

**Competence-based strategies and global production networks:
A discussion of current changes and their implications for employment**

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Abstract

This paper adopts a multidisciplinary perspective to analyse current changes in firms' organisational strategies and assess their implications from the perspective of industrial organisation and employment. The analysis first draws on recent developments in the strategic management literature that conceptualise the firm as knowledge-based or competence-based. This approach is built upon to develop a competence-based organisational model integrating both firms' internal management practices and external linkages into a unified analytical framework, and showing how firms respond to new competitive pressures by managing competencies on an intrafirm and interfirm basis. Part two considers how such model can contribute to explain the emergence of global production networks, which are analysed by focusing on the key dimensions of power, activity and geography, along the lines of the global commodity chain framework. The employment outcomes of competence-based organisational strategies and network forms of organisation are then discussed from the perspective of labour market segmentation theory, with emphasis on the emergence of new forms of employment segmentation within and between firms.

In today's fast-changing competitive environment, firms' competitive positions are constantly challenged by the emergence of new technologies, products, markets and competitors. Flexibility and adaptability have become key management concepts to develop a sustainable competitive advantage, and successful firms apply them in new organisational strategies that put into question many conventional tenets on organisations and their management. These strategies involve a decentralised and responsive work organisation, based on co-operative relations not only within the firm but also in its relations with customers, suppliers and competitors. However, firms are also increasingly resorting to traditional market mechanisms through the use of contingent workers and arms'-length subcontracting relations.

This paper adopts a multidisciplinary perspective to examine these new strategies as well as their implications in terms of industrial organisation and employment. By doing so, it aims to highlight major changes in power relations both between firms, through the new dynamics of competition, and within firms, through new forms of employment relations. Firms' organisational strategies are a key driver of changes in these two areas, and as such they constitute the entry point of our analysis. The first section builds on recent developments in the strategic management literature that conceptualise the firm as knowledge-based or competence-based, to propose an original model for analysing firms' organisational strategies. This model integrates both firms' internal management practices and external linkages into a unified analytical framework, showing how firms can successfully respond to new competitive pressures by managing competencies on an intrafirm and interfirm basis.

Competence-based organisational strategies are increasingly blurring interfirm boundaries, leading to the emergence of complex production networks where activities are co-ordinated through a mix of co-operation and market links. The second section combines a strategic management and a global commodity chain perspective to analyse the structure and

dynamics of these networks, focusing on the key dimensions of power, activity and geography. Drawing on well-known case studies of production networks in the Third Italy, the United States, Japan, and East Asia, it identifies dominant forms of network organisation at the global level, beyond the specificities of the various industrial communities within which such networks are embedded at the local level. These global networks can be considered to constitute a new form of industrial organisation, which is deeply transforming the way value is created and distributed within global industries.

The third section turns to the employment outcome of competence-based organisational strategies and network forms of organisation. By combining two levels of analysis, the firm and the network, it highlights the emergence of new forms of employment segmentation within and between firms, as well as within and between locations, and discusses how these differ from traditional patterns of labour market segmentation. It concludes by pointing to the need for innovative policies aimed at stabilising competitive pressures within and between firms, and to the challenges and difficulties involved in achieving such goal.

I. New patterns in firms' strategy: a competence-based organisational model

The field of strategic management is currently undergoing a paradigmatic shift with the emergence of new conceptions of the firm as knowledge-based or competence-based (Conner and Prahalad, 1996; Grant, 1996; Prahalad and Hamel, 1990; Stalk et al., 1992). While traditional approaches to firms' strategies stress that profits come from the positioning of the firm in relation to outside markets (Porter, 1980), these views emphasise the role of firms' internal resources as sources of competitive advantage. They also promote a dynamic perspective on firms' strategies by looking at how firms' internal capabilities can help them adapt to increasingly unstable market conditions, based on their ability to learn and renew themselves overtime (Teece et al., 1997). This body of work brings to the fore concepts of

firm's knowledge, capabilities and competencies, that can be further defined with reference to the seminal work of Edith Penrose (1959).

First, Penrose (1959) emphasises the role of individual and collective knowledge accumulated within the firm through experience and teamwork, in generating "inputs" to the production process. Such "experiential" knowledge is embedded in work relationships, so that it cannot be standardised, and is developed through time within the firm, so that it cannot be purchased in the market. Based on these characteristics, experiential knowledge presents similarities with the concept of skills and assets specificity (Williamson, 1975). Second, Penrose (1959) sees the firm as continuously producing new experiential knowledge through its activity, this knowledge being used by managers to create new operating systems, that in turn generate new experiential knowledge through their application. The process of growth is here conceptualised as a process of knowledge creation and utilisation, producing specific paths or trajectories based on each firm's experience. Firms' competencies or capabilities can thus be defined as their ability to create and utilise experiential knowledge in order to develop new products and processes in a changing competitive environment. From a strategic perspective, such competencies constitute a superior source of competitive advantage because they are rare, valuable and difficult to imitate (Teece et al., 1997).

Why do we observe such a renewed interest in firms' knowledge and capabilities? Drawing on classic organisation theory, it can be argued that greater complexity and uncertainty in firms' competitive environment create incentives for firms to develop experiential knowledge and continuously adapt their operating modes to changing environmental conditions (Burns and Stalker, 1966). The competence-based view of the firm stresses such need for innovation, but tends to downplay the significance of short-term pressures in current competitive dynamics, and the resulting need for firms to reduce resource immobilisation and enhance their capacity to quickly respond to environmental changes. These evolutions are emphasised by a fast-growing stream of research on "hypercompetition"

in strategy research, pointing to the increasingly fleeting nature of firms' competitive advantage (for review, see Lengnick-Hall and Wolff, 1999). Accordingly, firms are facing the dilemma of developing competencies while limiting the resources devoted to this development. The organizational implications of such conflicting environmental demands have remained understudied, and constitute the focus of this section.

How can firms simultaneously meet greater needs for flexibility, quality and cost reduction in their operations? This paper argues that successful firms do achieve this goal by combining three competencies management strategies, that can be seen as forming a consistent organisational model. Such strategies include (1) the internal development of core competencies, (2) the externalisation of standard competencies, (3) and the quasi-internalisation of complementary competencies. The resulting model is schematised in Figure 1, showing the new competitive objectives derived from changes in environmental conditions, and the competence-based organisational strategy by which firms can meet these objectives and develop a durable competitive advantage.

INSERT FIGURE 1 ABOUT HERE

Complementarities between the three components of a competence-based organisational strategy can be demonstrated through the following steps. First, to develop competencies involves a clear focus on those activities that constitute the knowledge base of the organisation and its foundation for growth and access to new markets (Penrose, 1959; Prahalad and Hamel, 1990). Second, focusing on such core competencies entails a redefinition of the boundaries of the firm, or what will be done inside and outside it. In order to cut costs and limit investments that tie down resources and reduce the firm's agility, activities which are independent from the firm's core competencies should be externalised, i.e., managed through market links (Miles and Snow, 1986; MossKanter, 1989). However, the specialisation of the firm also creates new needs for interfirm co-operation, arising from co-

ordination requirements between firms performing closely complementary activities. Sydow (1992) refers to the development of interfirm co-operation as a process of quasi-internalisation, this strategy being an alternative to externalisation and full internalisation. Consequently, the reconfiguration of firms' boundaries involves not only the externalisation of independent, or standard competencies, but also the quasi-internalisation of complementary competencies. Firms adopting a strategy to develop core competencies are thus focusing on specific fields of knowledge and activity, building closer links with other firms performing complementary activities, and resorting to market links to manage standard or independent activities.

From a theoretical perspective, complementarities between the three facets of a competence-based organisational strategy can be highlighted with reference to transaction cost theory. Williamson (1979) considers that firms should internalise transactions that involve highly specific investments, relying on "relational contracting" within the firm. Transactions associated with semi-specific investments should be governed through interfirm relational contracting, and the market should be used for transactions applying to standardised investments. Reve (1990) goes a step further by linking the competence-based and transaction cost perspectives, arguing that "only core skills of high assets specificity should be governed internally. Complementary skills of medium asset specificity can more efficiently be obtained through strategic alliances, and are governed bilaterally, while all low specificity assets are most efficiently contracted in the market" (p. 142). More recently, Williamson (1999) proposed to compare and link together the transaction-cost and competence-based perspectives with the objective of contributing to a better understanding of business strategy. The competence-based organisational model builds on such efforts to specify how firms can effectively manage core, complementary and standard competencies in an integrated fashion. It does so by integrating key findings from the literature on organisation theory, human resource management (HRM), labour markets, as well as interfirm contracting practices,

taking into account the diversity of means by which firms can manage internal and external competencies. The three components of this model will be discussed with more details in the rest of this section.

The internal development of core competencies

Internally, the firm needs to adopt a management system supportive of competencies development. The general characteristics of such system can be found in Burns and Stalker's (1966) "organic" form of organisation, by which firms can effectively operate under complex and unstable environmental conditions. They include a strong integration of individual tasks and knowledge within the overall activity of the organisation, the importance of lateral interaction and communication as opposed to vertical command, and a strong commitment of individuals to the activities and goals of the organisation. These general principles have gained popularity in recent years, with an emphasis on (1) the need to foster decentralisation and horizontal communication processes within the firm, (2) the role of trust and shared values as co-ordinating mechanism, and (3) the strategic role of human resources management in building competitive advantage.

Decentralisation and horizontal co-ordination

The need for a more flexible and responsive organisation appears in a broad literature dealing with various levels of co-ordination in firms' activity: co-ordination between individuals working in teams, between the various stages of the production process, between functional activities, and between business units of the large firm (Aoki, 1990; Best, 1990; Cole, 1989, 1994; MossKanter, 1989; Milgrom and Roberts, 1990). The emphasis is on managing product flows, resource deployment and information sharing, with the objective of integrating individual tasks, functions, and units into a consistent and dynamic system. This

involves a greater reliance on horizontal co-ordination processes and a decentralisation of decision-making, together with a reduction of hierarchical layers within the organisation.

Such recommendations draw on best practices identified in a variety of countries (Appelbaum and Batt, 1994; Dertouzos et al., 1989), although Japanese firms are a prominent reference. Horizontal communication processes are a central feature of Aoki's (1984, 1990) model of the Japanese firm, and Cole (1994) stresses that the Japanese approach to quality improvement involves organisational learning across functional divisions. Some researchers point to the facilitating role of information technology in developing horizontal co-ordination, but most emphasise the role of shared experience and values as the basis for co-operation between establishments, functions, and individuals. The development of a common culture or set of beliefs is instrumental both in ensuring the consistency of decisions made within the firm, and allowing for co-operation beyond the specific interests of individuals and groups involved in decision-making.

The role of trust and shared values

Trust and shared values appear as central mechanisms for work co-ordination and control in the flexible enterprise. From the perspective of organisational theory, when work is complex and constantly changing, "direct control" based on supervision becomes too expensive, and "bureaucratic control" based on work standardisation cannot be used. Organisations have to rely on "unobtrusive control", or "the control of the cognitive premises underlying action" (Perrow, 1986, p. 129). This form of internalised control is conducive to trust by one's peers and management, allowing for co-operation to develop within the organisation. Firms can either select individuals with appropriate norms and/or develop them in new recruits through the processes of interaction taking place within the firm.

Within contract theory, trust is regarded as an alternative mechanism to the market and the bureaucracy for co-ordinating transactions. Under conditions of strong uncertainty

and complexity, the firm cannot control transactions through market prices or bureaucratic rules, and relies on socialisation as the principal mechanism of mediation or control (Ouchi, 1980). Macneil (1980) further elaborates on the distinction between market-based and trust-based transactions, making an important contribution through his typology of “discrete” versus “relational” contracts. Discrete contracts are strictly defined in their duration and content. They are limited to the exchange of goods, with a well-specified distribution of costs, benefits and responsibilities between the parties. By contrast, relational contracts primarily involve persons rather than goods, so that they tend to be unique and non-transferable. The value, content and duration of exchange are loosely specified and the transaction proceeds in an adaptive manner, on the basis of shared norms and values among individuals. Thus, trust has a well-established function as co-ordination and control mechanism both in organisation and contract theories. While more subtle and difficult to implement than other mechanisms, control based on shared norms and values appears as the most effective choice when activities, or transactions, are of a complex and changing nature.

