

# 1. Introduction\*

**Christos Pitelis, Roger Sugden and  
James R. Wilson**

---

## CLUSTERS AND GLOBALISATION: A RESEARCH AGENDA

The development of economies is increasingly influenced by the changing relationships associated with what is termed ‘globalisation’. However, amidst these changes, which arguably remove the significance of many previous borders, the importance of understanding local development processes is enhanced. Indeed, while the significance of territory in general has been one of the many contested areas within debates surrounding globalisation (Hirst and Thompson, 1996; Ohmae, 1990, 1995; Radice, 2000; Ruigrok and Van Tulder, 1995; Scholte, 2000; Wade, 1996), it is widely acknowledged that ‘localisation’ of some form is central to the changes that are occurring. For example, Storper (1997), in his influential book, emphasises the key role of regional communities and firms as the basic building blocks of an increasingly connected world. Moreover, the wave of research in ‘new economic geography’ sparked by Krugman’s (1991) seminal contribution has focused on the location of firms and factors determining the concentration of economic activity (Krugman, 1998; Fujita et al., 2001).<sup>1</sup> It follows that an understanding of the development of economies under globalisation requires analysis both of local economic processes and of their interaction in the changing global sphere of relationships.

When it comes to understanding local economic processes, there is a wide and varied body of research to draw on, spanning the disciplines of economics, geography and regional science, among others. A theme that runs through much of this literature, and that has gained particular prominence recently, is that of the role of ‘clusters’ of firms in local development processes. The clustering of firms as an economic phenomenon with the potential to provide an ‘engine’ for local development is by no means new, and is famously rooted in Marshall’s (1907, 1919) analysis of ‘industrial districts’. Recently, however, research into clusters, and more

generally networks of cooperation between firms, has flourished. Indeed, it has contributed to what Martin (1999) has termed a 'geographical turn' in economics, and, from a management perspective, is reflected in Dunning's (1997) label of 'alliance capitalism'.<sup>2</sup>

In particular, 'clustering' as an economic policy concern has become increasingly fashionable, stimulated especially by the success of the industrial districts of the so-called 'Third Italy' (Piore and Sabel, 1984; Pyke et al., 1990; Becattini, 1991; Dei Ottati, 1991; Becattini et al., 2003). Other successful experiences, whereby clusters of one form or another have been associated with productivity growth and/or employment creation, have fuelled this policy interest,<sup>3</sup> as has the influential work of Porter (1990, 1998) on competitive advantage. Indeed, a consequence is that there is currently a widely held view that 'clusters' are somehow fundamental for ensuring economic success for localities in a global economy. Policies to stimulate clusters are thus frequently perceived as desirable, *per se*, by those concerned with facilitating local economic development.

While it is refreshing and welcome that an academic concern with clusters has been able to infuse policy debate to such an extent, with notable policy impact in localities across the world, there is also cause for concern. A crucial problem arises in that the term 'cluster' embraces a potentially huge variety of very different forms of relationships, both among firms and between firms and other actors. Moreover, in the context of globalisation, these relationships are not confined to firms and actors in geographical proximity, but may span localities and nations in different ways. Thus while clusters are often pursued as a general solution to problems of local economic development, there is remarkably little understanding, and even less agreement, around what clusters are, what they require for success, and what impacts they are likely to imply in different contexts, locally, nationally and internationally.<sup>4</sup> This presents a clear rationale for a research agenda that seeks to bring together expertise from different fields in order to clarify understanding around the requirements and consequences of 'clusters', and for analysing rigorously the role that has been assumed for them in local economic development processes in the context of globalisation.

## THE ORIGINS AND PURPOSE OF THIS VOLUME

This volume is part of a wider research project that has been coordinated by L'institute (Universities of Birmingham, Ferrara and Wisconsin–Milwaukee), the Centre for International Business and Management (CIBAM) (University of Cambridge), the Universitat de Barcelona, the Universitat de Rovira i Virgili and the Université de Toulouse, and is

titled 'The Importance of Clusters to Urban and Regional Prosperity in a Globalised Economy'. The origins of the project lie in a series of two L'institute workshops that took place in Milwaukee, USA, during 2000 and 2001. The second of these workshops addressed the issue of 'Urban and Regional Prosperity in a Globalised Economy', and aimed to integrate the work and ideas of participating scholars with local development concerns within the state of Wisconsin. A volume was published containing the research of participants, alongside explicit analysis of the actual process of the workshop and a collective report commenting on the local development concerns that were identified and discussed (Sugden et al., 2003).

