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Research Paper:

**“Evaluating Knowledge Flows within Industrial Clusters – the case of the Sinos Valley shoe Cluster in Brazil”**  
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***Introduction***

The purpose of this paper is to investigate knowledge flows within industrial clusters – more specifically, the case of the shoe cluster in the Sinos Valley, Brazil. The broader aim is to extend the understanding of networking for innovation, one of the key aspects dealt with by the RAAKS methodology, and extrapolating it for an industry case application. The second aim is to check if there can be a “social organization of innovation” also in the industrial sector.

The paper is divided in four parts. First, the concept of networking for knowledge as addressed by RAAKS is briefly introduced. Secondly, the theoretical aspects of clustering and knowledge flows in industrial clusters are presented. Having covered the literature, the third part uses a case study of the shoe cluster of the Sinos Valley in Brazil is used to try to understand if (and how) knowledge flows help firms to evolve in this business. Finally, concluding remarks with links between RAAKS’ vision and cluster analysis is made.

***RAAKS and the concept of networking for knowledge.***

RAAKS – (Rapid Appraisal of Agricultural Knowledge Systems) is a framework developed with the main purpose of providing tools for actors involved in some common issues to share knowledge for development. It departs from the cornerstone that knowledge is socially constructed; therefore, through networking knowledge might be faster and more effectively achieved, and innovations would easily emerge from the application of such knowledge. Innovation in this approach is a much broader concept, understood as the process through which actors (or stakeholders) create value from their knowledge and is hence the output of such networking processes addressed through the RAAKS methodology.

In the RAAKS methodology, all actors involved are considered relevant in the search for innovative solutions for specific problems. Indigenous and endogenous knowledge are important in the process, and not only formal education. Networking for innovation implies providing a stimulating environment for innovation.

In the RAAKS approach, governmental or other formal institutions may eventually, but not necessarily play a central role in the process. Sometimes they do, as in national policy-driven systems. Their importance, however, does not overshadow the role of each other participant in the network. Formal institutions, researchers or the government may act as facilitators of the process, through the engagement of the relevant actors into learning processes.

RAAKS was developed with the main purpose of involving farmers in the process of finding innovative solutions for agricultural problems, but it seems that its application can be broadened for several other areas in which networking might bring smart solutions for (apparently) tough problems. Learning is a process enhanced through practice; successful innovations are the outcome of joint learning of all relevant stakeholders. This is what makes RAAKS a participatory approach.

The analysis of industrial clusters has several characteristics that lead observers to recall RAAKS when analysing the outcomes of collective actions. If such industrial networks may be related somehow to the RAAKS participatory approach is the question to be answered next. Some of the theoretical aspects of industrial clusters are highlighted in the next section, and following there is a brief presentation of the specific case of the shoe cluster of the Sinos Valley, in Brazil.

### *Clusters and knowledge flows in local industrial arrangements.*

Clusters can be broadly defined as “a large group of firms in *related industries* located in a *specific region*” (Swann and Prevezer, 1998, cited by Basant, 2002). The reasons why firms of the same industry cluster in a given region are diverse, and this type of industrial arrangement has been widely analysed by scholars for years<sup>1</sup>. However, lately, special attention has been paid to factors of clusters that facilitate the generation and dissemination of knowledge in such networks.

The general attributes of industrial clusters are the following: geographical proximity, sectoral specialization, close inter-firm collaboration, inter-firm competition, social embeddedness and state support (Basant, 2002). All these features have their role in building a more favorable environment for the generation and dissemination of knowledge within the cluster.

The biggest achievement of firms within industrial cluster is **collective efficiency**, as posed by Schmitz (1995), which comprises gains from external economies (easier access to specialized local suppliers, local pool of skilled labour, a local industrial atmosphere, etc) as well as those from joint action (e.g., vertical collaborations on product improvement between producer-user, or the horizontal sharing of specialist capital equipment by competing firms) (Albu, 1997). This joint action means that there is a deliberate force working for the benefit of the private cooperation of firms within the cluster. It is embodied in the presence of political and social institutions that support and stimulate partnering activities among firms in the cluster in order to develop an even broader network for production and innovation (Basant, 2002; Suzigan, 2000). The word *deliberate* here must be stressed, in order to highlight the consciously private cooperation undertaken in order to achieve a better result than would be achieved individually.