The strategic role of human resource management

The role of human resource management (HRM) in supporting firms’ competitive advantage has received growing attention over the last decade, leading to the emergence of different streams of literature. The strategic human resource management (SHRM) perspective sees HRM as contingent on firms’ environment, competitive strategy and organisational structure (see Lawler, 1995, for review). When competitive strategies are targeted toward innovation and adaptability in a complex and changing environment, the relevant modes of HRM present similarities with those identified in the Japanese model (Aoki, 1990, 1994; Cole, 1994; Koike, 1994) as well as the U.S. participative management model (Beer et al., 1990; Kochan and Osterman, 1994; Pfeffer, 1994). In these various approaches, the central goals of HRM are to promote employee commitment to the work of

the organisation, to foster employee initiative and creativity, and to provide the firm with an adequate pool of individual competencies. Achieving these goals requires a consistent set of HRM practices including the selection, development, appraisal and motivation of the workforce.

First, researchers emphasise the greater selectivity of firms engaged in competencies development strategies. Selection criteria can be of an objective nature when applied to technical skills, but tend to be rather general and subjective for evaluating work attitudes and values, or the ability of individuals to successfully operate within the organisation. Second, human resource development can be defined as “a series of experiences that stretch individuals to learn new knowledge, attitudes, and behaviour” (Beer et al., 1990, p. 36). It relies mainly on job and task experience, i.e., on-the-job training, which is most conducive to the development of experiential knowledge. Third, the appraisal of individual performance relies on a combination of objective and subjective criteria. The former can be used for evaluating results, while the latter apply to the assessment of work attitudes and behaviours, that best reflect the potential contribution of individuals to the organisation.

Techniques to motivate the workforce present greater variations depending on the country considered. In the Japanese model, employees are motivated to engage in continuous learning and problem-solving because these activities are taken into account in performance appraisal, which in turn affects promotion opportunities and pay (Aoki, 1990). In the U.S., the use of financial scheme such as gain-sharing or profit-sharing is an important feature of firms pursuing innovation strategies. However, some authors points to declining career prospects within flatter, flexible organisations, and a resulting increase in interfirm mobility (MossKanter, 1989; Noyelle, 1987). Thus, employability is here considered as an alternative to internal promotion for motivating employees when growing environmental uncertainty prevents the firm from committing to stable employment (Waterman et al., 1994). These two options can be viewed as U.S. and Japanese versions of SHRM, although national differences

should not be overemphasised. As pointed by Cole (1994), Japanese firms do not offer systematic promotion and employment security, and a U.S. employee may stay with the same firm as long as his or her performance meets the firm's strategic objectives. In both cases, the focus is on enhancing individual learning processes and their contribution to the knowledge base of the firm.

The three main features of a strategy aimed at developing core competencies, including a strong reliance on horizontal co-ordination processes, trust, and SHRM, contribute to maintain a dynamic balance between co-operation and competition within the firm. Individuals co-operate within and across teams, functions and departments on the basis of shared norms and values, while competing to improve their positions in terms of pay, promotion and/or employment prospect. Such balance between co-operation and competition supports continuous learning and improvement within the firm. However, the adoption of an internal structure supportive of competencies development needs to be complemented by a redefinition of organisational boundaries. This repositioning of firms' activities involves the externalisation of activities that do not require firm-specific skills or competencies, as well as the building of closer links with firms performing closely complementary activities. These two dimensions of competence-based strategies will now be examined, leaving momentarily aside the important and somewhat elusive question of determining what a firm's core competencies are, or on which set of activities a firm should concentrate its efforts to build superior capabilities.

The externalisation of standard competencies

Strictly defined, externalisation refers to the use of market links to co-ordinate transactions, along the characteristics of Macneil's (1980) discrete contracting. As pointed by institutional labour market economists, the employment relation was managed through the

market in the early days of industrialisation, before becoming progressively internalised in bureaucratic management systems (see, for example, Jacoby, 1985). Since the mid-1980s, a number of authors have signalled a resurgence of externalisation practices in reaction to changes in firms' competitive environment (Atkinson, 1985; Capelli, 1994, 1995; Mangum et al., 1985; Pfeffer and Baron, 1988). This body of work has adopted a broader approach to externalisation, encompassing all employment and interfirm relations that do not benefit from the firm's competencies development strategy. Pfeffer and Baron (1988) summarise these views by distinguishing three types of externalisation, respectively applying to the location of work, its administrative control, as well as its duration.

The externalisation of place refers to the growing use of homework, either through the informal sector or through institutionalised work programs in major corporations. It also includes the geographical relocation of particular groups of jobs and activities, such as the transfer of back-office functions from urban to suburban areas in the U.S. (Noyelle, 1987; Sassen, 1991), or the rise of offshore production and data-processing activities (Colclough and Tolbert, 1992; Pearson and Mitter, 1993). The externalisation of administrative control is based on the resort to temporary help service workers, leased employees, self-employed workers, as well as suppliers and business service enterprises (Belous, 1989; duRivage, 1992; ILO, 1996). Reducing the duration of employment provides a third form of externalisation, which can be accomplished by hiring employees on a part-time or fixed-term basis, or simply without committing to a continuation of the employment relationship (Atkinson, 1985; Hirschhorn, 1988; Osterman, 1988). Externalisation presents several advantages for firms engaged in developing their core competencies, and is made possible by a combination of changes in firms' technological, social and institutional environment.

Externalisation as a way to increase internal homogeneity

Externalisation can enhance the development of core competencies by increasing the firm's internal consistency in terms of activity, culture and HRM practices. It applies to those activities that present a low degree of interdependence with the firm's core activity, as well as a low degree of ambiguity in measuring performance. From the perspective of the firm, such activities are associated with skills of a generic rather than a specific nature. However, the skills content of externalised activities is not necessarily low, as firms might externalise specialised activities that require complex skills but are not tightly coupled to their main activity. Externalisation can help to preserve the cultural homogeneity of the firm by keeping out individuals with different norms and values. Likewise, maintaining internal pay equity might lead firms to externalise higher-paid activities in order to avoid pressures to upgrade the prevailing wage scale, as well as lower-paid activities that would have to be compensated at a higher rate if performed within the firm. Conversely, externalisation allows firms to exploit cost differences between different types of workers, by mobilising external supplies of cheap labour (Rubery and Wilkinson, 1981, p. 123).

The use of externalisation to increase internal homogeneity is a central feature of the Japanese model. Some employment categories such as part-time and temporary positions are indeed not integrated into human resource development strategies, and are predominantly filled by women whereas men hold the majority of regular jobs (Houseman and Osawa, 1995). Another, and perhaps more explicit, form of externalisation can be found in the important use of subcontracting in Japanese industries. Smitka (1991) found that the development of subcontracting in the Japanese automotive industry was motivated by the desire to maintain a strong egalitarian ethic within leading firms. He further demonstrates that wage differences between large and small firms are primarily linked to age, gender and educational differences in their workforce, with small firms employing a disproportionate share of workers who are older, are women, or have less education.

Externalisation as a way to increase flexibility

Atkinson (1985) distinguishes three main types of flexibility in firms' operations:

- functional flexibility refers to firms' ability to redeploy competencies in order to adapt products and work processes to new environmental demands; it relies on the versatility of workers' skills and their ability to perform a variety of tasks within the organisation;
- numerical flexibility is defined as the capacity of firms to adjust the amount of labour in response to variations in the level of output demand; it can be obtained by changing the number of hours worked and the number of workers employed;
- financial flexibility is sought to support the two former types of flexibility, by using performance-based pay to motivate skills development and/or by paying labour at competitive market price.

In relation to this typology, workers who embody a firm's core competencies provide its main source of functional flexibility, as well as some financial flexibility linked to performance-based pay. They also contribute to numerical flexibility through variations in the number of hours worked, as illustrated by the substantial use of overtime in Japanese firms (Seike, 1992). However, the importance of social cohesion and functional interdependencies within the firm puts some restriction on the numerical flexibility that can be obtained from core workers. Because of the potentially disruptive impact of strong variations in the number of people employed, employment in core activities tends to be a fixed resource for firms engaged in competencies development strategies. In that perspective, externalisation provides the main source of numerical flexibility, allowing firms to meet fluctuations in output demand while buffering their permanent workforce from environmental turbulence, along the core-periphery model described by Atkinson (1985) and Osterman (1988). Externalisation can also be used to achieve some functional flexibility, as firms can access a variety of skills in the external labour market to perform special projects or meet unusual market demands. Likewise, financial flexibility is enhanced as firms can reduce their fixed cost by focusing

competencies development strategies on core employees. Another cost advantage provided by externalisation relates to the fact that contingent workers, including part-time, temporary and contract workers, typically receive fewer benefits than do regular employees (duRivage, 1992; GAO, 1991; Hipple and Stewart, 1996). Finally, externalisation provides a mean to maintain competitive pressures on core workers, knowing that they can be displaced to peripheral positions if they do not exhibit satisfactory performance (Aoki, 1990, Pfeffer and Baron, 1988).

Enabling factors in the use of externalisation

A number of environmental factors have played a facilitating role in allowing firms to resort to externalisation. They include the development and diffusion of information technologies, the changing characteristics of the labour force, as well as changes in the institutional landscape. First, information technologies offer new possibilities to standardise and externalise work, as illustrated by the case of office work in service industries (Appelbaum, 1989; Coates, 1988; Noyelle, 1987). Although the automation of office work is not the primary driver of externalisation, such practices are enabled by possibilities to rationalise work, depersonalise monitoring, and allow work to be done at remote sites. The diffusion of information technology is also accompanied by the development of skills of a generic nature that can be easily transferred from one firm to another, reducing firms' incentives to develop them internally. When the use of a particular technology is loosely coupled to the firm's core activities, it is thus in its interest to externalise it.

Second, firms' incentives to externalise work are reinforced by changing labour supply characteristics. In the United States, for instance, the growing share of women and minorities in the workforce contributes to diversify the labour pool from which employers can draw, increasing incentives for firms to diversify the mechanisms by which labour is mobilised. Studies by Belous (1989), Tilly (1992) and Carré (1992) show that women and minorities are

over-represented among temporary and part-time workers in this country. The availability of a large labour pool also reduces firms' incentives to internalise employment (Atkinson, 1985; Cole, 1989). As will be discussed later, both the diversity and abundance of the labour supply are substantially increased by the globalisation of firms' activities, as firms can use labour resources in a variety of locations across national boundaries.

Finally, a number of changes in the institutional environment of firms have facilitated the development of externalisation practices. Capelli (1995) argues that declining pressures from unions and governments provide at least part of the explanation for the reversal of internalisation practices in the 1980s and 1990s in the United States. The decline of unions' organising success, their difficulties in resisting concessions in organised settings, as well as government "laissez-faire" attitude toward corporate downsizing have made it easier for firms to externalise standard competencies. Such practices have also been facilitated by the rise of new institutions such as temporary help agencies, that play an intermediary role between the firm and the external labour force (Pfeffer and Baron, 1988).

This overview of externalisation practices highlights the diversity of ways by which firms can mobilise labour resources without integrating them into competencies development strategies, as well as their reasons for doing so. However, it would be misleading to see firms as developing core competencies in isolation, surrounded by market links applying to external competencies. Externalisation is only part of the picture, and needs to be combined with greater proximity, or quasi-internalisation, between the firm and some of its outside partners.