One local concern very evident during the workshop was the role of clusters in Wisconsin's economic development, linked in particular with a desire to create 'high-value' employment in the region (Sugden et al., 2003). In the four years since the workshop this concern has not subsided, and continues to dominate state-wide debate on economic development, as seen most explicitly in sessions at the periodic 'Wisconsin Economic Summit' and in the Wisconsin Department of Commerce's commitment to a state-wide cluster initiative. However, at the time of the workshop, debate focused substantially on the potential problems associated with adopting 'clusters' as a general solution to problems of local economic development, without thorough analysis of impacts and requirements (Sugden et al., 2003). The relevance of this for ongoing debate in Wisconsin, alongside the realisation that similar adoption of 'clusters' as a panacea for economic development ills was occurring in localities across the world, provided the impetus for a project dedicated to specifically analysing such issues.

The chapters presented in this volume are a result of that project. Based on the lessons of the L'institute–Milwaukee workshops, the overall aim of the project has been to learn from different perspectives on clusters and experiences with clusters, in order to understand better their varying consequences for economic activity, including performance and policy. The project was founded on a fundamental concern with locality-based development in a globalised economy, and has sought to integrate discussion and analysis on conceptual issues, experiences and impacts. In particular, it is clear that the label 'cluster' encompasses many different and varied types of production organisation, implying a danger that localities will attempt to appeal to clusters without appreciating this enormous variation. An objective has therefore been to consider conceptual arguments and case material from scholars with different perspectives and theoretical groundings, and, in doing so, to identify key characteristics and requirements of the forms of cluster that appear to be especially significant for the attainment of economic prosperity.

The chapters are an initial step towards achieving this objective. They have been variously debated and refined during special sessions at the 2002 and 2003 International Conferences of EUNIP (European Network on Industrial Policy) in Turku and Porto, respectively, and at two dedicated international workshops in Reus (2003) and Toulouse (2004). The research contained within the volume explores a range of key concerns at the heart of the analysis of clusters in a globalising economy, and in the remainder of this chapter we outline some of its contents.

## OVERVIEW OF CHAPTERS

The first two chapters are conceptual in nature, and their concern is to establish appropriate frameworks for the analysis of clusters in the context of their potential contribution to economic development amidst the forces of globalisation. Chapter 2, by Christos Pitelis and Anastasia Pseiridis, sets the scene by arguing that small firms, and in particular clusters of small firms, have been afforded insufficient attention in the economics literature. They aim to address this by developing a conceptual framework for the analysis of clusters of small firms, in particular with regard to their impact on productivity.

The first part of their chapter accordingly undertakes a detailed analysis of various literatures. Suggesting that recent and growing policy interest in clusters is rooted in diverse perspectives and/or is based on observation rather than theory, they critique the theoretical input that different strands of the economics literature might offer in understanding the potential significance of clusters. This brings them, in particular, to an analysis of industrial districts; rooted in the work of Marshall and carried forward by various other authors, this is a theme that is also reflected in other contributions throughout this volume.

From this foundation, the conceptual contribution of Pitelis and Pseiridis is twofold. First, they build on the seminal insights of Richardson, on cooperation, and Penrose, on the growth of the firm, to establish a framework for analysing clusters. The essence of their argument is that a cluster can be seen as an expanded (or quasi) Penrosean firm, whereby cooperation, as understood in a Richardsonsian sense, can lead to Penrose-type effects within and across firms, increasing productivity. While the work of Richardson contributes towards understanding the circumstances under which cooperation will take place, Penrose's ideas are needed to identify how and when entrepreneurs are able to understand whether or not activities necessitate cooperation. Second, they pursued further the effects of cooperation and clusters on firm productivity by linking this framework

to the 'productivity–competitiveness wheel' developed by Pitelis (1998). Specifically, they show how clusters affect productivity with regard to their impacts on human resources, infrastructure, unit cost economies, technology and innovation, and institutional atmosphere.

The final part of the chapter then seeks to apply aspects of this conceptual framework to a cursory analysis of a specific cluster policy that has been implemented in Greece. The authors uncover a number of limitations to this programme, but suggest, on the whole, a positive impact. This supports their more general argument that industrial policies for the promotion of clusters are promising endeavours due to the alternative route that they provide for productivity and competitiveness.

