CO-OPERATION IN PRODUCTION, THE ORGANIZATION OF INDUSTRY AND PRODUCTIVE SYSTEMS: A CRITICAL SURVEY OF THE 'DISTRICT' FORM OF INDUSTRIAL ORGANISATION AND DEVELOPMENT

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Abstract

Liberal economics has traditionally put strong emphasis on individualisation and specialisation – and has struggled with the notion of co-operation. Thus, Alfred Marshall's pioneering work on the English industrial districts of his day posed a significant challenge to the conventional wisdom, which embraced laissez-faire markets and Adam Smith's claim that improvements in efficiency depend upon the increased division of labour within firms competing in them. Marshall found that an important determinant of the competitive success of industrial districts was effective co-operation within and between firms, supported by a dense network of institutions, and markets regulated by agreed rules, norms and standards. He theorised that these generate external economies of scale and scope that enable the district and its constituent small firms to successfully compete with large, vertically integrated firms. From the mid-1920s, however, with the emergence and growth of very large, highly successful firms, the conventional wisdom shifted to suppose that the historical tendency in capitalist development was towards large firm dominance; and the small firm sector was progressively reduced to a residuum. However, the rediscovery of the industrial district by Italian scholars during the 1960s revived interest in Marshall's notion of localised productive systems and attracted considerable attention to this form of industrial organisation. This paper traces themes within this literature, from the earliest theorising by the Classical Political Economists to the present, focusing on the role of co-operation in production, the relationship between the organisation of production and markets, and the nature and functioning of productive systems.

Keywords: Industrial Districts, Productive Systems, Co-operation and Competition, Industrial Organisation

JEL codes: B00, L00

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1. Introduction

Liberal economics[1] has long been informed by 'the idea of an economy that was somehow separate from society, a collection of markets with its own inexorable principles and logic' (Abdelal & Ruggie, 2009, p. 152). It has traditionally put strong emphasis on individualism and specialisation – and has struggled with the notion of co-operation. Liberal economists are generally highly suspicious of individuals and firms that co-operate, assuming that they are colluding against the public interest; they are even more dubious about institutional means of co-operation, joint action and collective security, which are believed to limit free competition and reduce economic welfare.

Alfred Marshall's pioneering empirical and theoretical work on the English industrial districts – localised clusters of small enterprises and their suppliers, which were at the heart of British industrial development during the 19th Century – therefore posed a serious challenge to the conventional wisdom of his day. Marshall found that an important determinant of the competitive success of industrial districts was effective *co-operation* within and between firms, supported by a dense network of institutions, and markets regulated by agreed rules, norms and standards. He argued that these agglomerations generated economies of scale and scope which were *external* to the firm but *internal* to the clusters, and which enabled the member firms to *compete effectively*, even with much larger, vertically integrated firms.

During the 1920s, however, the emergence and increasing size of highly successful American and German enterprises revived the question – which John Stuart Mill had grappled with three quarters of a century earlier[2] – of how to reconcile increasing returns (in production) with perfect competition (in markets). From the perspective of (static) neo-classical economic theory, the first firm to adopt the most efficient scale of production in relation to the size of the market takes the whole of the market and becomes a monopolist. Marshall's theory of industrial districts thus sparked a vigorous debate about the problem of increasing returns and competitive equilibrium, which Marshall's 'external economies' purported to resolve.

Perhaps the most influential attack on Marshall's theory came from Piero Sraffa, who argued that because '[e]veryday experience shows that a very large number of undertakings … work under conditions of individual diminishing costs' (Sraffa, 1926, p. 543), resolving the dilemma required dispensing with the assumption of perfect competition in favour of monopoly. He went on to dismiss external economies on the grounds that '[t]hose economies which are external from the point of view of the individual firms, but internal as regards the industry in its aggregate, constitute precisely the class which is *most seldom* to be met with' (ibid, p. 540, emphasis added). Sraffa's conclusion – that 'in the

circumstances, I think it is Marshall's theory that should be discarded' (Robertson, Sraffa & Shove, 1930, p. 93) – apparently settled the debate; and the conventional wisdom evolved to contend that the historical tendency in capitalist development is towards large firm dominance, with the progressive reduction of the small firm sector to a residuum.