The quasi-internalisation of complementary competencies

Richardson (1972) was among the firsts to express dissatisfaction with the traditional dichotomy between firm and market, emphasising that an important part of economic activities are organised in "the dense network of co-operation and affiliation by which firms are inter-related" (p. 883). Interfirm co-operation has become increasingly significant during

the last two decades, as firms searched for new strategic responses to growing complexity, uncertainty and cost pressures in their competitive environment (Badaracco, 1988; Campbell, 1992; Miles and Snow, 1994; Starr, 1991). As emphasised by MossKanter (1989) and Starr (1991), co-operative relations allow firms to develop synergies, i.e., interactions between businesses that provide benefits above and beyond what they can achieve individually. They also help firms to develop and extend their core competencies, by acquiring new capabilities possessed by other firms (Hamel and Prahalad, 1994). In general terms, such synergies can be obtained from two areas of interfirm co-operation: vertical co-operation applying to the co-ordination of complementary activities, and horizontal co-operation between firms involved in similar activities. In order to characterise the third component of a competence-based organisational model, some critical dimensions of inter-firm cooperation will first be highlighted, before discussing vertical and horizontal co-operation.

The forms of inter-firm co-operation

Co-operative relations between firms may take a great variety of forms. They can be based on formal links between organisations such as joint ventures, consortia, share-holding, licensing or franchising agreements, as well as long-term contracts or exclusive dealing arrangements. However, as Teece (1992) emphasises, “(M)uch of the complexity and subtlety of these arrangements is missed by analysts who narrowly focus on legal titles and the structure of property rights” (p.5). Co-operative relations can also be supported by electronic linkages facilitating the circulation of information between companies, but they are not technologically driven: “(I)n all cases they depend largely on the attitudes and practices of the participating managers” (Johnson and Lawrence, 1988, p. 94).

These remarks point to the importance of informal dimensions in defining interfirm co-operation. From a competence-based perspective, three informal dimensions stand out to characterise the dynamics of interfirm co-operation: joint-competencies development, trust,

and stability. First, interfirm co-operation can sustain the joint-creation of experiential knowledge, on the basis of information-sharing and problem-solving activities across organisations (Badaracco, 1991; Powell, 1990). Second, joint-competencies development involves trust. It requires intimate working relationships between the personnel of co-operating firms, and the existence of shared norms and values among these individuals (MossKanter, 1989, 1994). Finally, joint-competencies development involves a long-term perspective. Such stability is essential both to motivate firms to develop skills specific to the relationship, and to allow them to reap the returns from such relationship. Co-operative relations can thus be seen as joint-investments yielding benefits over time as firms learn how to work together more effectively. Sako (1990) adopts a comparable view in her typology of Obligational Contractual Relations (OCR) versus Arm's-length Contractual Relations (ACR), emphasising the role of trust and obligation, as opposed to financial or technological links, to characterise OCR.

Vertical co-operation

For Richardson (1972), activities are complementary when they represent different phases of a process of production, such as marketing, manufacturing and research-development. They can also be defined as the various stages of a "value chain" regrouping the discrete activities involved in designing, producing, marketing and delivering a specific product (Porter, 1985; Jarillo, 1995). As firms focus on their core activities or competencies, new co-ordination needs arise within the value chain between firms engaged in complementary activities. Richardson (1972) demonstrates that such needs cannot be met by resorting to market links, as they involve both a quantitative co-ordination of output volume and a qualitative co-ordination of product characteristics. They require interfirm co-operation, or the building of interfirm relations based on trust, stability, and joint-competencies development.

The development of vertical co-operative relations within the value chain is a logical extension of firms' internal strategies to improve product quality and responsiveness to market changes. Indeed, the management of functional interdependencies extends beyond a firm's internal activities, to their relations with other firms performing complementary activities. In recent years, best practice management models have placed a strong emphasis on building closer relations with customers and suppliers, together with internal restructuring aimed at increasing flexibility (Hamel and Prahalad, 1994; Miles and Snow, 1994; Woomack and Jones, 1996). These two aspects of firms' strategies are also mutually reinforcing: in order to develop external co-operative relations, firms need to operate internally as decentralised, flexible networks. For example, building closer relations with suppliers requires to give greater autonomy to the firm's purchasing department, that will become involved in learning about suppliers capabilities, helping in improving them, and co-ordinating contacts between the firm's design personnel and their counterpart at the supplier (Badaracco, 1988; MossKanter, 1989, 1994).

Vertical co-operation allows firms to develop specialised capabilities at a particular stage of the value chain while enjoying some of the advantages of vertical integration. Firms benefit from economies of integration provided by their enhanced ability to co-ordinate complementary activities, both quantitatively and qualitatively. At the same time, they avoid what Porter (1980) calls the strategic costs of vertical integration, including higher fixed costs, reduced ability to change partners, non-access to suppliers' and customers' know how, as well as reduced incentives to innovate as buying and selling occur through a captive relationship. Influential examples of vertical co-operation include the subcontracting relations developed by large Japanese and, more recently, U.S. firms, as well as stable linkages between small firms in craft industries and industrial districts (Aoki, 1994; Johnson and Lawrence, 1988; Powell, 1990).

Horizontal co-operation

Horizontal co-operation refers to bilateral or multilateral arrangements between firms performing similar or competing activities. Through such arrangements, firms can pool resources to undertake projects that are beyond their individual capacities due to high costs, high risks and/or insufficient know how. Horizontal co-operation also provides the most effective way to enlarge a firm's market base within the context of global competition (Ohmae, 1994). Joint ventures or licensing agreements allow firms to achieve such goal while keeping down resources immobilisation. Reve (1990) points that horizontal co-operation can also be used to increase a firm's bargaining power in vertical relations, as exemplified by the formation of voluntary retail chains by retailers and their derived advantages in the terms of trade with suppliers. Large Japanese groups such as Mitsui and Mitsubishi provide another a well-known example of horizontal co-operation, where member firms benefit from informal information exchange between corporate managers, as well as favourable financing terms from the large banks which are part of the groups (Imai, 1988; Nekhili, 1998). Horizontal co-operation equally applies to small concerns, that can develop economies of scale by sharing research and development centers, purchasing services, warehouses, or marketing service.

From the perspective of firms' organisational strategies, however, it is important to note that horizontal co-operation involves less interdependencies between firms' activities, and has a lesser impact on their internal structure and processes, than does vertical co-operation (MossKanter, 1994). Although horizontal co-operation certainly contributes to shape power positions within an industry, it does not alter to a comparable extent the nature of work and the ways in which work is organised within and between firms. For this reason, the proposed model of competence-based organisational strategy focuses on the three dimensions of core competencies development, externalisation of standard competencies, and quasi-internalisation of complementary competencies within the value chain. The following section will analyse the industrial transformations derived from this strategy, drawing of case

studies of industries such as automobiles, garments and electronics, where the disaggregated nature of the production process has allowed for the implementation of particularly advanced forms of competence-based organisational strategies.

II. Changing forms of industrial organisation: the rise of global production networks

As previously mentioned, competence-based organisational strategies involve to redefine both firms' activities and their relations to other firms performing complementary activities. Through externalisation and quasi-internalisation, enterprises are developing complex webs of interfirm linkages, thus transforming the organisation of production within their industry through the emergence of network forms of organisation. These networks have been studied from a variety of theoretical perspectives, among which the "strategic network" and "global commodity chain" approaches can be usefully combined for the purpose of our analysis. On the one hand, both are concerned with the organisation of complementary activities within the value chain, and with changing firms' power positions within their industries. On the other hand, each emphasises distinct and complementary aspects of production dynamics.

The strategic perspective on interfirm networks is primarily concerned with firms' competitiveness. It defines a strategic network as a "long-term, purposeful arrangement among distinct but related for-profit organisations that allows those firms in them to gain or sustain a competitive advantage vis-à-vis their competitors outside the network" (Jarillo, 1988, p. 32). Drawing on management theory, the strategic perspective highlights the need for command and co-ordination within interfirm networks, if these are to provide a superior source of competitive advantage. Accordingly, a strategic network is led by a focal organisation that co-ordinates relations among firms specialised at various stages of the value chain (Jarillo, 1988; Sydow, 1992; Miles and Snow, 1994). Such perspective allows to link firms' organisational strategies to the dynamics of interfirm relations, by shifting the focus of

analysis from the firm to the network, while retaining a consistent view of competitiveness and its organisational requirements. However, the strategic network approach says little on the broader social, institutional, geographical conditions of firms' operations, as these tend to be consistently overlooked in management and strategy research.

Rooted in the sociology of development, the global commodity chain (GCC) approach adopts an enlarged analytical perspective by taking into account the geographical and institutional context of production. A GCC consists of “sets of interorganizational networks clustered around one commodity or product, linking households, enterprises, and states to one another in the world-economy” (Gereffi et al., 1994, p. 2). It is characterised by three main dimensions: “(1) an input-output structure, (i.e., a set of products and services linked together in a sequence of value-adding...activities, (2) a territoriality (i.e., spatial dispersion or concentration of production and distribution networks...), and (3) a governance structure (i.e., authority and power relationships that determine how financial, material, and human resources are allocated and flow within the chain)” (Gereffi, 1994, p. 96-97). Strategic networks can thus be seen as forming the complex interfirm dynamics developed within global commodity chains. The strategic perspective allows to "zoom in" global commodity chains to better comprehend interfirm and competitive dynamics, whereas GCCs offer a broader outlook on the locational and institutional context of firms' activities. Just as the value chain links together complementary activities at the firm level, global commodity chains encompass complementary industries involved in the production and commercialisation of a final product.

Combining these two perspectives and levels of analysis, the remaining of this section will highlight some key characteristics of production networks in relation to the implementation of competence-based organisational strategies. The three main dimensions of GCCs will be used as an organising framework, to explore how competence-based organisational strategies are transforming the governance, the input-output and geographical

structure of production. The issue of governance will first be considered, focusing on why lead firms exist and how they manage network relationships to achieve superior competitive advantage. An analysis in terms of activity, or input-output structure, will then be developed to identify the sources of power in production networks, and how lead firms can reach dominant positions by controlling strategic activities within the value chain. Finally, the geography of production networks will be discussed by looking at interactions between global and local dynamics. The discussion will primarily rely on a GCC perspective, complemented with a third approach to interfirm networks that emphasises the local embeddedness of production activities, along the lines of the comparative business systems and industrial districts perspectives. Overall, this section will draw on prominent cases of network forms of organisation in Italian industrial districts, as well as Asian and American manufacturing industries.

The governance structure: power relations in production networks

The governance structure of production networks is emphasised both in the GCC and strategic network perspectives. Gereffi (1994) establishes a distinction between "producer-driven" and "buyer-driven" commodity chains, capturing the diverse configurations of leadership within transnational production networks. In capital- and technology-intensive industries such as automobile, aircraft, computers and semi-conductors, firms driving the chain are large transnational manufacturers, while in labour-intensive industries such as garment, footwear, and consumer electronics, the commodity chain is driven by large retailers, branded marketers and trading companies. Although Gereffi (1994) emphasises that lead buyers or producers exercise significant leverage on other firms within the chain, the rationale for power relations, the ways in which power is exercised, and the ways in which lead firms use it to shape network structure and boundaries, tend to remain underexplored. The strategic network perspective allows to shed some light on these issues.

The rationale for power relations in production networks

As mentioned above, the strategic perspective tends to emphasise the need for a central co-ordination of production networks in order for member firms to develop superior competitiveness. Sydow (1992) stresses that “(T)he *focal organisation* leading the network...is permanently engaged in attracting and selecting new members,...in sustaining network relationships by managing conflicts and learning, in positioning and repositioning the network in the market, and in building the structure and the culture of the network” (p. 114, emphasis in original). Thus, the lead firm provides the efficient allocation of resources, the global vision, and the speed in decision making which are necessary to build up and maintain the network's competitive advantage.