In Chapter 3, Roger Sugden, Ping Wei and James R. Wilson develop a methodological framework for analysing clusters in the context of the development of local economies more generally. They begin in a similar way to Pitelis and Pseiridis, highlighting growing scepticism surrounding the conceptual, theoretical and empirical underpinnings of clusters as a solution to problems of local economic development. However, they argue that this is related, in part, to insufficient attention being afforded to analysing the relationships among actors within and across clusters, and the evolution of these relationships. Such inherently qualitative analysis is often overlooked as more obvious, quantitative, but arguably superficial, aspects of apparently successful clusters are highlighted. One result is an association between the term 'cluster' and allegedly favourable local economic outcomes, leading ultimately to the adoption of 'cluster' policies as a panacea for local development problems. An objective of the chapter is hence to pioneer an alternative approach, which seeks to recognise underlying qualitative relationships as determining likely success or failure for any given 'cluster'.

Defining 'cluster' very broadly, Sugden et al. build on a paper by J. Robert Branston, Laretta Rubini, Silvia Sacchetti, Roger Sugden, Ping Wei and James R. Wilson (2003) (which is included as an Appendix to the chapter) in suggesting an analytical framework designed to explore the requirements and impacts of clusters. They take a strategic decision-making perspective, founded on an underlying theoretical argument that the governance of development processes plays a pivotal role in determining whether or not development meets the aims of those in a locality. Given the nature of clusters as being in some sense embedded in localities, their framework seeks to extend this theoretical concern to the analysis of clusters themselves. Understanding the governance of clusters, it is argued, is central to appreciating both their requirements and their potential impacts on the development of local economies. Moreover, such a focus requires a fundamentally multidisciplinary approach, something that is reflected in

the nature of their suggested methodology, which is taken up in part by the case analysis of Sacchetti and Tomlinson in Chapter 11 of this volume.

The next group of chapters is also conceptual in nature, but focuses on more specific issues – public goods, knowledge, foreign direct investment (FDI), territorial governance, trust – whose detailed analysis can provide valuable lessons for the potential roles and impacts of clusters with regard to local economic development. In Chapter 4, Marco Bellandi builds on previous research to consider first of all the analytical distinction between clusters, local production systems and industrial districts. He relates these three notions to the existence of goods with public characteristics, and to mechanisms for the governance of these goods. As regards clusters, the importance of public goods that are specific to the clusters' needs is emphasised, and a framework is introduced for analysing such specific public goods. In particular, specific public goods can be differentiated by their functions, territorial span, and the type and degree of public characteristics that they exhibit. A series of examples – from the development of information and communication technologies in clusters, to 'high-tech' clusters, to a case of bifurcation in the development of an evolving city – is then employed to illustrate and explore various issues surrounding the provision of specific public goods in different contexts.

Various implications for the characteristics and requirements of successful clusters can be drawn from this analysis. While the provision of specific public goods is clearly an important factor – clusters are indeed built on public goods – there are complex qualitative issues to consider. In particular, the balance of public goods exhibiting different degrees and types of public characteristics is argued to be of fundamental importance. At the same time, it is recognised that the appropriate balance changes both over time and with the specific character of the cluster/locality itself. Thus when thinking of clusters as a solution to problems of local development, we might want to be concerned with those that are capable of generating a context-specific, desirable balance of public goods. Moreover, policies that integrate various types of specific public goods, rather than separate policies, may be more consistent with such an outcome.

The next chapter (5), by Nick Henry and Steven Pinch, focuses on a specific subset of the potential productivity advantages that Pitelis and Psieridis attribute to clusters, those that pertain to the generation and diffusion of knowledge. Taking a perspective rooted in the geographical clustering of firms, the basis for their analysis is that a significant part of the gains from such clustering stems not from agglomeration economies or transaction cost reduction, but from the competitive advantages that firms can secure through gaining access to various types of knowledge. They acknowledge the conceptual and empirical problems that such an

observation raises, and seek to tackle such issues through the adoption of a knowledge-based view of clusters and economic performance.