But interest in Marshall's theory was revived during the 1970s with the discovery, by Italian scholars, of competitively successful agglomerations of small firms in the 'Third Italy'.[3] The success of these modern industrial districts in securing inter-firm co-operation and channelling their joint efforts towards quality upgrading and product and process innovation – at a time when large firms and the Fordist mass production model were generally in decline – brought them to the attention of the international research community. Yet the success of this form of industrial organisation presented a challenge to the orthodox economists' view that inter-firm co-operation mainly represents an attempt to fix prices[4] and is therefore inefficient; and it questioned their strict dichotomisation of 'firms' and 'markets'. The district form of industrial organisation also sparked debate about both de-industrialisation, which found 'a powerful trend towards geographic *dispersal* of at least productive (if not distributive) activity' (Harrison, 1992, p. 470, emphasis in the original), and globalisation, which some have argued signals the 'delocalisation' of economic and social relationships (Gray, 1998, p.57).[5]

This critical survey re-considers the role of co-operation in production and exchange, the relationship between the organization of production and markets, and, more generally, the nature and functioning of productive systems.

2. Co-operation and the Organization of Production

Adam Smith's theory of the division of labour assigned a central role to specialisation and *working together* for the realisation of productivity gains in production – *and* for the prosperity of societies in which it progressed the furthest:

> 'It is the great multiplication of the productions of all the different arts, in consequence of the division of labour, which occasions, in a well-governed society, that universal opulence which extends itself to the lowest ranks of the people. … [I]f we examine, I say, all these things, and consider what a variety of labour is employed about each of them, we shall be sensible that, without the assistance and *co-operation* of many thousands, the very meanest person in a civilised country could not be provided, even according to, what we very falsely imagine, the easy and simple manner in which he is commonly accommodated' (Smith 1999 [1776], pp. 115-117, emphasis added).

But he argued that what gave rise to the division of labour was a form of market mechanism operating in the exchange of productive efforts by self-interested individuals:

> 'In civilised society, [man] stands at all times in need of the *co-operation* and assistance of great multitudes … [He] has almost constant occasion for the help of his brethren, and it is in vain for him to expect it from their benevolence only. He will be more likely to prevail if he can interest their self-love in his favour and shew them that it is for their own advantage to do for him what he requires of them' (Smith 1999 [1776], p. 118, emphasis added).

Edward Gibbon Wakefield, an early critic of Adam Smith's emphasis on the fine division of labour in production and the co-ordination of isolated stages of production by market forces, insisted on production's closely *co-operative* nature. In his editorial notes to the *Wealth of Nations,* Wakefield (1835) argued that Smith had, in his formulation of the division of labour, confused the categories of *labour* and *employment*, the latter being the work performed by labour. He pointed out that labour is naturally divided between pairs of hands, so that the division of employment between many pairs of hands requires workers to work collectively; and he argued that '[t]he greatest division of *labour* takes place amongst those exceedingly barbarous savages who never help each other, who work separately from each other; and division of *employments*, with all its great results, depends altogether on combination of labour, or co-operation' (Wakefield, 1935, p. 24, emphasis added).

He went on:

> 'Co-operation appears to be of two distinct kinds: first, such co-operation as takes place when several persons help each other in the same employment; secondly, such co-operation as takes place when several persons help each other with different employments. These may be termed simple co-operation and complex co-operation' (ibid., p. 26).

Co-operation is to be found in the workshop: 'the division of employments which takes place in a pin-factory, results from, and is wholly dependent on, the union, generally under one roof, of all the labour by which pins are made' (ibid., p. 25) and, more generally, is 'dependent also upon arrangements, agreements, concert, or combination, of a general kind, of which the whole of society takes part' (ibid., p. 29).

What Wakefield was alluding to was, firstly, that in each stage of production, labour, equipment and material work together. None can operate without the others so that the failure of any to adequately perform its productive functions lowers the joint product of the whole.[6] The essence of production is, therefore, mutual dependence rooted in technical complementarities inherent to technology, the exploitation of which requires the full co-operation of all of those involved in production. Wakefield also drew attention to the importance of the organisational and institutional framework for securing co-operation.

Hodgskin (2013 [1825]) was also early in recognising the central importance of co-operation and joint labour in production. Taking a different route from Wakefield, he maintained:

> 'Almost any product of art and skill is the result of joint and combined labour. So dependent is man on man, and so much does this dependence increase as society advances, that hardly any labour of any single individual, however much it may contribute to the whole produce of society, is of the least value but as forming a part of the great social task' (Hodgskin, 2013 [1825], p. 40).