Recent transformations in Italian industrial districts tend to support such view. The traditional district model emphasises the existence of non-hierarchical relations between small and medium-sized firms clustered in a given area or region (Piore and Sabel, 1984; Pyke et al, 1990). In recent years, however, intensified international competition and fast-changing markets have placed heightened pressures on district firms to innovate and improve quality and productivity, generating greater needs for interfirm co-ordination. The districts that successfully met these challenges have adopted new forms of organisation, where local firms are integrated within larger groups based on formal and informal relations (Cossentino et al., 1996; Nuti and Cainelli, 1996; Tiberi-Vipraio, 1996). These groups tend to be organised around a lead firm co-ordinating relations with other firms within the value chain. Some of these lead firms have also extended interfirm linkages beyond the traditionally restricted geography of the district by relocating production activities to other regions or countries. Thus, the continuing success of Italian districts can be attributed to the emergence of strategic networks in, and beyond, these localities, where lead firms have stabilised interfirm relations in order to achieve a greater co-ordination of activities.

Co-operation as a tool for control in production networks

How do lead firms manage interfirm relations within production networks? This issue has been thoroughly studied in Japanese subcontracting networks, showing how co-operative relations based on trust, stability and joint-competencies development allowed lead firms to exercise significant control on their main suppliers (Nishiguchi, 1994; Smitka, 1991). Subcontracting was developed by large Japanese firms in the post-war period on the basis of externalisation strategies aimed at reducing costs, weakening unions, and transferring risks to small suppliers. However, during the following decades, firms reacted to new environmental pressures by transforming their subcontracting relations from market links to relational contracting based on trust, stability and joint-competencies development. In the automobile and electronics industries, large manufacturers delegated to selected suppliers a substantial number of manufacturing functions, and played an essential role in helping them to improve their productive capabilities.

Co-operation and control are closely intertwined in these new subcontracting relationships, as illustrated by "open book" policies where suppliers unilaterally display detailed cost data to manufacturers, or the "grading system" through which prime firms assess suppliers' performance in terms of product quality, price, delivery and other criteria (Nishiguchi, 1994). Suppliers' dependency can also be assessed by looking at characteristics of concentration, substitutability, and essentiality in their economic exchanges (Fauré et al., 1979). First, the exchanges of Japanese suppliers are highly concentrated: in the electronics industry, the main customer accounts for 78%, and top three customers for nearly 92%, of suppliers' annual sales (Nishiguchi, 1994), whereas in the auto industry the prime customer's share of sales has been assessed at 60% (Dyer, Cho, and Chu, 1998). Second, investments made by suppliers are of a highly specific nature, as measured by plant proximity and the percentage of equipment and workers dedicated to a particular customer (Dyer, 1994; Dyer,

Cho, and Chu, 1998; Nishiguchi, 1994). Relatively high levels of assets specificity mean that suppliers cannot easily redeploy their productive resources if their main exchange relationships terminate. Third, such relationships are essential to the subcontracting firms as they apply to their main activity. Consequently, lead firms' control over their main suppliers can be assessed both through the processes of co-operation by which they exercise significant influence on suppliers' internal operations, and through the structural characteristics of economic exchanges between these two types of firms. Although these conclusions derive from the particular case of Japanese networks, similar characteristics have been found in other settings such as the New York garment industry (Palpacuer, 1997; Uzzi, 1996).

The strategic management of network boundaries

A second dimension of network management involves the setting of boundaries, that can be defined as the limits between co-operation and market links. Such boundaries are not set by lead firms unilaterally, as suppliers retain "satellite organisations...enter and leave the network..., position and reposition themselves within the network, and participate to the development of the network" (Sydow, 1992, p. 114). However, lead firms exercise important leverage in this process, using a mix of co-operation and market links to enhance the competitive advantage derived from production networks. Such strategic management of network boundaries appears as a defining feature of subcontracting relations developed in Japanese manufacturing and in the New York garment industry.

In Japan, the formation of co-operative relations has involved not only a transformation of the nature of subcontracting relationships, but also a reconfiguration of lead firms' external linkages, including a concentration of exchanges with key suppliers and the building of a new hierarchy between primary and secondary suppliers. As underlined by many observers, co-operative linkages apply only to primary suppliers, to which lead firms have delegated the management of relationships with secondary suppliers (Kamath and Liker,

1994; Nishiguchi, 1994; Smitka, 1991). While first-tier suppliers perform complex functions, second-tier firms execute simpler tasks under their direction. Secondary suppliers operate at the boundary of the network as they maintain market links with their clients, characterised by unstable orders and strong pressures on price. Thus, the adversarial subcontracting relationships developed by lead firms in the post-war period have been transferred to lower-order suppliers in their current network configuration.

A similarly segmented subcontracting structure can be observed in the New York garment industry, where lead firms have built co-operative relations with core production suppliers while maintaining market links with secondary or peripheral suppliers (Palpacuer, 1997; Uzzi, 1996). These market relations allow lead firms to continuously prospect new production suppliers, and engage in co-operative relations with those that exhibit a potential for skills development and upgrading. As in the Japanese system, if a contracting firm fails to meet the performance requirements of the lead firm, it will be discharged or retrograded to a peripheral network position. The contracting networks of lead firms in the New York garment industry are thus composed of three layers: (1) well-trained suppliers, that demand higher prices and tend to have a relatively diversified consumer base, (2) in-training suppliers, that work almost exclusively for the lead firm and are learning to meet its quality, flexibility and costs requirements, and (3) peripheral suppliers that operate at the margins of its contracting network (Palpacuer, 1997).

Such strategic management of network boundaries allows lead firms to combine the advantages of quasi-internalisation and externalisation in managing network relationships: through stable partnership with first-tier suppliers, they can effectively co-ordinate production activities, both quantitatively in relation to production volumes, and qualitatively with respect to product characteristics. Second-tier suppliers provide additional flexibility to absorb fluctuations in output demand, reduce production costs, and maintain a competitive pressure within the contracting network. The tiered configuration of production networks thus presents

similarities with the core-periphery model identified in employment relations and discussed in the previous section.

The input-output structure: sources of power in production networks

Parent firms of semi-formal groups in Italian districts, large Japanese manufacturers, and lead firms in the New York garment industry present some common characteristics: their core competencies are focused on marketing, product development, some strategic production activities, as well as the co-ordination of interfirm relations within the value chain. In identifying the sources of power in production networks, such positioning in terms of activity is of primary importance. Indeed, these firms' core activities are predominantly associated with the production of services, that constitute a superior source of competitive advantage and allow lead firms to build dominant positions within their industry.

The power of services

The strategic literature underscores the role of services or immaterial outputs as source of value creation in firms' competitive environment. Quinn et al. (1991) refer to "the power of services", stressing that "value added is increasingly likely to come from technological improvements, styling features, product images, and other attributes that only services can create" (p. 302). Analysing the success of large American corporations, Reich (1991) similarly observes that "the distinction that used to be drawn between "goods" and "services" is meaningless, because so much of the value provided by the successful enterprises...entails services" (p. 85). The governing role of services has also been underlined from a global commodity chain perspective. Rabach and Kim (1994) stress that "(S)ervices have come to play a critical role in GCCs because they...integrate and co-ordinate the atomized and globalized production process" (p. 123). Consequently, "TNCs have steadfastly retained command over core services, since these are not only high value added, but allow

TNCs to *control* the entire process of production and distribution” (p. 138, emphasis in original).

Such view of competitive advantage sheds a new light on the Penrosian firm, where activities are essentially defined as the production of services. Within the value chain, some functions or activities such as marketing and research would be more service-intensive than others, associated to the most standardised stages of the production process. These functions mobilise and create more experiential knowledge, so that they generate more value and are more difficult to imitate. Consequently, lead firms find it profitable to concentrate their core competencies on the most service-intensive stages of the value chain, while controlling other related activities through production networks. In such strategies, the management of production networks becomes in itself a service-intensive function and superior source of competitive advantage. Production networks also allow lead firms to develop economies of scale, by spreading the high cost of developing strategic services on large production volumes while avoiding to immobilise resources in production-related investments.

Service-intensive functions thus constitute the main source of power in production networks, both because they mobilise hard-to-copy, experiential knowledge, and because they provide economies of scales to the firms controlling them. Such perspective provides elements to answer the question raised in section 1, of determining what a firm's core competencies are or should be. It indicates that strategic services might constitute superior core competencies in terms of derived power and competitive advantage, so that firms should attempt to focus on these activities within their industries. However, Gereffi's (1994) typology highlights the importance of industry-specific characteristics in determining sources of power and competitive advantage. In labour-intensive industries such as garment, little economies of scale can be derived from production so that lead firms indeed focus on strategic services, but in capital-intensive industries such as automobiles, lead firms retain direct control over some parts of manufacturing to strengthen their competitive position.

Likewise, the distribution of power and roles within production networks is likely to evolve overtime, as demonstrated by the recent emergence of powerful first-tier suppliers in automobiles and electronics (Humphrey, 1998; Sturgeon, 1998). Mirroring the position of lead firms such as GM or Dell within these industries, the power of global first-tier suppliers lies both in scale economies and core service capabilities such as component design and quality control.

New forms of industrial organisation

By controlling key service functions, lead firms might be able to substantially alter the forms of competition within their industry. A first implication can be the formation of dominant "strategic groups", defined as "clusters of firms within an industry that have common specific assets and thus follow common strategies in key decision variables" (Oster, 1994, p. 80; see also Porter, 1980). Lead firms' strategic groups are protected by strong entry barriers, based on scale economies as well as the complexity of required competencies, allowing lead firms to reduce their exposure to competition and increase their profits above the industry average. By contrast, entry is much easier in strategic groups where firms perform more simple work. In the most standardised stages of the production process, skills requirements are limited and scale economies are of diminishing importance as mass production patterns continue to decline. Within production networks, suppliers involved in production activities are thus more vulnerable to competitive pressures, although to a lesser extent in the case of first-tier suppliers. Accordingly, the new patterns of industrial organisation formed by production networks can be characterised by two levels of segmentation: a vertical segmentation between lead firms and suppliers, reflecting their specialisation at different stages of the value chain, and an horizontal segmentation between first-tier and second-tier satellite firms, corresponding to a more detailed division between complex and simple tasks at a given stage of the value chain (Figure 2).

INSERT FIGURE 2 ABOUT HERE

Another important implication of the “power of services” in terms of industrial organisation relates to firms’ size and the comparative advantage of large versus small firms in performing service-intensive activities. Indeed, the existence of scale economies in service-intensive functions is likely to favour the preponderance of large firms as leaders of strategic networks. Such is the thesis developed by Harrison (1994), who argues that if production activities are being increasingly decentralised in small, flexible firms, the locus of power and control in interfirm networks remains concentrated within the largest firms. Nevertheless, recent trends in the electronics industry show that technological changes can alter the sources of scale economies within an industry, allowing for the emergence of large, transnational first-tier suppliers and shifting power relations between lead firms and suppliers (Sturgeon, 1998).

The geographical dimension: global and local patterns in production networks

What trends can be identified with respect to the geography of production networks? On the one hand, the GCC perspective highlights the growing internationalisation of production activities (Gereffi et al., 1994). On the other hand, the traditional district model puts emphasis on the role of geographical proximity in fostering co-operative, flexible interfirm relations. Firms' embeddedness within local communities favours shared norms and values, that are supportive of trust in interfirm relationships. Geographic proximity also allows to build and transmit experiential knowledge through personal, face-to-face contact. For these reasons, the diffusion of co-operative interfirm relations has been considered by some to reinforce tendencies toward a regional agglomeration of activities (Storper and Scott, 1989). Such global and local perspectives are not necessarily conflicting, however, if one

considers characteristics of firms' size in production networks. Indeed, geographic proximity is particularly important for small firms since these are less able to engage in large-scale networking (Tödling, 1994). By contrast, successful multinationals demonstrate an ability to develop dynamics of trust and competencies building on a global scale. Such global strategies are achieved through a complex balance between centralised co-ordination at headquarters and the local autonomy of subsidiaries, allowing for local units to operate flexibly and participate to the learning dynamics of localised networks (Ohmae, 1984). Thus, global networks are not place-free but embedded in a variety of local contexts, a notion captured by Dicken et al. (1994) in terms of "globalized local embeddedness".