After a critique of the debate surrounding clusters, which bears similarities to the arguments made in justification of the need for new conceptual frameworks in the earlier chapters by Pitelis and Psieridis and Sugden et al., Henry and Pinch set out a model of knowledge diffusion in geographically clustered firms. Their model moves beyond the common distinction between tacit and codifiable knowledge to embrace an analytical distinction between *component* and *architectural* knowledge. This is then used to generate new insights into the competitive advantage of certain clusters. They focus particularly on architectural knowledge (that relating to the organisation of an entire system, including component knowledge), arguing that this can develop at the cluster level as well as the firm level, and highlighting that the national system in which clusters sit can also play an important role in shaping such systems of knowledge. Their analysis of architectural knowledge draws specifically on a discussion of earlier qualitative research on the case of the motor sport industry cluster in the UK to illustrate and substantiate the core of their argument.

As discussed in their conclusions, there are important implications for cluster policy that arise from Henry and Pinch's chapter. While their analysis implies that architectural knowledge is likely to play a crucial role in determining the economic competitiveness of clusters, and hence their likely impacts on trajectories of local economic development, they are careful to acknowledge the methodological difficulties in thoroughly analysing such processes. Nevertheless their perspective on knowledge provides a valuable framework from which policy makers can evaluate what is happening within their clusters, what impacts clusters are having, and what potential exists for nurturing suitable ways forward. However, it should also be noted that they are keen to stress that clusters themselves are only one spatial expression of the new economic geography of urban and regional development. An implication is that we should take care in focusing all of our analysis on so-called 'clusters'.

In Chapter 6, Lisa De Propriis and Nigel Driffield continue the emphasis on knowledge, but with the focus shifting to knowledge sourcing as a potential motivation for FDI in the context of clusters. In particular, they seek to draw insights from a fusion of two literatures that have traditionally remained separate; the firm-based economics literature on FDI and the regional science literature on indigenous clusters and local development. From this they suggest an alternative way of analysing the relationship between FDI and clusters. Whereas traditionally clusters have been seen as the outcome of FDI, De Propriis and Driffield suggest that they can in fact be a precondition for the strategic attraction of quality FDI to particular localities.

The basis of their argument lies in the potential of clusters as centres of accumulated knowledge, something that is related to the significance of 'architectural knowledge' analysed by Henry and Pinch in the previous chapter. It is argued that realisation of the knowledge potential of clusters enhances the attractiveness of their localities for transnational firms, a contention that is supported by reference to the large FDI literature on spillovers, in particular with regard to recent research suggesting a knowledge-sourcing motivation for FDI. Crucially, basing the attractiveness of localities on clusters that are characterised by accumulated knowledge provides an alternative to seeking to attract FDI through cheap labour or other short-term incentives. In turn this opens the potential for longer-term and mutually beneficial FDI, avoiding the problems of transience and exploitation that are often levelled at FDI. Indeed, the analysis has particular implications for policies towards developing and supporting successful clusters. For example, it is suggested that UK cluster policy has been misguided in recent years, relying on FDI to create and sustain clusters rather than focusing on developing indigenous cluster advantages which can then attract high-quality FDI that is of long-term benefit to the cluster and locality.

Chapter 7, by Jean-Pierre Gilly and Jacques Perrat, examines a further set of conceptual issues that are central to understanding local development, and hence central to an appreciation of the roles that 'clusters' might play here. Their focus is on the economic and institutional interconnections between territorial and global dynamics, specifically the links between the different spatial scales at which economic systems are regulated. After presenting an analytical framework for the analysis of these issues, building on previous work, they consider how the relationship between local governance and global regulation functions today, in an era marked by changes in the exercise and transmission of power and authority. Indeed, the existence of such 'globalisation' highlights the especial importance of the interface between local governance processes and global governance processes.

The chapter contains notable warnings regarding the dominance of certain players and the purely financial logic that many players currently pursue, something the authors suggest has increased polarisation and reinforced spatial inequality. They also warn against global governance predetermining local governance, highlighting a need to guard against such tendencies. In this regard, their analysis again provides pointers for how we analyse clusters, and the potential impacts that they may have. A clear implication, for example, is that clusters may be an important mechanism for redressing this balance between local and global governance. However, following the arguments of Sueden *et al.* and Sacchetti and Tomlinson, this might only be realised if appropriate attention is afforded to the nature of

governance processes within clusters, and between clusters and other, local and global, actors.

A key aspect that emerges explicitly throughout the first five contributions, and implicitly in the case of the chapter by Gilly and Perrat, is the significance of so-called 'trust' relationships for the successful development and operation of clusters. Appropriately, therefore, trust, confidence and their interaction with proximity are the detailed focus of the next chapter (8), by Claude Dupuy and André Torre.