Small and medium enterprises (SMEs) tend to benefit, in thesis, even more from their location in such agglomerations, for those firms struggle even harder to achieve efficiency levels and especially to innovate, in comparison to larger firms.

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<sup>1</sup> Some seminal works in the analysis of industrial clusters: Humphrey & Schmitz (1995) “*Principles for promoting clusters and networks in SMEs*” , IDS mimeo; Schmitz (1995), “*Collective efficiency: growth path for small scale industries*”, Journal of Development Studies 31(4): 529-566, among several other works of Porter, Schmitz and Nadvi & Schmitz.

Firms in clusters interact along several steps of the production chain: production, trade, distribution linkages, marketing, export promotion, supply of critical inputs, and also R&D. Behind all types and purposes of interaction is the support of a local institutional framework. For clusters to succeed, there must prevail, in its environment, a healthy balance between cooperation and competition of firms that are part of it.

Linkages amongst the actors within a cluster are a very important feature for the dissemination of knowledge and the accomplishment of innovation. How effectively firms are capable of building inter-organizational networks is key for the success of a cluster. The lack of this capacity is pointed as the reason why the high-tech cluster in Cambridge-UK did not produce multinational firms, as happened in the rival Silicon Valley cluster in the US (Basant, 2002).

Sharing knowledge for innovation is especially useful for SME, for most of them would not succeed in bringing out innovations if they were standing alone in the market. This was observed early in the first and broadly studied industrial clustering in Italy in the 1960s. Italian firms managed to survive in very competitive export markets, building jointly capacities to upgrade their production (IDS PB, 1997). Working together, small firms learn more and increase their chances to compete in global markets.

Governments can stimulate and enhance the performance of clusters. In this way, they act as important “facilitators” for clustering. While clusters mostly come into existence by chance, some of them are actually fostered through public promotion, as is the case of a school furniture cluster in the State of Ceará, Brazil (IDS PB, 1997). In this specific case, the Government built a scheme to make sure firms had an incentive to learn from each other and co-monitor their performances. Learning was also facilitated by a government agency focused on SMEs, SEBRAE, which provides, among other things, professional training for managers and employees. Through collective learning, producers acquired a larger customer base than the previous only client – the Government itself. Besides, lots of jobs and several sawmills were created in town. Several similar cases where the government action was central in the further development of clusters are quoted in the literature.

Next, the case of the shoe cluster of the Sinos Valley in Brazil is presented, and the main features of the knowledge flows within its social actors are raised.

### ***The Sinos Valley shoe cluster –can we talk about networking for knowledge in the industry?***

The shoe cluster of the Sinos Valley is a widely studied case of industrial clusters in developing countries. It is called the “Giant Cluster” due to the fact that it has succeeded in bringing together actors from all stages of the production chain, interacting through either backward or forward ties. The effects such linkages brought about an upgrading performance, skills and technologies of the firms within the cluster (Nadvi, 1995).

The Sinos Valley cluster comprises 25 cities located in the Southern State of Rio Grande do Sul, in Brazil (its most important city is Novo Hamburgo). It comprises more than 1.800 firms (Nadvi, 1995; Oliveira, 2001). It differs from other shoe-producing centres in Brazil for this wide range of suppliers of inputs, machinery and shoe-components producers. In fact, 80% of all the Brazilian production of shoe machinery comes from the cluster. They have also several specialized producer services: free-lance designers, technical and financial consultants and specialized transport services.

The success of the Sinos Valley cluster is much based on the well built linkages among its various actors, who successfully managed to build networks with local suppliers of inputs, machineries and producer services and also with their main clients, especially export agents (Nadvi, 1995; Schmitz, 1999).

In 1971, 85% of the firms in the Sinos Valley were small; in 1991, this share had fallen to 48% (Nadvi, 1995). This does not mean that those small firms died or left the market; on the contrary, the success of the cluster made them grow and many of them now are large enterprises. Nadvi notes that their location in a cluster with deep linkages among actors was the main reason for growth. One may say then that firms learned to grow together.

For a long time North-American retailers were the cluster's main customers, because in the 1970s that country lost its interest in manufacturing shoes. Because of this external orientation of production, export agents played an important role in the cluster in providing information for producers about the main fashion tendencies around the world. Exporters kept tight links with shoe manufacturers and were in charge of researching, in Europe, USA and international shoe fairs, the latest tendencies in shoe design. The knowledge accumulated in their travels through other important shoe-producing markets was always shared with the Sinos Valley producers.