The development of such locally-embedded global networks has been made possible by the diffusion of space-shrinking communications and transport technologies, as well as the growth and spread of large corporations capable of organising activities across national boundaries (Dicken, 1998). Supply-side factors also played a role, as the development of local industrial capabilities attracts global firms in particular locations. For instance, the rise of export manufacturing activities in East Asia has resulted from the existence of a dynamic enterprise base and supportive state policies, providing incentives for foreign firms to develop local production linkages (Gereffi, 1995, 1996). These local dimensions are emphasised by the business systems perspective, showing how a country's social, institutional and historical characteristics shape the structure and dynamics of production (Hamilton, 1994; Whitley, 1996). Such perspective is needed to understand local industrial upgrading dynamics, or how specific locations might enter global commodity chains and improve their position in terms of value creation and derived competitive advantage. It also helps to explain differences among lead firms' strategies in relation to dominant patterns in their country of origin. For instance, American electronics lead firms have been more inclined to externalise production activities than their Japanese counterparts (Sturgeon, 1988).

The purpose of this discussion, however, is to highlight key dynamics in firms' organisational strategies and network forms of organisation, that may translate into a diversity of operational practices depending on the national or local context of firms' activities. Accordingly, whereas the business systems perspective highlight national specificities, the GCC perspective allows us to identify global patterns of production across locations, and as such is better suited to our analysis. Nevertheless, evaluating global trends in the geography of production networks remains a complex matter. Focusing on highly internationalised manufacturing industries such as garments, automobiles and electronics, two major trends will here be emphasised: an international division of work where the various stages of the value chain are performed in different locations, coupled with a local division of work where various stages are clustered in a given location.

International segmentation: core and periphery locations in production networks

One influential view of the spatial organisation of activities within global networks revolves around Hymer's (1972) model and the New International Division of Labour (NIDL) (Froebel et al., 1980). Both consider multinationals as central actors in the international distribution of activities, and stress differences in the type of functions performed in various locations: multinationals centralise knowledge-intensive functions in core countries, while low-skilled, standardised functions are performed in peripheral countries. According to Sassen (1991), the growing dispersal of production activities around the world increases the need for lead firms to centralise service-intensive activities in a few poles where the corresponding competencies are produced and developed. Such strategies enhance the role of global cities such as New York, London and Tokyo, as centres of command in global production networks. Dicken et al. (1994) similarly argue that headquarters and R&D functions remain highly concentrated geographically because they tend to be strongly embedded in these local milieu. Tödting (1994) considers that the diffusion of network forms

of organisation tends to strengthen major metropolitan areas as innovation poles and locations for research and technology centres.

Such geographical distribution of activities can be observed in American high tech industries, where service-intensive functions are clustered in a few centres such as the Boston and San Francisco Bay areas, while a substantial share of high tech assembly and manufacturing has moved to the Third World (Colclough and Tolbert, 1992). In the low tech garment industry, service-intensive functions including product design, marketing, sales, and network management also tend to be concentrated in a few cities, among which New York and Los Angeles are prominent, whereas production activities are widely dispersed in a growing range of peripheral and semiperipheral countries. The production networks of American lead firms have become increasingly diversified over time, as the NICs specialised in higher value-added manufacturing and less-developed countries took over low value-added production. Consistent with Hymer's (1972) model, lead firms have thus established a division of labour between countries that broadly corresponds to the segmented structure of their production network: first-tier suppliers are located in semiperipheral countries such as Hong Kong and South Korea, and suppliers in peripheral countries such as China are essentially in a second-tier position (Gereffi, 1994).

Local segmentation: core and periphery within locations

The tendency toward an international division of labour within production networks appears to be combined with two counteracting trends: the development of service-intensive activities in semi-peripheral locations, and the persistence of manufacturing activities in core locations. The first trend has been substantially documented in East Asian countries, where firms' positions in international networks have evolved from low value to higher value contributions. Serving local markets appears as a major incentive for lead firms to decentralise some service-intensive functions to this part of the world, as illustrated by recent

trends in the electronics industry (Ernst, 1997). Even in industries such as garment, where lead firms are predominantly serving Western markets, the role of core suppliers located in Hong Kong, Taiwan and South Korea has substantially evolved over the past decades, from low cost manufacturing to high quality production and network co-ordination activities (see Gereffi, 1994).

Conversely, low cost production activities have not disappeared in high powered, service-intensive locations. In the United States, an abundant immigrant labour pool stimulates the development of manufacturing activities near the research, marketing and management activities controlled by lead firms. In the clothing industries of New York and Los Angeles, production activities are now performed by Latino and Asian suppliers specialised in small volume manufacturing, for which foreign sourcing is not economical (Loucky et al., 1994; Palpacuer, 1997; Waldinger, 1986). Accordingly, local and offshore producers play a complementary role in global production networks, with small-volume orders being placed locally while the bulk of large-volume orders goes to Asia and Central America. The development of production activities also introduces new forms of segmentation among local producers, comparable to those identified in Taiwan's and Hong Kong's garment industries (Gereffi and Pan, 1994; Lau and Chan, 1994). A few large, first-tier contractors have reached first-tier status associated with greater work stability, technological improvement and skill-based HRM, and are surrounded by many small, second-tier contractors absorbing fluctuations in output demand. The overall picture emerging from these various trends is represented in Figure 3, combining the international segmentation of production networks between core, semiperipheral and peripheral locations, and the local segmentation of these networks within core and semiperipheral locations.

INSERT FIGURE 3 ABOUT HERE

III. Implications for employment: new forms of labour market segmentation?

From the perspective of employment, competence-based organisational strategies and network forms of organisation generate complex segmentation patterns that are simultaneously situated within and between firms, as well as within and between locations:

- at the firm-level, externalisation strategies produce a segmentation between regular workers embodying the firm's core competencies, and peripheral workers performing more simple tasks, or tasks which are loosely linked to its core activities, thus contributing to the emergence of the core-periphery employment system discussed in section 1 of this paper;

- at the interfirm level, quasi-internalisation and externalisation strategies generate a segmented network structure between lead firms, first-tier suppliers and second-tier suppliers, with important implications for the quality and stability of jobs in subordinate firms; in Japanese production networks, employment conditions in secondary firms are characterised by low wages, high absenteeism and employee turnover, as well as strong variations in employment levels resulting from fluctuations in output demand (Smitka, 1991); in the New York garment industry, core suppliers offer relatively good conditions in terms of wages, employment stability, unionisation, as well as safety and health criteria, while periphery suppliers do not fare well along these various dimensions (Palpacuer, 1997); in these two cases, employment conditions are strongly differentiated according to firms' position within production networks.

- geographically, such segmented structure can be found both *within* core locations, where some of the lead firms' production suppliers continue to operate, and *between* the core, semiperipheral and peripheral locations where these networks have spread over time; when local industries improve their position within global production networks, they are thus likely to develop new patterns of employment segmentation at the local level, as illustrated by the upgrading trajectory of the Taiwanese garment industry (Gereffi and Pan, 1994). More generally, global links produce new interdependencies between local industries, so that the

quality and quantity of local jobs are increasingly related to local firms' position within a global value chain, and to the nature of their relations to other network firms.

Some implications of these new segmentation patterns can be explored by discussing how they differ from traditional forms of employment segmentation, and raise new challenges for local policy-makers.

Traditional versus new forms of labour market segmentation

Traditional segmentation theories were developed in the 1960s and 1970s, highlighting key patterns of employment differentiation in developed countries during the post-war period. At the firm level, "primary" labour markets are associated with relatively good employment conditions in terms of wages, stability and promotion opportunities, protected by labour laws and collective agreements (Doeringer and Piore, 1971; Piore, 1975). As highlighted by Piore (1980), such privileged conditions are made possible by the existence of loosely regulated "secondary" labour markets, providing a buffer against cyclical fluctuations and uncertainty in industrial economies. Secondary markets are characterised by low wages, high employment instability, limited promotion opportunities, as well as arbitrary management.

Primary labour markets tend to be located in "center" firms characterised by large size, production integration and mass production systems, leaving to "periphery" firms that portion of aggregate demand which is too specialised or unstable to allow for mass production (Averitt, 1968). Periphery firms are typically small, with limited managerial, technological and financial capabilities. Secondary labour markets are to be found in this periphery, although they can also be attached to center firms through direct employment relations. Thus, traditional segmentation patterns are defined both at the interfirm and intrafirm levels, a characteristic that still applies to the new forms of segmentation identified in this paper. However, competence-based organisational strategies and network forms of organisation are

likely to alter these segmentation patterns along a variety of dimensions, including the nature of core or primary labour markets, the relative size of the core and the periphery, the boundaries between them, as well as their geography.

First, competence-based organisational strategies are transforming the conditions of employment in center firms. Through greater internal flexibility and new priorities in their HRM systems, lead firms are exposing core workers to enhanced competitive pressures and declining prospects for internal career paths. The new organisational model also involves a shift away from industrial relation systems that provided detailed rules for job classification, pay and promotion, towards employment systems that are primarily organised and regulated by the firm's personnel policy (Kochan et al., 1986). New organisational patterns in center firms are thus associated with a diminished role for union organisations, the traditional counteracting power to employers' authority. Second, new firms' strategies are altering the size of core and periphery segments. By focusing on core competencies, center firms are reducing the size of their core workforce and transferring activities to smaller production settings that typically offer lower wages, fewer benefits, less employment stability as well as less opportunity for union representation (Brown et al., 1990). The growing use of contingent workers is also likely to increase the size of the peripheral workforce, raising issues of social protection and representation for these workers.

However, current organisational transformations do not produce a straightforward shift in the relative importance of core and periphery positions. Boundaries between these two segments are becoming increasingly blurred, with the emergence of a great variety of intermediary positions. For instance, networking strategies allow some small firms to improve their economic performance and employment conditions beyond what is suggested by traditional segmentation theory. Such is the case of first-tier suppliers in production networks, that have reached an intermediate position between lead firms and second-tier suppliers. The blurring of firms' boundaries also raises new issues of corporate responsibility.

As pointed by Badaracco (1988), “(T)he old model of social responsibility...presupposed sharp boundaries and hierarchical firms. Government wrote laws, and executives were responsible for their firm's compliance...but where does the buck stop within a network of shared authority?” (p. 88). Similarly, unions negotiate rules that typically apply to firms as self-contained units. Today, their ability to influence employment conditions within a given firm is increasingly constrained by economic interdependencies with outside organisations.

Finally, the new forms of network organisation are transforming the geography of segmentation. Traditional segmentation patterns were largely contained within national, or even regional boundaries, as illustrated by the concentration of U.S. manufacturing industries within the Northeastern region of that country. Such concentration created a fairly close coincidence between the geographical scope of productive activities on the one hand, and the social and institutional framework regulating labour markets on the other hand. The regulation of local labour markets is now constrained by the global dynamics of production networks. In core or semiperipheral locations, local institutions might find it difficult to take actions aimed at reducing local segmentation without running the risk of losing jobs to lower cost locations. In peripheral locations, improving the quality of local jobs might run against providing incentives to attract business from foreign firms. Thus, the new configuration of activities and jobs in production networks calls for innovative political intervention, while making it increasingly difficult for local institutions to perform their regulating role.