They present a sophisticated framework for understanding the concepts of trust and confidence that generates a number of interesting distinctions and insights. The chapter is based around a theoretical discussion of the nature and evolution of trust relationships, which are ultimately founded on the presence of uncertainty. In particular, an important distinction emerges between *interpersonal confidence* and *community confidence*. Interpersonal confidence concerns 'rational' interaction between individuals, where trust is acquired through mutual commitments based on face-to-face relationships in the pursuit of private gain. Community confidence, on the other hand, is related to 'blind trust' and centres on the ability of individuals to embed themselves in a social system, the relationship of trust resting on the reputation of the community as a whole. The former is characterised as being *undersocialised* and the latter as *oversocialised*, which, it is argued, renders them inadequate for covering the whole spectrum of relations of proximity. This leads to consideration of a third distinction, *hierarchical confidence*, a more organised form that is defined in terms of relationships with the institutions that govern the rules of the game.

These distinctions, and the theoretical discussion around them, provide the basis for understanding a number of dynamics that are potentially important for analysing local systems of production, including clusters. Different levels and types of trust are discussed, for example, leading to an appreciation of the phenomena of cycles of euphoria or overconfidence, and, inversely, crises in confidence. The risks of opportunism and conflict in interpersonal relationships are also analysed, providing a rationale for the institutionalisation of rules as reflected in hierarchical forms of confidence. Finally, the relationship between spatial proximity and different forms of confidence is analysed, leading to a conclusion that commitments are more easily reversible in trust relationships based on hierarchical confidence where proximity plays a lesser role. Such analysis implicitly provokes questions about the balance of different forms of confidence that are likely to be desirable for spatially bound clusters, and also potentially for clusters that are not spatially bound.

The next group of chapters presents a slight shift in the analytical focus. While they are also concerned with conceptual issues that can generate

insight into the role and impact of clusters with regard to local economic development, they pay particular attention to fusing conceptual analysis with specific case experiences in building relevant insights.

Chapter 9, by Miriam Quintana and Valeria Pulignano, addresses an often ignored factor in the analysis of clusters – the significance of employment relations. They suggest that the nature of the employment relationship can be expected to be extremely important for the success of firms in clusters, as these firms are highly dependent on the social context in which they are embedded. The authors analyse the scarce literature in this area, drawing attention to the conflict between the potential that clusters provide for greater face-to-face interaction between employer and employee, and the enhanced scope for paternalistic and authoritarian practices that a lack of formal regulation might imply. This is reflected, they argue, in apparently divergent views of the nature and quality of the employment relationship in industrial districts and, by extension, clusters.

The authors discuss various factors that can shape employment relations in a cluster context. They focus in particular on two broad issues: first, the location of the cluster, something that can be associated with a whole range of factors such as the presence and role of organised labour and the institutional and regulatory framework; and, second, the size of firms in the cluster, in turn related to the power relationships and dependencies/interdependencies. These issues are explored with reference to a particular case analysis of Fiat in Italy, a supply network where employment relationships have evolved in a particular way as a consequence of both the location of the cluster, hence institutional setting, and the nature of firm interdependencies implied by the adoption of new management techniques. This case illustrates both the potential significance of employment relations for the successful operation of clusters, and also the role that cluster relationships of certain forms might play in influencing the evolution of employment relations practices.

There is change of focus in Chapter 10, where Mario Davide Parrilli examines a specific type of cluster often observed in less developed countries, the so-called ‘survival clusters’.<sup>5</sup> He presents a case for optimism regarding the development prospects for such clusters, confounding the predominantly pessimistic assumption that their economic performance has a tendency to stagnate.

The first part of Parrilli’s chapter discusses a theoretical framework based around two complementary hypotheses. The first posits that ‘clustering is beautiful’ precisely because all kinds of clusters have the potential to grow. This argument is rooted in a ‘stage’ approach that transforms Brusco’s (1990) four historic models of Italian local production systems into a sequence of stages that Italian industrial districts pass through in their trajectory of growth. Thus so-called ‘survival clusters’, it is argued, may

resemble earlier stages of industrial districts, representing a reality with interesting potential to grow and evolve with time, and one which merits further investigation. The second hypothesis then draws on key strands of the literature surrounding clusters to suggest that the growth of clusters depends on three types of factors: collective efficiency, social embeddedness and policy inducement.

