting practice with governments at all levels is extremely active and his teaching at the Harvard Business School has centered on the diamond as a competitive analysis and strategy formation tool.

It is not hard to understand why Porter's ideas have become so influential in U.S. economic development practice. He offers a model of how a place can grow —in essence, a regional growth theory—that is understandable and easy to explain to non-specialists, despite being ultimately based on much more formal and complex theories of innovation and externalities. It helps that the theory is verbal rather than mathematical, and that it is couched in a business vernacular that has much wider accessibility than the terminlolgy of

mainstream economics. It also helps that Porter's method of research was inductive. He points to successful cases for support, which makes the model more tangible than more formalized regional theories, something development practitioners prize. The framework is also accompanied by a political message that is now more or less widely accepted, although it was somewhat more controversial in the late 1970s and early 1980s when the question of industrial policy was vigorously debated. That message is that government's role in the economy should be a very modest one, directed mainly to creating a good tax, regulatory, and infrastructure environment for companies to succeed. It is a view that appeals to corporate officials and local economic developers alike. It communicates that government can be useful and also "business friendly-."

Most importantly for our purposes is that the concept of clusters appears to offer a convenient, manageable, and convincing framework for formulating regional economic development strategy. Business strategy—how to develop and implement it—is the subject of an enormous and sophisticated literature, of which Porter himself is an important contributor. Yet, strategy formation has been the subject of relatively little sophisticated thinking in local and regional economic development. Most U.S. development practitioners tend to view the making of strategy for *places*—as opposed to strategy for their own *organizations*—in the linear, analytical, and rational-comprehensive terms emphasized in early strategic planning models that have long since been discredited in the business field (Mintzberg 1994). Blakely and Bowman's (1985) model of the development planning process is not atypical (see Figure 1). The framework envisions five major stages in the creation of an economic development plan: information gathering and analysis, development planning (identification of goals and strategy formulation), building action plans, assembling the total action program, and action program implementation. The inference is that from analysis comes the knowledge of what to prioritize and do (the strategy) followed by the development of the steps required to realize the strategy (the plan itself).

One of the most vexing challenges in strategic planning of this type is identifying appropriate and useful information gathering and analysis. What methods should be used? What questions should be asked? What variables should be defined and measures created? How does one avoid collecting gigabytes of data and calculating hundreds of indicators only to discover that one is still not much closer to knowing what to do? Blakely and Bowman try to narrow the range of possible data collection and analysis by suggesting major categories for socio-economic and institutional study, but within those categories the scope of potential inquiry remains vast. In the recent version of his classic text on economic development planning, Blakely describes the same basic process but uses even broader categories for the analysis (Blakely and Leigh 2009).

Bounding the information gathering and analysis effort by using clusters as a conceptual frame of reference would seem to offer a solution to the conundrum. This is precisely the approach of "cluster-based" economic development planning approaches, such as that laid out by the World Bank.[1] The Bank describes cluster-based economic development as a four-stage process: 1) mobilization of interest groups and stakeholders; 2) a diagnosis phase that assesses

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[1] See http://go.worldbank.org/L70PF4QAM0.

Information Gathering and Analysis

Socio-economic Analysis

- Demographic
- Labor Market
- Economic System
- Community Services
- Physical/Locational
- Conditions
- Competitive Advantages

Institutional Capacity Analysis

- Political Institutions
- Economic/Commercial
- Financial Institutions
- Community Development Projects
- Social Development Programs
- Education and Training

Opportunities and Challenges

Preparedness

Development Planning

- Establishing Goals
- Determining Alternative Strategies
- Assembling a Strategy

Building Action Plans

- Define Inputs, Outputs, and Management Structures

Source: Blakely and Bowman (1986)

Assembling Total Development Action Program

- Detailed Feasibility Analysis
- Final Design and Business Plan
- Systems Developed for Monitoring and Evaluation