Institutional challenges: the need for a new regulatory order

The critical need for institutional responses to these new patterns of segmentation can be better assessed through two examples at the local level. The first involves the paradigmatic case of Italian districts, in which local institutions have been instrumental in building convergence between competitive forces and social cohesion. Today, this model is being challenged by a number of external and internal changes (Cossentino, 1996). Competitive

pressures from developing countries call for a new industrial strategy based on innovation and product quality, but it becomes extremely difficult to devise such strategy for the region as a whole. For Cossentino (1996), “Emilia-Romagna's collective organisations have become less capable of unifying and aggregating interests, and acting as effective vehicles for social participation and mobilisation” (p. 105). In respect of labour markets, recent changes including the growing participation of women, and the emergence of dual labour markets, have combined to weaken labour institutions, resulting in a decline of union membership over the years. At the business level, new forms of industrial organisation have produced a divergence of interests between large and small firms, as well as between innovative, export-oriented small firms and their more traditional counterparts. Conflicts have emerged among the various business organisations representing these views, as to which directions should be taken in defining the districts’ industrial policies. At this stage, the region needs to rebuild a social consensus through a new process of conflict resolution.

The New York garment industry constitutes another case where industrial and labour market restructuring creates the need for a new regulatory model. Here too, an institutional system was historically established to maintain a balance between market forces and social cohesion (Palpacuer, 1996, 1997). Under the impulse of the New Deal, an industrial relations framework was devised to prevent excessive competition from undermining labour standards in small production concerns, building on the recognition that manufacturers hold responsibilities for employment conditions in subcontracting firms. Three important environmental conditions allowed for this regulatory system to operate: the local dimension of the industry at that time, the shared values of the local immigrant communities in which the industry was embedded, and a limited labour supply resulting from a slow down in immigration flows.

These conditions dissolved over the last decades, when lead firms developed global production networks and new immigrant groups entered the local industry, generating an

oversupply of labour in production activities. The non-union sector is also on the rise, further reducing the ability of collective organisations to enforce the local industrial relations systems. In order to contain the deterioration of employment conditions in small production firms, a new social consensus has to be reached among economic and social actors not only at the local level, but also at the global level, since the sweatshop problems in New York City cannot be solved without addressing similar issues in the Asian and Latin American parts of global production networks. Innovative policies include tripartite policies to help small firms upgrade their positions within global production networks, as well as “codes of conduct” experiments by which lead firms commit to monitor employment conditions at their suppliers’ workplace both in the US and overseas. Although the binding nature of such codes is subject to debate, a “new regulatory order” might emerge from these various initiatives, that would adapt to the new configuration of production networks by building on interactions between the local and the global level.

Conclusion

This discussion of current changes in firms’ organisational strategies has highlighted the emergence of network forms of organisation characterised by high levels of flexibility and responsiveness to market changes. It first proposed a competence-based model to analyse the various facets of firms' organisational strategies, including (1) the development of core competencies based on decentralisation, trust, and SHRM, (2) the externalisation of standard competencies through market-based relations with peripheral workers and/or peripheral suppliers, and (3) the quasi-internalisation of complementary competencies through co-operative interfirm relations within the value chain. It then combined complementary perspectives on production networks to analyse the new forms of industrial organisation resulting from the implementation of competence-based organisational strategies, showing how such strategies allowed some firms to build dominant positions

within their industry. By developing a complex mix of market and co-operative linkages to regulate their production networks, by focusing their core activities on service-intensive functions and controlling complementary activities through network relations, and by building on interactions between local and global dynamics to organise network activities, these firms have developed superior competitive advantage and changed the dynamics of competition within their industries.

By redefining their boundaries and developing external linkages, lead firms are extending their influence and activities to new groups of workers, enterprises and countries. In doing so, they generate new growth opportunities and open up possibilities for these groups to participate in the global economy. However, these transformations are also altering the basis upon which traditional mechanisms for social solidarity have been established in local industries. They produce new patterns of employment segmentation both within and between firms, as well as within and between locations, where the most vulnerable groups of workers, firms, and countries are submitted to intense competitive pressures. To contain the social imbalances that might result from such developments, new forms of institutional regulation are needed to help stabilise competitive pressures, improve the relative position of marginal groups of firms and workers, and ensure an equitable distribution of wealth among the various actors involved in global production activities. Because of their dynamic nature, the social and economic processes that generate new forms of segmentation are also creating new opportunities for policy-makers to foster growth and promote social equity.

Overall, this discussion has emphasised the dynamic role played by firms' organisational strategies in explaining industrial and social changes, focusing more specifically on strategies followed by American and Asian lead firms in global industries. Such perspective highlights the dominant organisational logic of powerful actors that shape or influence the behaviour of others including employees, suppliers, foreign competitors, and policy-makers within the global economy. It does not account, however, for the rich diversity

of organisational practices implemented at the local level, and the ways in which these might adapt to, or transform, dominant patterns identified at the global level. Along a global commodity chain approach, it thus provides an ideal-typical view of global dynamics that can usefully inform the study of firms and industries from a local perspective, thus contributing to a better understanding of interactions between global and local dynamics.

REFERENCES

- Aoki, M. (1994), The Japanese firm as a system of attributes: a survey and research agenda. in Aoki, M., Dore, R. (eds.) *The Japanese firm: the sources of competitive strength*. Oxford: Oxford University Press, 11-41.
- Aoki, M. (1990), Toward an economic model of the Japanese firm. *Journal of Economic Literature*, 28, 1-27.
- Appelbaum, E., Batt, R. (1994), *The new American workplace*. Ithaca, NY: ILR Press.
- Appelbaum, E. (1989), The growth of the US contingent labour force. in Drago, R., Perlman, R. (eds.) *Microeconomic issues in labour economics*. New York: Harvester Wheatsheaf, 62-82.
- Atkinson, J. (1985), *Flexibility, uncertainty and manpower management*. Brighton, UK: Institute of Manpower Studies, University of Sussex.
- Averitt, R. T. (1968), *The dual economy; The dynamics of American industry structure* New York: Norton & Co.
- Badaracco, J. L. (1991), *The knowledge link*. Boston, Mass.: Harvard Business School Press.
- Badaracco, J. L. (1988), Changing forms of the corporation. in Meyer, J. R., Gustafson, J. M. (eds.) *The US business corporation: an institution in transition*. Cambridge, Mass.: Ballinger, 67-91.
- Beer, M., Spector, B., Lawrence, P., Mills, D., Walton, R. (1990), *Managing human assets*. New York: The Free Press.
- Belous, R. (1989), *The contingent economy: the growth of the temporary, part-time and subcontracted workforce*. Washington, DC: National Planning Association.
- Berggren, C. (1995), Japan as number two: competitive problems and the future of alliance capitalism after the burst of the bubble boom. *Work, Employment and Society*, 9, 1, 53-95.
- Best, M. (1990), *The new competition: institutions of industrial restructuring*. Cambridge, Mass.: Harvard University Press.
- Brown, C., Hamilton, J., Medoff, J. (1990), *Employers large and small* Cambridge, Mass.: Harvard University Press.
- Burn, T., Stalker, G. M. (1966), *The management of innovation*. London: Tavistock Publications.
- Campbell, D. (1992), Introduction: Is the single firm vanishing? in *Is the single firm vanishing? Inter-enterprise networks, labour and labour institutions*. Geneva: International Institute for Labour Studies, Forum Series on Labour in a Changing World Economy, 1, 1-7.
- Capelli, P. (1995), Rethinking employment. *British Journal of Industrial Relations*, 33, 4, 563-602.

Capelli, P. (1994), Forces driving the restructuring of employment. *National Planning Association*, 16, 2-3, 5-11.

Carre, F. (1992), Temporary employment in the Eighties. in Durivage, V. L. (ed.) *New policies for the part-time and contingent workforce*. Washington, DC: Economic Policy Institute, 45-88.

Coates, V. T. (1988), Office automation technology and contingent work modes. in McLaughlin, A., Dennis, S. M. (eds.) *Flexible workstyles: a look at contingent labor*. Washington, DC: US Department of Labor, Women's Bureau, 29-33.

Cole, R. E. (1994), Different quality paradigms and their implications for organisational learning. in Aoki, M., Dore, R. (eds), *The Japanese firm: the sources of competitive strength*. Oxford: Oxford University Press, 66-83.

Cole, R. E. (1989), *Strategies for learning*. Berkeley: University of California Press.

Colclough, G., Tolbert II, C. M. (1992), *Work in the fast lane*. New York: State University of New York Press.

Conner, K., Prahalad, C. K. (1996), A resource-based theory of the firm: knowledge versus opportunism. *Organisation Science*, 7, 5, 477-501.

Cossentino, F., Pyke, F., Sengenberger, W. (1996) *Local and regional response to global pressure: the case of Italy and its industrial districts*. Geneva: International Institute for Labour Studies, Research Series 103.

Cossentino, F. (1996), The need for a new regulatory and institutional order. in Cossentino, F., Pyke, F., Sengenberger, W. (eds.) *Local and regional response to global pressure: the case of Italy and its industrial districts*. Geneva: International Institute for Labour Studies, Research Series 103, 99-110.

Crestanello, P. (1996), The industrial districts in Veneto: Changes and tendencies. in Cossentino, F., Pyke, F., Sengenberger, W. (eds.) *Local and regional response to global pressure: the case of Italy and its industrial districts*. Geneva: International Institute for Labour Studies, Research Series 103, 67-110.

Dertouzos, M., Lester, R., Solow, R. (1989), *Made in America: regaining the productive edge*. Cambridge Mass.: MIT Press.

Dicken, P., Forsgren, M., Malmberg, A. (1994), The local embeddedness of transnational corporations. in Amin, A., Thrift, N. (eds.) *Globalisation, institutions and regional development in Europe*, Oxford: Oxford University Press, 23-45.

Dicken, P. (1998), *Global shifts: the internationalisation of economic activity*. Third edition. New York: The Guildford Press.

Doeringer, P., Piore, M. *Internal labor market and manpower analysis*. New York: M.E. Sharpe, 1971.

- Durivage, V. L. (1992), *New policies for the part-time and contingent workforce*. Washington, DC: Economic Policy Institute.
- Dyer, J. H., Cho, D. S., Chu, W. (1998), Strategic supplier segmentation: the next "best practice" in supply chain management. *California Management Review*, 40, 2, 57-77.
- Dyer, J. H. (1994), Dedicated assets: Japan's manufacturing edge *Harvard Business Review*, November-December, 174-178.
- Ernst, D. (1997), From partial to systemic globalisation: international production networks in the electronics industry. BRIE Working Paper 98.
- Faure, R., Marchesnay, M., Mathie, B. (1979), L'ombre des grands. *Revue Française de Gestion*, Septembre-Octobre, 108-115.
- Frobel, F., Heinrichs, J., Kreye, O. (1980), *The new international division of labour*. Cambridge: Cambridge University Press.
- General Accounting Office (1991), Workers at risk: increased numbers in contingent employment lack insurance, other benefits. GAO/HRD-91-56. Washington, DC: US General Accounting Office.
- Gereffi, G. (1996), Global commodity chains: new forms of co-ordination and control among nations and firms in international industries *Competition and Change*, 4, 427-439.
- Gereffi, G. (1995), Global production systems and third world development. in Stallings, B. (ed.) *Global change, regional responses*. Cambridge: Cambridge University Press, 100-142.
- Gereffi, G. (1994), The organisation of buyer-driven global commodity chains: how US retailers shape overseas production networks. in Gereffi, G., Korniewicz, M. (eds.) *Commodity chains and global capitalism*. Westport, Conn.: Greenwood Press, 95-123.
- Gereffi, G., Korniewicz, M., Korniewicz, R. (1994) *Commodity chains and global capitalism*. Westport, Conn.: Greenwood Press.
- Gereffi, G., Pan, M.-L. (1994), The globalisation of Taiwan's garment industry in Bonacich, E., Cheng, L., Chinchilla, N., Hamilton, N., Ong, P. (eds.) *Global production: the apparel industry in the Pacific Rim*. Philadelphia, PA: Temple University Press, 127-146.
- Grant, R. (1996), Prospering in dynamically-competitive environments: organisational capabilities as knowledge integration. *Organisation Scienc*, 7, 4 375-387.
- Hamel, G., Prahalad, C. K. (1994), *Competing for the future*. Boston, Mass: Harvard Business School Press.
- Hamilton, G. G. (1994), Organisation of Economies. In Selmer, N. J. and Swedberg, R. (eds.) *The handbook of Economic Sociology*. Princeton, NJ: Princeton University Press, 183-205.
- Harrison, B. (1994), *Lean and mean: the changing landscape of corporate power in the age of flexibility*. New York: Basic Books.