Combining these two hypotheses, the second part of the chapter examines empirical evidence from Costa Rica and Nicaragua on two furniture clusters whose performance by conventional indicators puts them in the category of 'survival clusters'. Parrilli finds, however, that this disguises considerable dynamism, certainly in the Costa Rican case, and to a lesser extent in the Nicaraguan case. This means that they may in fact be comparable with the clusters in advanced economies, which are today considered 'competitive', in their first stage of development. Moreover, the evidence seems to confirm the value of adopting an eclectic approach capable of understanding the diverse and complex interrelationships that underlie potentially successful clusters. Indeed, in line with much of the conceptual work of earlier chapters, an implication is that it is important to look behind superficial characteristics to analyse the production of relationships, trust, public goods and so on in examining the potential for successful clusters. It is in this context that appropriate policy support is likely to be identified and pursued.

In Chapter 11, Silvia Sacchetti and Philip R. Tomlinson draw implications that are related to those of Parrilli, but from an analysis of two very different cluster cases. Their focus is the challenges posed to two of Europe's oldest and most established industrial clusters by globalisation and increasing international competition. They adopt a strategic decision-making approach to cluster analysis that is rooted in an application of the methodological framework set out by Sugden et al. in Chapter 3; it considers an understanding of cluster governance structures to be crucial in analysing their impacts and, consequently, their policy requirements.

The chapter is essentially split into two in-depth case analyses, followed by a concluding section. The first case to be considered is that of the North Staffordshire ceramics industry in the UK, which was established since the late seventeenth century, and the second is that of the Prato textile industrial district in Italy, which has an even longer history, dating back to the twelfth century. It is clear from the analysis, however, that the future of both of these traditional clusters has become increasingly uncertain in the context of globalisation and its accompanying trends. In turn this has stimulated processes of restructuring in each of the clusters, something that has in both cases altered governance structures. It is these changes in governance, their implications, and the corresponding possibilities for future developments that are the focus of analysis in the chapter.

A number of interesting conclusions emerge from Sacchetti and Tomlinson's analysis. For example, they identify specific lessons that each of the clusters can learn from each other's experiences. They argue, for example, that the future of the ceramics cluster in Staffordshire depends on greater cooperation and networking among actors, in part a return to a previous 'stage' of the cluster's development, where the structure was characterised by smaller-scale production units. In this they have much to learn from the earlier development of Prato's small-firm sector. Similarly, given the path of production consolidation to which the Prato cluster currently appears drawn, it can learn from the failures of the merger wave that swept through Staffordshire in the 1960s. Indeed, such arguments provide an interesting extension to the 'stages' approach developed in the previous chapter by Parrilli; in the case of mature clusters, it appears that there can be 'stages too far'. Overall, the central implications from the chapter's analysis are that clusters such as these need to find ways to retain a significant degree of strategic decision making within the locality, and, alongside this, to encourage a positive role for networks, institutions and public research units in ensuring an innovative 'high road' to the development of activities.

Chapter 12, by Mari Jose Aranguren, Miren Larrea and Itziar Navarro, focuses specifically on the policy process itself. Arguing that real integration of clusters and networks into policy making has been far from achieved they conduct an analysis of actual policy evolution and implementation in the Basque Country in Spain. Following an introduction to the specific case context, their chapter is split in two, reflecting the two separate cluster/network oriented policies that have coexisted in the Basque Country for the last 15–20 years.

The first of these is the cluster policy of the Basque government, which began at the start of the 1990s, essentially applying Porter's (1990) concept of cluster. They describe the evolution of policy, initiated in a top-down manner, and the emergent Basque clusters. They then use a series of observations drawn from various prominent case-based cluster studies as benchmarks from which to evaluate the Basque policy process. Their primary conclusion is that the policy has succeeded in generating cooperative opportunities among different Basque agents in strategic areas, but that there remain unresolved issues around evaluation of the impact of cluster activities on competitiveness, a stated mission of the project. In contrast to the top-down 'cluster policy', a second stream of cluster-oriented policies is then identified and analysed with regard to the Basque local development agencies. Describing a much more organic process, it is argued that these agencies have evolved a bottom-up model of support that has roots in Marshallian systems, but that crosses territories through a loose networking of agencies. An identified challenge, however, is to reinforce their role in stirring local agents into action within their territories.