But he admitted: 'there is no principle or rule, as far as I know, for dividing the produce of joint labour among the different individuals who concur in production' (ibid., p. 40). Liberal economics got around this distributional issue by arguing that factors of production are substitutes for each other in production. It is then assumed that the organisers of production, confronted with production techniques composed of different combinations of labour and capital, choose among them on the basis of their relative prices. The problem of income distribution is resolved by assuming diminishing marginal rates of substitution between factors of production; but nothing is said about the nature of the relationship between the factors of production once the technique has been chosen and production is underway. The production process is a black box and assumptions of either perfect foresight or computable risks trivialise the distinction between short and long term interest.

In his theories of the labour process and of surplus value, Marx followed Wakefield and Hodgskin in explicitly recognising the importance of co-operation (Marx, 2015 [1867], Chapters. XII to XV). He argued that co-operation in production originates when capitalist employers bring workers together in workshops under their command. Even with existing technology, workers increase their collective productivity by working in concert; and this additional value is expropriated by capital. Assembling workers together also provides opportunities for the division of labour, the mechanisation of production and, eventually, the development of modern industry. In this process, co-operation shifts from its simple form, to a 'more specialised form based on the division of labour' and,

ultimately, to 'a technical necessity dictated by the very nature of the instruments of labour' (ibid., p. 268). During this transformation, capitalists play a central innovating role in developing the social organisation within which co-operation evolves:

> 'A single violin player is his own conductor; an orchestra requires a separate one. The work of directing, superintending and adjusting becomes one of the functions of capital, from the moment that the labour comes under the control of capital [and] becomes co-operative' (ibid., p. 231).

In Marx's analysis, the managerial *plan* co-ordinates production within the factory prior to the often chaotic and wasteful co-ordination of supply and demand in the market (Pagano, 1985). Income distribution also involves a two stage process in which the market and managerial control both play their part; but this time the market comes first. Marx saw money wages as being determined by free market exchange after which, within the factory and under the control of capitalist managers, additional value is extracted from labour: *surplus* value which constitutes profits.[7]

3. Co-operation, Increasing Returns and Markets

Adam Smith identified the market as the driver of productivity-enhancing division of labour *and* the co-ordinator of the increasing specialised parts of the system. He argued that the propensities in human nature to 'truck, barter and exchange one thing for another' (Smith 1999 [1776], p. 120) drove the division of labour and, therefore, the growing dependence of increasingly specialised trades on the production of others; and he insisted that these requirements were met not 'by the benevolence of the butcher, the brewer or the baker', but in exchange where each had 'regard for their own interest' (ibid., p119). Thus, self-interest provides the incentive for specialisation; exchange provides the opportunity; and the system of exchange – the market – co-ordinates individual production and consumption decisions and secures societal co-operation.

The classical political economists had, for the most part, understood that realisation of the increasing returns inherent in the division of labour was dependent upon expansion of the market (Rima 2004, p. 172); and they were theorising at a time when most firms were relatively small. During the 1920s, however, with the emergence of very large, vertically integrated firms, economists debated the true nature of increasing returns.[8] Marshall had tried to circumvent the problem with his theory of external economies, using the device of the 'representative firm':

> ‘A representative firm is in a sense an average firm … that particular sort of average firm, at which we need to look in order to see how far the economies, *internal and external,* of production on a large scale have extended generally in the industry and country in question. We cannot see this by looking at one or two firms taken at random: but we can see it fairly well by selecting, after a broad survey, a firm, whether in private or joint-stock management (or better still, more than one), that represents, to the best of our judgment, this particular average. (Marshall (1920 [1890], p. 185, emphasis in the original)

But Sraffa (1926), argued that increasing returns were pervasive in industry and incompatible with competition, suggesting that the solution to the problem was to turn to the theory of monopoly.

Sraffa’s position was strongly challenged by Allyn Young, among others, who returned to Adam Smith’s conceptualisation of the division of labour and its relation to the extent of the market. Writing about 150 years after Smith – and with the benefit of hindsight of the second industrial revolution and the emergence and the growth of very large vertically integrated firms – Young approached the question of increasing returns using Marshall’s concepts of internal and external economies (Young 1928: 527). But whilst he considered this distinction to be ‘fruitful’, Young suggested that it is ‘necessarily a partial view’ because ‘although the internal economies of some firms … may figure as the external economies of other firms, not all of the economies which are properly to be called external can be accounted for by adding-up the internal economies of all the separate firms’ (Young 1928, p. 528). Because Young did not view increasing returns as primarily taking the form of large-scale economies, he did not consider their existence incompatible with competition.