- Hipple, S., Stewart, J. (1996), Earnings and benefits of contingent and noncontingent workers. *Monthly Labor Review*, 119, 10, 22-30.
- Hirschhorn, L. (1988), The post-industrial economy: labor, skills and the new mode of production. *The Service Industries Journal*, 1, Spring, 19-38.
- Houseman, S., Osawa, M. (1995), Part-time and temporary employment in Japan. *Monthly Labor Review*, October, 10-18.
- Humphrey, J. (1998), Globalisation and Supply Chain Networks: the Auto Industry in Brazil and India. International Workshop on Global Production and Local Jobs: New Perspectives on Enterprise networks, employment and local development policy, International Institute for Labour Studies, Geneva, Switzerland, 9-10 March.
- Hymer, S. (1972), The efficiency (contradictions) of multinational corporations. in Paquet, G. (ed.) *The multinational firm and the nation-state*. DonMills: Collier-Macmillan, 49-65.
- Imai, K. I. (1988), The corporate network in Japan. *Japanese Economic Studies*, 1988, 16, 2, 3-37.
- International Labour Organisation (1996), World Employment Report 96/97, International Labour Office, Geneva.
- Jacoby, S. M. (1985), *Employing bureaucracy*. New York: Columbia University Press.
- Jarillo, C. J. (1995), *Strategic networks: creating the borderless organisation*. Oxford: Butterworth-Heinemann.
- Jarillo, C. J. (1988), On strategic networks. *Strategic Management Journal*, 9, 31-41.
- Johnson, R., Lawrence, P. R. (1988), Beyond vertical integration: the rise of the Value-Adding Partnership. *Harvard Business Review*, July-August, 94-101.
- Kamath, R., Liker, J. (1994), A second look at Japanese product development. *Harvard Business Review*, 1994, November-December, 154-170.
- Kochan, T. A., Katz, H., McKersie, R. (1986), *The transformation of American industrial relations*. Ithaca, NY: ILR Press.
- Kochan, T. A., Osterman, P. (1994), *The mutual gain enterprise*. Boston, Mass: Harvard Business School Press.
- Koike, K. (1994), Learning and incentive systems in Japanese industry. in Aoki, M., Dore, R. (eds.) *The Japanese firm: the sources of competitive strength*. Oxford: Oxford University Press, 41-65.
- Lau, H.-F., Chan, C.-F. (1994), The development process of the Hong Kong garment industry: a mature industry in a newly industrialized economy. in Bonacich, E., Cheng, L., Chinchilla, N., Hamilton, N., Ong, P. (eds.) *Global production: the apparel industry in the Pacific Rim*. Philadelphia, PA: Temple University Press, 105-125.

- Lawler, E. (1995), Strategic human resource management: an idea whose time has come. in Downie; B., Coates, M. L. (eds) *Managing human resources in the 1990s and beyond*. Kingston, Ontario: IRC Press.
- Lengnick-Hall, C. A., Wolff, J. A. (1999), Similarities and contradictions in the core logic of three strategy research streams. *Strategic Management Journal*, 20, 1109-1132.
- Loucky, J., Soldatenko, M., Scott, G., Bonacich, E. (1994), Immigrant enterprise and labor in the Los Angeles garment industry. in Bonacich, E., Cheng, L., Chinchilla, N., Hamilton, N., Ong, P. (eds.) *Global production: the apparel industry in the Pacific Rim*. Philadelphia, PA: Temple University Press, 345-361.
- Macneil, I. R. (1980), "The new social contract: an inquiry into modern contractual relations. New Haven: Yale University Press.
- Mangum, G., Mayall, D., Nelson, K. (1985), The temporary help industry: a response to the dual internal labor market. *Industrial and Labor Relations Review*, 38, 4, 599-611.
- Miles, R., Snow, C. (1994), *Fit, failure and the hall of fame*. New York: The Free Press.
- Miles, R., Snow, C. (1986), Organisations: new concepts for new forms. *California Management Review*, 28, 62-73.
- Milgrom, P., Roberts, J. (1990), The economics of modern manufacturing: technology, strategy, and organisation. *The American Economic Review*, June, 511-528.
- Moskander, R. (1994) Collaborative advantage. *Harvard Business Review*, 1994, July-August, 96-108.
- Moskander, R. (1989), *When giants learn to dance*. New York: Simon & Schuster, 1989.
- Nekhili, M. (1999), Le mode de gouvernement des entreprises japonaises. *Revue Finance, Contrôle, Stratégie*, 1, 4, 63-82.
- Nishiguchi, T. (1994), *Strategic industrial sourcing: the Japanese advantage*. New York: Oxford University Press.
- Noyelle, T. J. (1987), *Beyond industrial dualism*. Conservation of Human Resources Studies in the New Economy. Boulder, Col.: Westview Press.
- Nuti, F., Cainelli, G. (1996), Changing directions in Italy's manufacturing industrial districts; the case of the Emilian footwear districts of Fusignano and San Mauro Pascoli. *Journal of Industry Studies*, 3, 2, 105-118.
- Ohmae, K. (1994), Global logic of strategic alliances. in *Global Strategies*. Boston, Mass: Harvard Business Review, 109-128.
- Ohmae, K. (1985), *Triad power: the coming shape of global competition*. New York: The Free Press.

Oster, S. M. (1994), *Modern competitive analysis*. Second edition. New York: Oxford University Press.

Osterman, P. (1988), *Employment futures : reorganization, dislocation, and public policy*. New York: Oxford University Press.

Ouchi, W. G. (1980), Markets, bureaucracies and clans. *Administrative Science Quarterly*, 25, 129-141.

Palpacuer, F. (1997), Subcontracting networks in the New York garment industry: changing characteristics in a global era. Conference on Global Production, Regional Responses, and Local Jobs: Challenges and Opportunities in the North American Apparel Industry, Duke University, Durham, NC, USA, 7-8 November.

Palpacuer, F. (1996) *Stratégies compétitives, gestion des compétences et organisations en réseaux: étude du cas de l'industrie new-yorkaise de l'habillement*. Unpublished doctoral dissertation, Université de Montpellier I, Faculté de Droit et de Gestion de l'Entreprise, France.

Pearson, R., Mitter, S. (1993), Employment and working conditions of low-skilled information-processing workers in less developed countries. *International Labour Review*, 132, 1, 49-65.

Penrose, E. (1959), *The theory of the growth of the firm*. Oxford: Basil Blackwell.

Perrow, C. (1986), *Complex organisations*. Glenview, IL: Scott, Foreman and Co.

Pfeffer, J. (1994), *Competitive advantage through people*. Boston, Mass.: Harvard Business School Press.

Pfeffer, J., Baron, J. (1988), Taking the workers back out: recent trends in the structuring of employment. in Staw, B., Cummings, L. L. (eds.) *Research in Organisational Behavior*, 10, 257-303. Greenwich, CT: JAI Press.

Piore, M. J. and Sabel, C. F. (1984), *The second industrial divide*. New York: Basic Books.

Piore, M. (1980), Dualism as a response to flux and uncertainty. in Berger, S., Piore, M. (eds.) *Dualism and discontinuity in industrial society*. Cambridge, Mass.: Cambridge University Press, 23-54.

Piore, M. J. (1975), Notes for the theory of labor market segmentation. in Edwards, R., Reich, M., Gordon, D. (eds.) *Labor market segmentation*. Cambridge, Mass.: Cambridge University Press, 125-150.

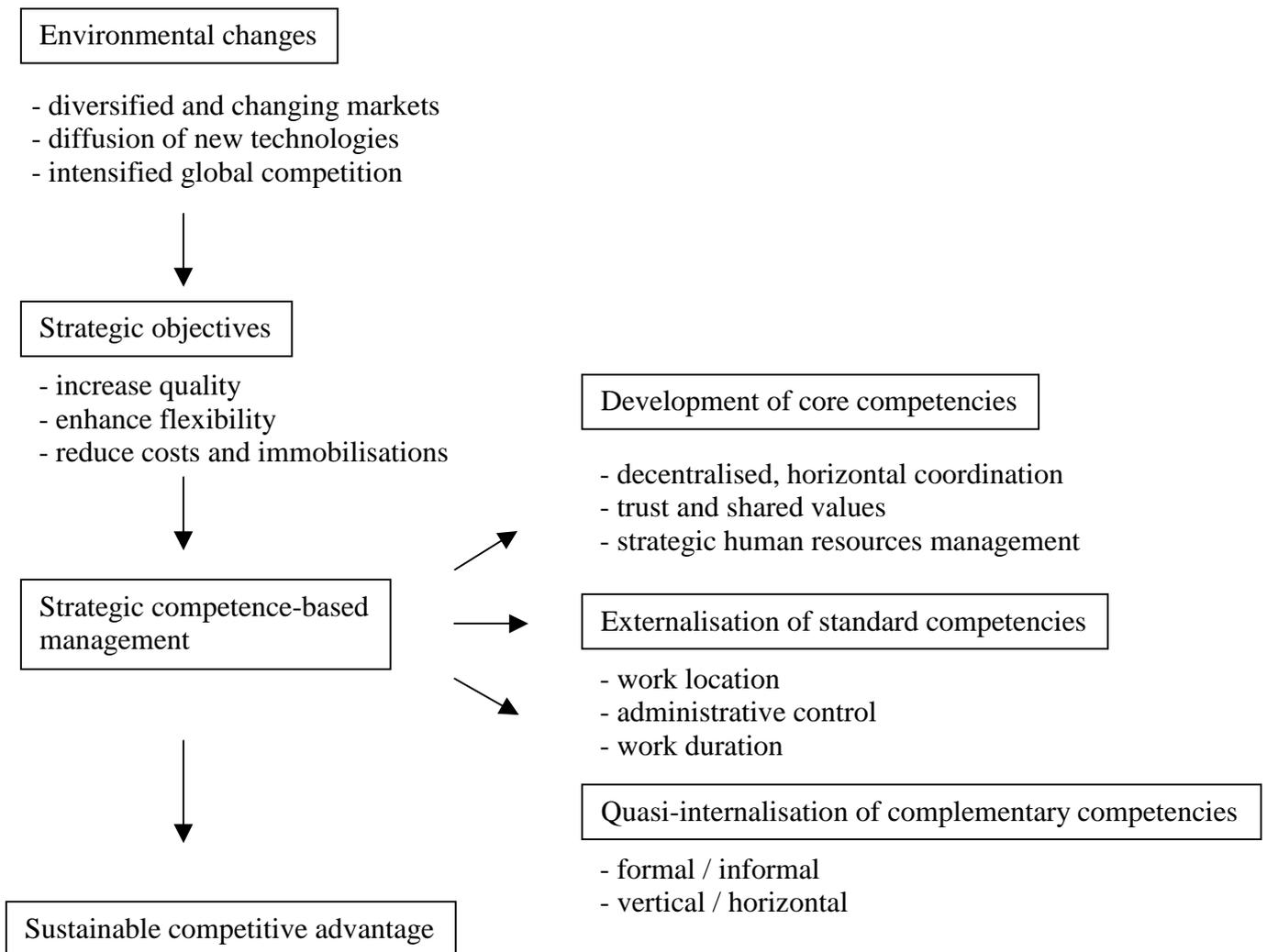
Porter, M. (1985), *Competitive advantage: creating and sustaining superior performance*. New York: The Free Press.