It is the contrasting of these two distinct policy processes – one directly influenced by Porter, the other indirectly based around the ideas of Marshall – in the same territory that is most interesting, and the operation of policy at different territorial scales potentially opens up many of the issues/tensions that concern Gilly and Perrat, for example. Moreover, given the argued successes stemming from both models, an implication from this analysis is that there is more than one way to conceive of, and therefore provide policy support for, clusters.

In the next chapter (13), by Marco R. Di Tommaso, Daniele Paci, Lauretta Rubini and Stuart O. Schweitzer, the policy theme is continued, but the analysis focuses on a specific type of cluster, those that are characterised as ‘high-tech’, and in particular on the case of the biotech industry. This contrasts with the earlier analysis of ‘survival clusters’ provided by Parrilli, and complements the knowledge-based framework for analysing clusters set out by Henry and Pinch.

After introducing the significance of the analysis of clusters, industrial districts and networks, Di Tommaso et al. turn their attention to the specific theme of industrial concentration in high-tech industries. They argue that the traditional concept of agglomeration economies must be rewritten in the case of the emerging industries of the high-tech economy, focusing on three specific characteristics of such industries: their reliance on R&D and knowledge; the role that innovation plays as a core process in such industries; and the fact that production activity tends to be characterised by high levels of risk and uncertainty. Analysis of these three features then leads into an exploration of the particular case of biotech clusters, offering a discussion of localisation and agglomeration dynamics as alternative explanations for clustering in this industry, and a brief comparison of different models of biotech clusters that can be found in the USA, the UK and France.

The chapter concludes with reflection on the implications of the analysis for public policy and private collective strategy. Recognising the importance of such high-tech clusters, especially for the industrialised countries, the authors conclude that industrial policy in this area should focus on a number of issues: local public goods, internal relations, transactions costs, and external relations. Indeed, their conclusions have synergies with much of the analysis elsewhere in the volume, for example the contributions by Bellandi, Pitelis and Psieridis, and Henry and Pinch.

## FURTHER RESEARCH

As we have described, this volume is a result of a research project which has sought to analyse the importance of clusters for urban and regional

development in a globalised economy. It has done so by bringing together scholars with different perspectives and theoretical groundings, indeed from different disciplines, to debate a range of conceptual ideas and cases. The chapters in the volume reflect this process, and offer a collection of research that contributes significantly to the analysis of clusters in the context of globalisation.

We hope that the analysis contained in the following chapters will stimulate further academic debate in a field that is crucial for understanding processes of local economic development, and that such debate might lead to future projects and further research, building on the insights contributed herein.

## NOTES

- \* We are grateful to Jean-Pierre Gilly for comments on an earlier draft of this chapter.
1. This surge of interest is also reflected in the French school on the economics of proximity; see, for example, Gilly and Torre (2000).
  2. See also de Rond (2003), Child and Faulkner (1998) and Nohria and Eccles (1992) for other important contributions to the management literature on inter-firm cooperation.
  3. See, for example, among many others: Saxenian (1994) on the experiences of 'Silicon Valley' and 'Route 128' in the USA; Sabel et al. (1989) on the Baden-Württemberg region of Germany; Putterman (1997) on the experience of 'Town and Village Enterprises' in China; and Schmitz and Musyck (1994) on the lessons that various European experiences with clusters might hold for developing countries.
  4. Indeed, Martin and Sunley (2003) have made the case that there is currently a 'chaotic' use of the term 'cluster' amidst fundamental conceptual, theoretical and empirical questions surrounding its validity for shaping development policy.
  5. Parrilli (Ch. 10) defines 'survival clusters' as 'local systems composed of many craft producers working independently from one another (i.e. no division and specialization of labor) and elaborating individual products of rather low quality (due to little use of machinery) for the low-income segment of local consumers'.

## REFERENCES

- Becattini, G. (1991), 'Italian industrial districts: problems and perspectives', *International Studies of Management and Organization*, **21**(1), 83–90.
- Beccatini, G., Bellandi, M., Dei Ottati, G. and Sforzi, F. (2003), *From Industrial Districts to Local Development: An Itinerary of Research*, Cheltenham: Edward Elgar.
- Branston, J.R., Rubini, I., Sacchetti, S., Sugden, R., Wei, P. and Wilson, J.R. (2003), 'The development of local economies and the possible impact of public policy: a framework for case studies', L'institute Discussion Paper No.20.
- Brusco, S. (1990), 'The idea of industrial districts', in F. Pyke, G. Becattini and W. Sengenberger (eds), *Industrial Districts and inter-firm cooperation in Italy*, Geneva: International Institute for Labour Studies.
- Child, J. and Faulkner, D. (1998), *Strategies of Cooperation: Managing Alliances, Networks and Joint Ventures*, Oxford: Oxford University Press.