There are other prominent institutions which help disseminate knowledge among the cluster are: FENAC – the local shoe fair, set up in 1963 in conjunction with local producers and the local government; SENAI (National Industrial Training Service): provides vocational schools in tanning, shoe design and manufacturing since early 1960s; CTCCA – the privately set up leather and shoe technology centre, run by local shoe producers and other allied firms, opened in 1972; and ACI – the Local Business Association, along with several sectoral and sub-sectoral trade bodies. These institutions represent a “local development coalition” of public and private sector interests, and were especially important in the entry of the cluster into export markets (Nadvi, 1995: 17). The increasing demand was the main link bonding producers in cooperative agreements (Oliveira, 2001).

In its history, the shoe cluster of the Sinos Valley has had several moments when firms had to deal with strong competitive pressures from shoe producers of outside markets, as in the mid-1980s at what was called the “Chinese Shock” (Nadvi, 1995), when the US market was flooded with cheaper Chinese-made shoes. It was a challenging moment where the Sinos producers had to search for greater efficiency, whilst also made efforts to diversify their exports, aiming especially the higher-quality market in Western Europe. Producers applied the emerging reorganization strategies from western countries and, jointly with retailers, reduced costs through smaller inventory stocks, placing smaller orders and emphasizing greater quality control in production (Nadvi, 1995: 11). Competitive pressures from the outside led to local inter-firm cooperation also recently, especially through associations and support institutions. Such associations were the means producers found to learn to widen their markets.

From 1980 onwards the linkages among actors in the clusters started taking different directions and hence bringing different outcomes in terms of output. The cluster lost its networking power to gather their actors for jointly reaching their aims. Schmitz (1999) explains that one of the reasons was due to the fact that some enterprises became more committed to global than to local partners. Some of the formerly small firms which took the benefit of being clustered to grow have then decided to integrate vertically, and the linkages among actors in the cluster have loosened. Due to this, the result was successive delays in

carrying out joint action and a collective failure<sup>2</sup>. Added to this was a failing intervention of the State at central moments. Government agencies missed the chance to intervene in emerging conflicts among actors, adopting a neutral position face to the disagreement of taking place in the private sector. The global rationale prevailed, and local interests failed to be achieved.

The Sinos Valley shoe cluster can be seen as both a successful and failed example of how networking for innovation may lead to better results (in earlier times) but how this might not work unless actors are really committed and conflicts of interests are not managed (during the years of crisis). The final remarks address the connections and the possible results achieved through a participatory approach to problem solving, such as RAAKS.

### ***Concluding remarks: networking for innovation in the Industry.***

The observation of the Sinos Valley shoe cluster development signalizes that networking is a central practice for innovation also in the industrial sector, and that the actors' engagement in the networking process is a key element for successfully achieve development.

In this sense, one could think whether RAAKS and its participatory approach to gather actors in order to achieve convergence could have been applied in order to avoid the crisis that took place in the Sinos Valley shoe cluster in the late 1980s. It might have helped, but it would always depend on the commitment of actors to a common cause.

When actors in the cluster gave up their joint actions, and have switched their local perspective to a broader global view of market opportunities, the network was weekend. Stakeholders started acting in accordance to their individual aims. The cluster did not fail completely, but it acquired a new meaning in regard to objectives, linkages and economic outcomes.

Currently, at Sinos Valley both producers and the local Government are trying to extend ways to enhance economic development. This has been achieved, on the part of the Government and to the benefit of local communities, through the diversification of the local industry. Regarding shoe producers, they have found in developing their own design centres (which has been for a long time in the hands of the American buyers) a good way to add value to their final products. Some of the largest firms have opted for a more independent trajectory and have been successful.

The lack of government action as one of the main causes for the disorganization of the relevant actors in the cluster signalizes that industrial clusters can be a case of national policy-driven networks, and that RAAKS could have been successfully applied to this context. The social actors lacked some help in collectively overcoming crisis and reaching convergence (even without consensus) in order to achieve common goals – enlarging markets and enhancing production, for instance. The loss of common view was the turning point in the successful trajectory of the cluster as a successful networking environment, and not losing the sense of being a group might have been the best lesson to be learned through a RAAKS exercise in this specific case.

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<sup>2</sup> Further details of the failure process can be found in Schmitz (1999).

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