Young considered Adam Smith’s theory of the division of labor as being ‘one of the most illuminating and fruitful generalizations which can be found anywhere in the whole literature of economics’ (1928, p. 529). But, in line with Marshall, he extended it to include the specialization that occurs *among* firms and industries as the market expands, with implications for Marshall’s concept of the representative firm:

> ‘With the extension of the division of labour among industries, the representative firm, like the industry of which it is a part, loses its identity. Its internal economies dissolve into the internal and external economies of the more highly specialised undertakings which are its successors, and are supplemented by new economies. In so far as it is an adjustment to a new situation created by the growth of the market for the final products of industry the division of labour among industries is a vehicle of increasing returns’ (Young 1928, 538).

For Young, increasing returns must be understood from the perspective of *reciprocal demand*. Noting that 'the most important single factor in determining the effectiveness of its industry appears to be the size of the market' (Young 1928, p. 532), Young reaffirmed Smith's linkage between the division of labour and the extent of the market, going further to argue that 'the division of labour depends upon the extent of the market, but the extent of the market also depends upon the division of labour. In this circumstance lies the possibility of economic progress' (ibid., p. 539). But in asking 'what constitutes a large market?', Young contended that it was:

> 'Not area or population alone, but buying power, the capacity to absorb a large annual output of goods. This trite observation, however, at once suggests another equally trite, namely, that the capacity to buy depends upon capacity to produce. In an inclusive view, considering the market not as an outlet for the products of a particular industry, but as the outlet for goods in general, the size of the market is determined and defined by the volume of production" (Young 1928, p. 532).[9]

Despite these challenges to the Sraffian critique of Marshall's external economies as the solution to the problem of increasing returns to scale in production and competitive equilibrium, during the inter-war years, the focus of attention in the study of industrial organisation shifted away from the industry and towards individual firms.

In a paper entitled 'The Division of Labour is Limited by the Market', Stigler (1951) revived the Sraffian dilemma and recast Adam Smith's analysis of the interrelationship between the division of labour and the size of the market into a neo-classical framework. However, Adam Smith's approach is essentially dynamic: the division of labour increases labour productivity and the growth of markets – and development of new ones – provides greater opportunities for the division of labour. But realisation of the increasing returns inherent in the division of labour depends upon increases in effective demand. Thus, economic progress results from the interaction between growing markets and the increasing productivity made possible by the division of labour. By relocating the effects of the division of labour within the neo-classical '*conditions for stable competitive equilibrium*' (Stigler, 1951, p. 185, emphasis added), which is essentially static and focused on the individual firm, Stigler assumes away the possibility of economic growth, such that the further division of labour is only possible if *individual firms* grow and increasingly monopolise the industries they inhabit.

Alfred Marshall's empirical work on English industrial organisation of the 19th and early 20th centuries, however – as discussed above – demonstrates how the neo-classical theoretical dilemma had been averted during the 19th century without abandoning increasing returns or market competition. Viewing the internal economies that the representative firm can gain from increasing size as self-limiting, Marshall identified external economies as the reason that markets will continue to be dominated by competition (Marshall 1920 [1890], p. 316).

Compared with Stigler's dogmatism, Marshall's approach to economics was pragmatic; and his theory grew out of his detailed studies of industrial organisation. The introductory paragraph of Book 1, Chapter IV of the Eighth Edition of his *Principles of Economics* reads:

> 'We have seen that the economist must be greedy of facts; but that facts themselves teach nothing. History tells of sequences and coincidences; but reason alone can draw lessons from them. The work to be done is so various that much of it must be left to be dealt with by trained common sense, which is the ultimate arbiter in every in every practical problem. Economic science is but the working of common sense aided by appliances of organized analysis and general reasoning, which facilitates the task of collecting, arranging, and drawing inference from particular tasks. Though is scope is always limited, though its work without common sense is vain, yet it enables common sense to go further in difficult problems than otherwise be possible.' (Marshall 1920[1890], p. 29)

He was also sceptical about the value of the use of mathematics in economic analysis. Of this, Keynes wrote:

> 'Marshall, as one who had been Second Wrangler[10] and had nourished ambitions to explore molecular physics, always felt a slight contempt from the intellectual or aesthetic point of view for the rather 'potty' scraps of elementary algebra, geometry, and differential calculus which make up mathematical economics. Unlike physics, for example, such parts of the bare bones of economic theory as are expressible in mathematical form are extremely easy compared with the economic interpretation of the complex and incompletely known facts of experience, and lead one but little way towards establishing useful results.' (Keynes 1963, pp. 157-8)

4. Markets, Industrial Organization and Power

In liberal economics, the theoretical position on power in markets ranges from the static neo-classical view, in which it is neutralised by the market or by organisational authority if markets should fail, to the more dynamic notion that the command by entrepreneurs over resources and their deployment in the market empowers creativity in the fostering of economic progress. Liberal economics rests on the belief in *economic man*: that extreme individualist in whom property rights invest power over the assets he or she owns, and who is inherently self-seeking. On the other hand, the division of labour is regarded as the central driving force of economic progress, so that increasingly specialised individuals are more and more inter-dependent (Marshall 1920 [1890]). The question then becomes: how can mutual dependence between inherently self-seeking individuals be managed so that the resources they separately own and control can be put to the most effective joint use in their common interest?

Liberal economics offers two alternative solutions: the invisible hand of the market or the visible hand of managerial authority. And, although mainstream economic theorists have neglected Marshall's ideas about localised productive systems, his theorisation of the organisation of production in industrial districts has aspects of both the visible and invisible hand. Moreover, he takes a dynamic view of their role and interrelationships; and he shows that, within industrial districts, coordination is neither market *nor* planned but 'coordination by co-operation' (Best 1990, p. 235).

4.1 The Invisible Hand of the Market

Smith's idea of the pivotal role of the 'invisible hand' of the market in coordinating productive activity has been handed down to modern neo-classical economists. The *perfect* market, based on the freedom of contract, provides information and price incentives; it ensures contractual compliance, by providing opportunities for buyers and sellers to readily switch trading partners among a large number of equally well-qualified alternatives; and it determines relative price and hence income distribution. The importance of a freely functioning market in the present context is the role it is given in neutralising individual power, thereby ensuring full co-operation among self-interested individuals.

But this beneficial effect is limited, argue liberal economists, if individuals and groups can marshal any power they have *in restraint of trade*. Trade unions, employers' organisations and other collective monopolies are suspected of restricting supply and raising prices, and their close regulation is strongly recommended by liberal economists, who have, on the other hand, a much more ambivalent attitude towards dominant firms. As monopolists they are condemned

for lowering economic welfare, but as the outcome of successful competition they are applauded for raising it.

4.2 The Visible Hand of Managerial Authority

Until relatively recently, mainstream liberal economics made little of industrial organisation or the *relational* aspects of inter-firm links, apart from suspecting them of being in restraint of trade. However, a neo-classical case for the beneficial effects of dominant firms was succinctly summarised by Ronald Coase, who argued that 'an economist thinks of an economic system as co-ordinated by the price mechanism' and posed the question: 'Having regard to the fact that if production is regulated by price movements, production would be carried out without any organisation at all, well might we ask why is there any organisation?' (Coase 1937, p. 388). He answered his question by asserting that organisation provides an efficient way of overcoming market failure, stemming from trading partners' exploitation of any monopoly they might secure from control over specific assets and privileged access to information, and/or any difficulties they might have in ensuring that performance lives up to the promises made by contracting partners. Here, Coase picked-up on Marshall's idea that firms – and more generally, industrial organization – serve as coordinating and contract-enforcing mechanisms distinct from market forces.

Williamson (1985) incorporated Coase's ideas into his 'transactions cost' theory of industrial organization, in which organisation compensates for market failure. From this perspective, 'transactions costs' are the key determinants of the boundary between the market and the firm, with organizational power evolving reactively to neutralize the advantage secured by partners who, by exploiting any bargaining advantages they might have, increase the costs of transacting and lower economic well-being. But neither Coase nor Williamson – arguably the most authoritative contributors to the development of transactions cost economics – gave any credit to Marshall.