- Dei Ottati, G. (1991), 'The economic base of diffuse industrialization', *International Studies of Management and Organization*, **21**(1), 53–74.
- Dunning, J.H. (1997), *Alliance Capitalism and Global Business*, London: Routledge.
- Fujita, M., Krugman, P. and Venables, A.J. (2001), *The Spatial Economy: Cities, Regions and International Trade*, Cambridge, MA: MIT Press.
- Gilly, J.-P. and Torre A. (eds) (2000), *Dynamiques de proximité*, Paris: L'Harmattan.
- Hirst, P. and Thompson, G. (1996), *Globalization in Question*, Cambridge: Polity Press (2nd edn 1999).
- Krugman, P. (1991), 'Increasing returns and economic geography', *Journal of Political Economy*, **99**(3), 483–99.
- Krugman, P. (1998), 'What's new about the new economic geography', *Oxford Review of Economic Policy*, **14**(2), 7–17.
- Marshall, A. (1907), *Principles of Economics*, London: Macmillan.
- Marshall, A. (1919), *Industry and Trade*, London: Macmillan.
- Martin, R. (1999), 'The new "geographical turn" in economics: some critical reflections', *Cambridge Journal of Economics*, **23**, 65–91.
- Martin, R. and Sunley, P. (2003), 'Deconstructing clusters: chaotic concept or policy panacea?', *Journal of Economic Geography*, **3**, 5–35.
- Nohria, N. and Eccles, R.G. (eds) (1992), *Networks and Organizations*, Boston, MA: Harvard Business School Press.
- Ohmae, K. (1990), *The Borderless World*, New York: HarperCollins.
- Ohmae, K. (1995), *The End of the Nation State: The Rise of Regional Economies*, London: HarperCollins.
- Piore, M.J. and Sabel, C.F. (1984), *The Second Industrial Divide: Possibilities for Prosperity*, New York: Basic Books.
- Porter, M. (1990), *The Competitive Advantage of Nations*, New York: Free Press.
- Porter, M. (1998), 'Clusters and the new economics of competition', *Harvard Business Review*, **76**(6), 77–91.
- Putterman, L. (1997), 'On the past and future of China's township and village-owned enterprises', *World Development*, **25**(10), 1639–55.
- Pyke, F., Becattini, G. and Sengenberger, W. (1990), *Industrial Districts and Inter-firm Cooperation in Italy*, Geneva: International Institute for Labour Studies.
- Radice, H. (2000), 'Responses to globalisation: a critique of progressive nationalism', *New Political Economy*, **5**(1), 5–19.
- de Rond, M. (2003), *Strategic Alliances as Social Facts: Business, Biotechnology, and Intellectual History*, Cambridge: Cambridge University Press.
- Ruigrok, W. and Van Tulder, R. (1995), *The Logic of International Restructuring*, London: Routledge.
- Sabel, C., Herrigel, G., Deeg, R. and Kazis, R. (1989), 'Regional prosperities compared: Massachusetts and Baden-Württemberg in the 1980s', *Economy and Society*, **18**, 374–404.
- Saxenian, A. (1994), *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*, Cambridge, MA: Harvard University Press.
- Schmitz, H. and Musyck, B. (1994), 'Industrial districts in Europe: policy lessons for developing countries', *World Development*, **22**(6), 889–910.
- Scholte, J.A. (2000), *Globalization: A Critical Introduction*, Basingstoke: Palgrave.
- Stopper, M. (1997), *The Regional World: Territorial Development in a Global Economy*, London: Guildford Press.

- Sugden, R., Hartung Cheng, R. and Meadows, G.R. (eds) (2003), *Urban and Regional Prosperity in a Globalised, New Economy*, Cheltenham: Edward Elgar.
- Wade, R. (1996), 'Globalization and its limits: reports of the death of the national economy are greatly exaggerated', in S. Berger and R. Dore (eds), *National Diversity and Global Capitalism*, London: Cornell University Press.