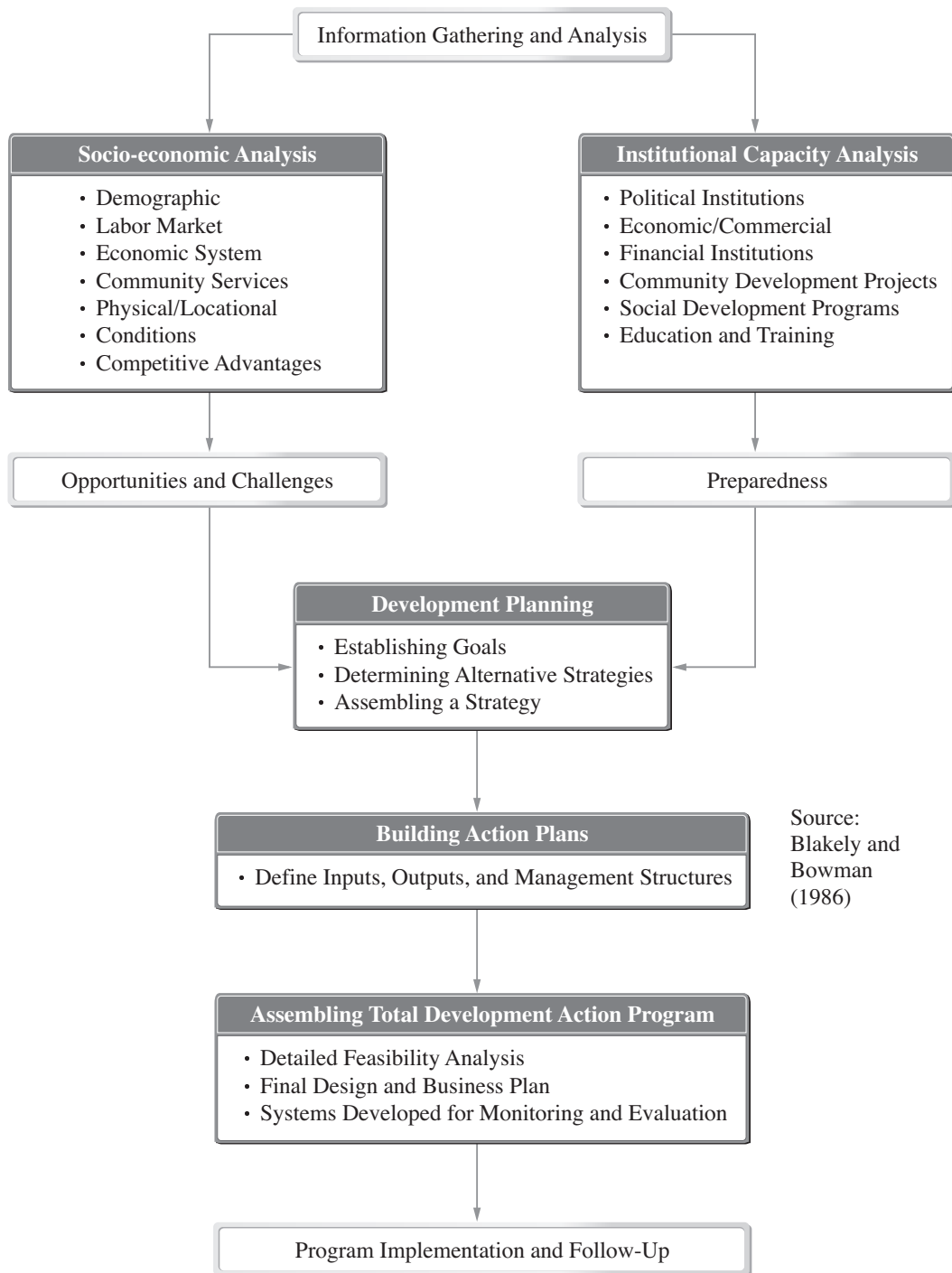Program Implementation and Follow-Up

Figure 1. A Hypothetical Development Planning Process

"the industry clusters that comprise the economy and the economic infrastructure that supports cluster performance"; 3) the development of a "collaborative strategy" designed by stakeholders in both the private and public sectors; 4) and an implementation phase driven by a cluster working group and possibly a dedicated cluster organization. In the World Bank's model, the analysis phase has clear objectives. Its scope appears to be sufficiently narrow to be manageable: conduct a systematic scan of the economy to identify clusters and the factors influencing their performance. From that analysis identify the opportunities and challenges that can be addressed in the development planning phase, where goals are established, alternative strategies proposed, and the actual strategy determined. Then prepare an action plan, action program, and process of implementation. Couple this solution to the comprehensive analysis dilemma with the other attractive features of the cluster concept noted above—the legibility of the theory, the implied benchmarks for prioritizing resources and investments, and the business-friendly political message—and you have a powerfully attractive model for economic development planning.