Other economists working within the liberal tradition have given the visible hand a more proactive role. In Marshall's later work, he accepted the logic of economies of large size, laying stress on the important role of *organization*, which he considered to be a fourth factor of production (along with land, labour and capital). For Marshall, organization played a central role in coordinating increasingly specialized and mutually dependent productive activities (Marshall 1920 [1890], Book IV, Ch VIII). Thus whilst he saw freedom of industry and enterprise[11] as a central motivating and integrating force, Marshall also maintained that market success depends upon increasingly effective industrial and work organisation, a process driven by the innovating entrepreneur who 'is the organiser in command of capital, who bears the uninsurable risk, … [and] takes complex decisions with limited information. Superintendence is only a

small part of this: co-ordination, imagination and risk bearing are fundamental' (O'Brien 1990, pp. 72-3).

Within this tradition, Chandler (1977) identified superior managerial and production organisation – and the economies of large scale operation – as explaining the competitive success of large corporations; Hayek and his followers argued that market success and firm growth were the consequence of entrepreneurial ability in discovering new profit opportunities in a world of uncertainty (Kirzner 1997); and Schumpeter (1943) theorised that the promise of monopoly profits is necessary to induce innovation. Such theories serve to justify the power exercised by large firms as fostering economic progress. They also extend the disciplinary and creative role of markets for, although large size may be the reward of success, big firms can only survive by generating the operational and dynamic efficiency by which organisations keep their feet in the market driven by the Schumpeterian process of 'creative destruction'.

Nevertheless, economists recognise the downside to market dominance. The abuse of power in labour and product markets may have significant distributional effects; and corporate actions may threaten the social and natural environment. Regulation is therefore accepted as necessary to counter such *negative externalities* and to contain the destructive capabilities of competition. But liberal economists caution that the urge to regulate must be tempered by recognition that, in the final analysis, the market provides the best opportunity for individuals and society. Moreover, whilst the market concentrates economic power, it also yields important benefits for society in the form of technical progress and economic growth. What is good for business is also good for society; and although the excesses of dominant firms need checking, it would check progress if their market opportunism was unduly restricted.

The theories supporting such arguments underpin what Berk (1994) described as *corporate liberalism*:

> 'Corporate liberalism conceived property and economic development prior to the will of collective or democratic choice. 'The laws of trade' its adherents were fond of saying 'are stronger than the laws of men.' Thus, the modern corporation, like the liberal person, owed its existence first and foremost to private purpose. If the result of economic development rooted in such pre-social entitlement was to concentrate the market in huge monopolistic firms, this was deemed inevitable. The only economic role left to the democratic state was to redress the concentration of excessive wealth in the modern corporation through regulated monopoly. The goal of regulation, in other words, was to balance the interests of consumers in

redistribution with those of the corporation in accumulation' (Berk, 1994, pp 13-14).

4.3 Markets and Power

In summary, underlying theories of markets in liberal economics is the concept of *economic* man – extended to include *economic* organisation – who is inherently driven by self-interest. Self-interest provides the driving force for economic activity, in which respect it is creative; but, given the opportunity, its pursuit also has the potential to become exploitative and destructive of economic well-being. Markets thus provide both the outlet for the creative deployment of self-interest and a check on its misuse. They serve to mobilise privately owned resources, provide information, co-ordinate separate production and consumption decisions and guarantee the competition necessary to offset the exploitation of power for individual or group advantage. But power also plays a positive role: it counters the negative effects of market failure and, by giving command of resources to innovating entrepreneurs, it serves as a vehicle for economic progress. In this process, markets are the selectors of uses of power that enhance economic well-being.

5. Markets and Organization: Marshall's Theory of Industrial Districts

Between the invisible hand of the market and the visible hand of managerial authority in large organizations are organizational forms composed of 'small- and medium-sized firms in particular branches of industry, localized in a specific area and participating in a production system characterized by divisions of labour between firms' (Hirst 1999, p. 111). The organisation of such systems involves a blending of networks of interdependent actors and firms, of hierarchies and of markets, that evolve over time as the structures of these relationships are cast and re-cast and as the environments within which they are embedded change. Alfred Marshall was a pioneer in theorising these systems, which he identified as *industrial districts* (Marshall 1920 [1890], p. 157).

In developing his theory of industrial organization, Marshall welded Adam Smith's notion of the division of labour as the primary vehicle of economic progress to Darwinian evolutionary theory (Marshall 1920 [1890], Book IV, Ch VIII). He argued that in economic life, the struggle for survival selects the fittest and fitness depends upon two complementary factors: increased differentiation and more sophisticated coordination. A finer division of labour – which requires ever-more sophisticated coordination of productive activities – leads to a more efficient use of resources; and the development of specialized skills, knowledge and machinery leads to increased differentiation. The emphasis on coordination as a factor of production sets Marshall apart from the strict neo-classical view of how markets work, in which arms-length market transactions suffice as a coordination mechanism.