Porter, M. (1980), *Competitive strategy: techniques for analyzing industries and competitors*. New York: The Free Press.

- Powell, W. (1990) Neither market nor hierarchy: network forms of organisation. in Straw, B. M., Cummings, L. L.(eds.) *Research in Organisational Behavior*, 12, 295-336. Greenwich, CT: JAI Press.
- Prahalad, C. K., Hamel, G. (1990), The core competence of the corporation. *Harvard Business Review*, May-June, 79-91.
- Pyke, F., Becattini, G., Sengenberger, W. (1990), *Industrial districts and inter-firm co-operation in Italy*. Geneva: International Institute for Labour Studies.
- Quinn, J. B., Doorley, T. L. , Paquette, P. C. (1991), Beyond products: services-based strategy. in Montgomery, C. A., Porter, M. E. (eds.) *Strategy: seeking and securing a competitive advantage*. Boston: Harvard Business School Press, 301-313.
- Rabach, E., Kim, E. M. (1994), Where is the chain in the commodity chains? The service sector nexus. in Gereffi, G., Korniewicz, M. (eds.) *Commodity chains and global capitalism*. Westport, Conn.: Greenwood Press, 123-142.
- Reich, R. (1991), *The work of nations*. New York: Vintage Books.
- Reve, T. (1990), The firm as a nexus of internal and external contracts. in Aoki, M., Gustafsson, B., Williamson, O. E. (eds.) *The firm as a nexus of treaties*. London, Newbury Park: Sage Publications, 133-161.
- Richardson, G. B. (1972), The organisation of industry. *Economic Journal*, 82, 883-96.
- Richter, F.-J., Wakuta, Y. (1993), Permeable networks: a future option for the European and Japanese car industries. *European Management Journal*, 11, 29, 262-267.
- Rubery, J., Wilkinson, F. (1981), Outwork and segmented labour markets. in Wilkinson, F. (ed.) *The dynamics of labour market segmentation*. London: Academic Press, 115-132.
- Sassen, S. (1991), *The global city: New York, London, Tokyo*. Princeton, NJ: Princeton University Press.
- Seike, A. (1992), The employment adjustment patterns of Japan and the United States. in KOSHIRO, K. *Employment security and labor market flexibility*. Detroit: Wayne State University Press, 245-263.
- Smitka, M. (1991), *Competitive ties: subcontracting in the Japanese automotive industry*. New York: Columbia University Press.
- Stalk, G., Evans, P., Shulman, L. E. (1992), Competing on capabilities: the new rules of corporate strategy. *Harvard Business Review*, March-April, 57-69.
- Starr, M. K. (1991), *Global corporate alliances and the competitive edge*. New York: Quorum Books.
- Sturgeon, T. J. (1998), Technological change and the rise of turnkey production networks for electronics manufacturing: implications for development theory and policy, Massachusetts Institute of Technology, March.

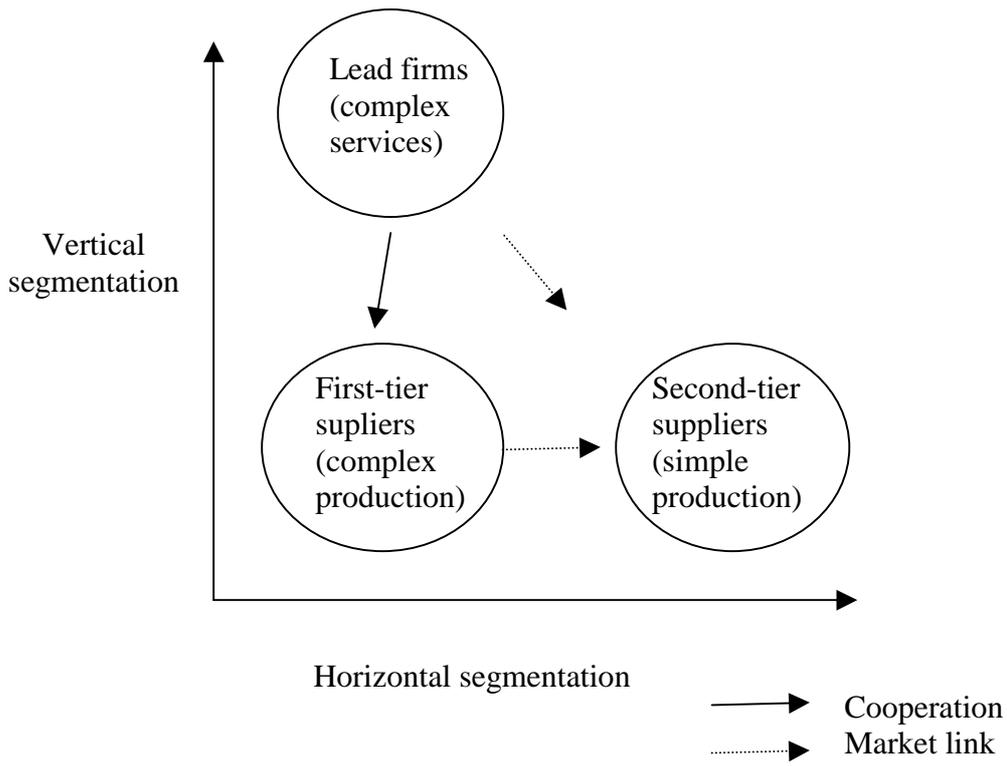
- Sydow, J. (1992), On the management of strategic networks. in Ernste, H., Meier, V. (eds.) *Regional development and contemporary industrial response: extending flexible specialisation*. London: Belhaven Press, 113-129.
- Teece, D. J., Pisano, G., Shuen, A. (1997) Dynamic capabilities and strategic management. *Strategic Management Journal*, 18, 7: 509-533.
- Teece, D. J. (1992), Competition, co-operation and innovation: organisational arrangements for regimes of rapid technological progress. *Journal of Economic Behavior and Organisation*, 18, 1-25.
- Tilly, C. (1992) Short hours, short shifts: the causes and consequences of part-time employment. in Durivage, V. (ed.) *New policies for the part-time and contingent workforce*. Washington, DC: Economic Policy Institute, 1992, 15-43.
- Todtling, F. (1994), The uneven landscape of innovation poles: local embeddedness and global networks. in Ash Amin, A., Thrift, N. (eds.) *Globalisation, institutions and regional development in Europe*. Oxford: Oxford University Press, 68-90.
- Uzzi, B. (1996), The sources and consequences of embeddedness for the economic performance of organisations: the network effect. *American Sociological Review*, 61, August, 674-698.
- Waldinger, R. D. (1986), *Through the eye of the needle: immigrants and enterprise in New York's garment trades*. New York: New York University Press.
- Waterman, R. H., Waterman, J. A., Collard, B. A. (1994), Toward a career-resilient workforce. *Harvard Business Review*, July-August, 87-95.
- Whitley, R. (1996), Business systems and global Commodity Chains: Competing or Complementary Forms of Economic Organisation? *Competition and Change*, 1, 411-425.
- Williamson, O. E. (1999), Strategy research: governance and competence perspectives. *Strategic Management Journal*, 20, 1087-1108.
- Williamson, O. E. (1979), Transaction-cost economics: the governance of contractual relations. *Journal of Law and Economics*, 22 (October), 233-262.
- Williamson, O. E. (1975), *Markets and hierarchies: analysis and antitrust implications*. New York: The Free Press.
- Woomack, J. P., Jones D. (1996), *Lean thinking*. New York: Simon & Schuster.

Figure 1:
A competence-based organisational model



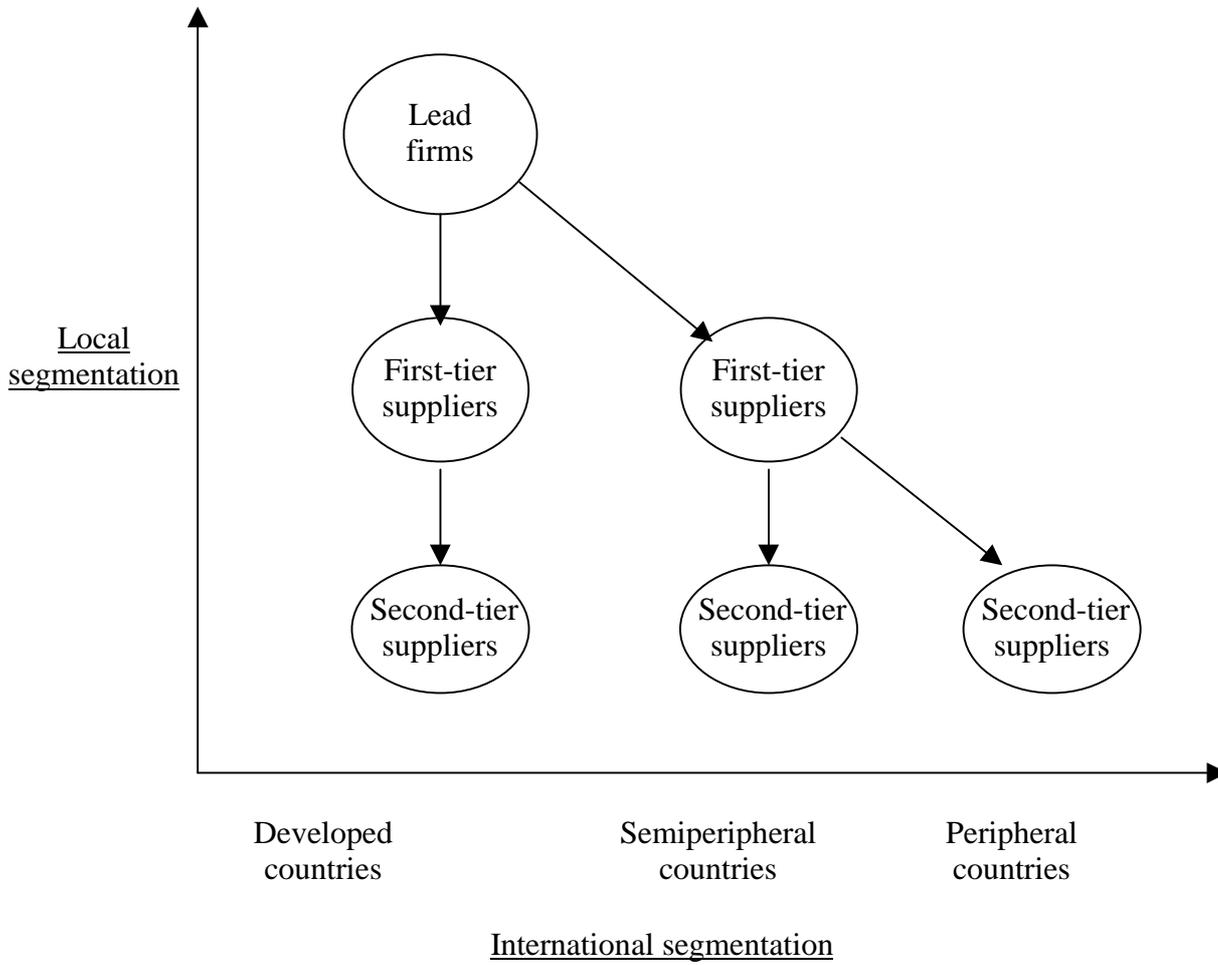
Source: developed by the author

Figure 2:
Production networks and industry structure



Source: developed by the author

Figure 3:
The geographical configuration of production networks



Source: developed by the author