So what is the problem? One is that cluster theory does not provide nearly the useful "bounding" of regional economic analysis that it seems to on first inspection. Indeed, it turns out that identifying clusters is a very tricky business. Another problem is that using clusters as the organizing frame for economic development planning effectively takes strategy making out of the process; clusters and their promotion *become* the de facto strategy. To understand this, we need to reflect more carefully on the roles of strategic thinking and strategic planning in regional economic development.

3. Clusters as a Guide to the Regional

Information Scan

Assume that one accepts that identifying clusters and the factors influencing their competitiveness is an appropriate way to approach the information scan in a strategic planning exercise. How does one identify clusters? Presumably the answer is to be found in the theory of clusters and clustering, which should supply the operational definitions necessary to guide the analysis. But cluster theory, even Porter's own version, can at best be said to infer multiple operational definitions, each of which is fully consistent with plausible influences of clustering on regional growth and development. While a number of authors have discussed the many theories that contribute insights into clusters and cluster dynamics (e.g., Feser 1998; Gordon and McCann 2000; Martin and Sunley 2003), recent work by Maskell and Kebir (2005) makes this point very clearly.

Maskell and Kebir conducted a search of all published article titles, abstracts and keywords for the terms cluster or its plausible synonyms (agglomeration, geographical concentration, growth poles, industrial districts, etc.). They found 102 references to such terms in papers published from 1950 to 1980 and nearly 1,350 references since 1990. They seek to make sense of the volume and diversity of contributions by arguing that truly distinct theories of industry clusters must do three things: explain the "existence" of regional clusters, that is, concentrations of related industries such as automobiles in Detroit or computers in Silicon Valley; explain the "extension" of clusters over time, that is, their growth and performance once they are established; and explain the "exhaustion" of clusters, since today's competitive clusters are tomorrow's outmoded industries (think of bias ply tire manufacturing in Akron, Ohio or integrated steel in the Monongahela Valley of Pennsylvania). The authors

assert that only three bodies of theory qualify: Alfred Marshall's theory of industrial districts, Porter's theory, and the largely French theory of the innovative milieu.

Maskell and Kebir's distillation of those three theories and their implications for policy are summarized in Table 1. My purpose in constructing the table is not to review each theory, but rather to offer evidence that while there are some major similarities

Table 1. Three "Qualifying" Cluster Theories

	Marshall	Porter	Innovative Milieu
Existence	Centripetal forces derived from a) transport costs; b) dedicated infrastructure made possible via agglomeration; c) skilled labor pool; d) presence of specialized suppliers; e) rivalry; f) search costs; g) institutions.	Advantages of proximity: a) spread of aggressive rivalry; b) exchange of R&D; c) joint problem solving; d) information flow between customers and suppliers. Growing clusters attract like-minded, skilled people and entrepreneurs, reinforcing continuous innovation and growth.	A set of relationships between independent actors "develops spontaneously" in a place (territory) that creates a "localized dynamic process of collective learning" (p. 8); reduces uncertainty in innovation process.
Extension	Centrifugal forces from a) congestion, and related price increases for land, labor, goods and services; b) incompatible industrial uses.	Centrifugal forces as in Marshall.	Key role of local sets of values, defining relations between actors, both defines who is "in" and who is "out" of the milieu; the networks create a boundary to the cluster.
Exhaustion	Vital factor of production fully utilized, undercutting key location advantage	Ebbing domestic rivalry, regulatory inflexibility, industry technology lock-in, new technology eroding advantage, deteriorating factor conditions, changes in tastes /demands (undercutting product).	Individual interests can take priority over collective: 'opportunistic behavior causes defiance or the outward openness becomes in adequate to ensure the enlargement of new cooperative relations or the replacement of technologies' (Maskell and Kebir quoting Maillat 1998, p. 15).
Public Policy	*Infant stage:* • "Market conformist": help provide inputs in short supply • Maximize labor mobility • Targeted education and training investments • Enhance creativity and collaboration • Provide necessary physical infrastructure • Seed and venture capital • Targeted tax relief *Mature stage:* • No specific policies are appropriate *Decline stage:* • Support creative destruction by 'dismantling institutions molded to accommodate and support yesterday's economic structures • 'Unlearning' is critical: 'While local coordinated action is usually a blessing, local closely knitted power groups are thus often an unquestioned evil when uncomfortable decisions have to be made' about obsolete policies, programs or investments/ spending.	• Secure competition and therefore enhance/ensure rivalry • Government as sophisticated demander, via regulation and enforcement (e.g., product safety and environmental standards) • Stay out of factor and currency markets • No subsidies, protection, arranged mergers, or joint R&D initiatives • National competitiveness policy, not place policies that erode national competitiveness to save local regions/clusters	• Government as active catalyst to enhance local synergy • Encourage inflow of ideas and knowledge from outside region (since local cluster may not be sufficiently aware of 'equally competitive or superior ways of how to organize and develop well-known local products or services', p. 12) • Aid transition when clusters reach exhaustion stage
		• *"All [three perspectives]argue that the main policy target in the post-exhaustion restructuring process is to create room for novel private sector initiatives as swiftly and effectively as possible rather than to pursue some governmental strategy of picking-the-winner by applying a range of top-down measures" (p. 13)* • *"No kind of vogue phrasings or remolded instrument packages can apparently alter the fact that the role of policy in the development of cluster advantages can only be marginal, indirect and long-term" (p. 13)*	

Based on Maskell, Peter, and Leila Kebir, 2005, What qualifies as a cluster theory, DRUID Working Paper No 05-09.

between major bodies of cluster theory, postulated influences on cluster existence, extension and exhaustion are quite varied. Indeed, they are so varied that identifying a single set of industries subject to all of the influences would necessarily prove very difficult if attempted with any precision.

A compelling example is the notion of labor pools versus supply chains as two causes for the existence of clusters. While one can imagine identifying a set of industries that benefit from shared labor pools, one can also imagine that those industries may not be the same ones that benefit from proximity to input suppliers. Put plainly, clusters might look different depending on what clustering benefit one emphasizes. If applied cluster analyses are to identify the set of competitive linked and related industries in a region, they first have to define operational measures of linkage that are valid with respect to the theory. Yet the theory itself implies there is no single dimension of interdependence and thus there is no lone solution to the question of which industries constitute "the clusters" in a given region.

Michael Luger and I have argued elsewhere that this issue, together with several others, means that cluster analysis must be viewed as a "flexible mode of inquiry" and not as a technical methodology for determining where to target resources and invest development attention (Feser and Luger 2003). The answer to the question of "what are the clusters in this region" is "it depends" — on the kind of interdependence that is under scrutiny, which, in turn, is contingent on the nature of the development challenges that the region faces and the problems that require resolution. The implication is that cluster analysis must begin with prior knowledge of development priorities and possibly even potential strategies, since without that knowledge, one does not know what kinds of clusters and clustering would be

most useful to understand.

4. Strategic Planning versus Strategy Making in Economic Development

What does this mean for formulating strategy in economic development? Which comes first: information gathering and analysis or prioritization and strategy? How should clusters and cluster analysis fit into analysis and planning? For answers, it is helpful to return to Mintzberg (1994). He argues that the planning and strategy making functions are different. Planners need to provide the information and analysis strategic thinkers require, but only "*as long as they do it to broaden consideration of issues rather than to discover the one right answer*" (p. 108, italics added). Planning must facilitate strategy formulation, not dictate it. Planners can also play a critical role in operationalizing visions and strategies. Indeed, Mintzberg defines strategic planning as "...about analysis—about breaking down a goal or set of intentions into steps, formalizing those steps so that they can be implemented almost automatically and articulating the anticipated consequences or results of each step" (p. 108). In effect, much of planning is really about programming strategies that are defined through creative, innovative, and visionary strategic thinking.

According to Mintzberg (1994, p. 110-12), three fallacious assumptions lead to the incorrect conclusion that strategic planning is strategy making: that the world is stable enough to make prediction possible; that strategic thinkers need not be directly engaged in the implementation of strategies; and that strategic thinking can be formalized in a sequential, predictable, and replicable process. Not surprisingly, these assumptions underlie many cluster-based (and other) economic

development planning exercises. First, any strategy that is based on finding a region's clusters as a point of departure necessarily requires the assumption of stability in economic conditions, especially given that our data are often only available with a considerable lag, that we have middling skill at identifying existing clusters even with recent data, and that we have virtually no ability to predict the emergence of new clusters. To make matters worse, we know that many of the existing clusters uncovered in a given region are often in process of serious restructuring or decline (Bergman 2008).

Second, cluster-based economic development efforts, perhaps more than any others, depend heavily on outside experts for strategy formulation and planning. The external cluster consultant has become a mainstay in development practice and many economic development organizations have taken to outsourcing much of their analysis, cluster related and otherwise, to consulting organizations or university applied research shops, either in a misguided effort to focus on core competences or to minimize costs. This means that the forms of tacit learning practitioners gain from experimenting with strategies and interventions on the ground are not easily joined and synthesized with more codified learning generated through formal analyses; the doers and planners/analysts are too distant from one another. The potential for the impoverishment of strategic thinking is significant in light of emerging research on strategic intuition which implies the most innovative and creative strategies arise from tacit and codified learning occurring in concert with one another (Hogarth 2001; Duggan 2007).

Finally, planning efforts using clusters as a strategic framework attempt to be as formalized as any other, as evidenced by the World Bank's cluster-based planning process: gather leaders and stakeholders; identify clusters via a comprehensive scan of the economy; assess strengths and weaknesses using the Porter diamond method; formulate strategies; develop implementation plan; etc. One can imagine the steps played out over a weekend with the help of imported analysis supplied by external consultants, or organized over weeks or months, as was the case with the Clusters of Innovation Initiative organized by the Council on Competitiveness and carried out in five regions in the U.S. between 1998 and 2001 (Porter, Monitor Group et al. 2001). The fallacy in this approach is that it ignores the possibility that good strategy arises from past experience (things that worked in other contexts and addressing similar problems) and from experimentation, a process Duggan (2003) describes as "seeing what works": doing what you know you can accomplish, not undertaking what you wish you could accomplish based on an externally supplied or predetermined goal.

The last point is especially important. Privileging the cluster concept and cluster analysis as the primary information base on which development strategy is formulated for a region takes much of the strategic intuition out of the picture. Clusters necessarily become the conceptual box into which strategies must fit. An analogy to other less current theories of development helps drive the point home. Imagine export base theory (North 1955) or the theory of growth poles/centers (Parr 1999a; 1999b) as the substitute for cluster theory as a rationale for the information gathering and analysis phase in Blakely and Bowman's linear planning model or the World Bank's four step planning process. Then the aim of the analysis would be to identify industries that yield the largest export multipliers or to delineate sub-regions that constitute potential growth centers. Both analytical frames, used exclusively, imply that the adoption of strategies that adhere to export base or growth center

logics; that is, the analytical framework and method has determined the strategic thinking. As noted in the introduction, Cortright (2006) argues clusters are a useful umbrella concept for understanding regional economies. The operative word is "a" useful concept, not "the" useful concept. Clusters are merely one perspective among others that can generate insights helpful for thinking strategically about a region's future.

5. Summary and Guides

I have argued many economic development practitioners have come to view cluster theory and analysis as constituting an approach to strategic thinking in economic development. Failure to see the negative implications of this perspective is abetted by the very limited systematic consideration of the differences between strategic planning, strategy making, and strategic programming in the development profession and the economic development research community. By observing the following guides, practitioners can ensure that they do not become a tool of the cluster concept but instead use clusters and cluster analysis as tools in service of innovative and creative strategic thinking.

First, cluster theories and concepts should not be used as the sole organizing frame for economic development planning, strategic or otherwise. Doing so effectively prioritizes a set of development options and solutions which may or may not be appropriate for the development concerns at hand. Second, practitioners should undertake analyses of clustering and interdependence in the regional economy as a means of better understanding local economic specializations and uncovering possible growth opportunities or areas of likely decline. However, such analyses should be conducted in concert with other scanning tools and should not be privileged as the only or even predominant means of identifying local competitive advantage. The idea is to open the eyes to previously unforeseen combinations and opportunities, not to don a conceptual straightjacket. Third, practitioners should take advantage of the power of cluster analysis techniques to help flesh out the plans necessary to implement other development strategies. An example is the increasingly common use of labor-based cluster analysis to target workforce development and training programs (see Koo 2005). This is equivalent to using cluster analysis for strategic programming rather than as an input in strategic thinking.[2] Finally, development organizations should take development of their own internal capacity to gather, analyze, and synthesize quantitative information seriously, and they should establish and encourage opportunities for internal planners/analysts and doers/implementers to interact and exchange information on an ongoing basis rather than infrequently in rigidly organized strategic planning exercises or "retreats." Real learning that drives strategic thinking is unpredictable, ongoing, and cannot be reduced to a rigid sequence of steps undertaken in a fixed time horizon.

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[2] I discuss a similar concept, using cluster concepts as a means of leveraging traditional development strategy, in Feser (2008).

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