Marshall was acutely aware of the systemic nature of production; and central to his understanding of the evolutionary trajectory of capitalism was the interaction between organization and knowledge. He argued:

> 'Capital consists in a great part of knowledge and organization … Knowledge is our most powerful engine of production; it enables us to subdue Nature and force her to satisfy our wants. Organization aids knowledge; it has many forms, e.g. that of a single business, that of several businesses in the same trade, that of various trades relatively to one another' (Marshall, 1920 [1890], p.84).

Thus, whilst acknowledging the importance of co-operation in production, Marshall focused on the role of organization in the coordination of increasingly specialized and mutually dependent activities. For Marshall, the central role of organization is the 'integration' of the increasing subdivision of production with the increasing division of labour, and the development of specialised skills, knowledge and machinery to achieve this (Marshall, 1920 [1890], p. 139). Marshall also drew a clear distinction between relationships within the firm and relationships between firms. Within the firm, co-operative relationships are coordinated by the manager-entrepreneur and take the Marxian form, in which co-operation in production permits the realization of increased output per worker. By contrast, outside the firm, co-operative relationships are co-ordinated by the market and take the Adam Smith form, where co-operation in exchange, secured by competition among individuals motivated by self-interest, permits the realization of gains from trade.

In theorizing industrial districts, Marshall identified external economies of scale and scope derived from the concentration of production in particular localities (Marshall 1920 [1890], p. 152). The benefits of such proximity include increases in the degree and specialization of skills; their diffusion throughout the community creating an abundant supply of appropriately qualified labour; the growth of 'subsidiary' trades and specialized services; and an expansion in the use of highly specialized machinery made possible by the combined demand of many firms. The close geographical concentration of firms allows all to enjoy the benefits of large-scale industrial production and technical and organisational innovation which are beyond the scope of any individual firm.

Thus, the importance of the localization of production within industrial districts for Marshall is that it creates an environment more favourable to individual success. The close proximity of firms within a particular industry provides opportunities for specialization and for the district as a whole to secure economies of scale and scope (both static and dynamic) denied to isolated individual firms because of internal restrictions on growth. Firms concentrate

their initiative and inventiveness on what they do best and establish an environment that improves the overall competitiveness of the locality.[12] In early versions of his analysis, Marshall placed limits on firm size by the growing problems of internal coordination, the aging of the founder and the failure to find a successor. But these are individual failures and the forward impetus of the system is maintained as vigorous new firms replace the old.

Marshall also recognized that industrial districts occupy both a physical and social space, with its own structure and history; and he highlighted the importance of *industrial atmosphere.* In his view, district effects are long-term, cumulative and dependent upon co-operation in knowledge creation and innovation. For Marshall:

> 'When an industry has thus chosen a locality for itself, it is likely to stay there long: so great are the advantages which people following the same skilled trade get from near neighbourhood to one another. The mysteries of the trade become no mysteries; but are as it were in the air, and children learn many of them unconsciously. Good work is rightly appreciated, inventions and improvements in machinery, in processes and the general organization of the business have their merits promptly discussed: if one man starts a new idea, it is taken up by others and combined with suggestions of their own; and thus becomes the source of further good ideas' (Marshall, 1920 [1890], p. 156).

He added '[t]he broadest, and in some respects the most efficient forms of constructive co-operation are seen in a great industrial district where numerous specialised branches of the industry have been welded almost automatically into an organic whole' (Marshall, 1920 [1919], p. 380).

However, Marshall considered individualistic initiative and free enterprise to be the drivers of economic progress. In Marshall's view, while collective action may foster individual success it risks blunting initiative and inhibiting competition. Thus, trade associations had a role to play in coordinating production, standardizing products and providing scientific and other specialized services but, lacking the profit motive, they are of second order importance to the individual effort of entrepreneurs. For similar reasons, public sector intervention had a positive although a limited role to play in industrial organization and technical progress.

5.1 Marshall's Evolving Thinking on Industrial Organization

At the turn of the 20th century, Marshall became worried about the future of the British economy, which he viewed as 'threatened' by newly emerging countries, including the USA and Germany, that had industrialised later than Britain. In his early work on industrial organization, 'industrial districts were the key element that, according to Marshall, could rescue the British economy' (Belussi and Caldari, 2009, p. 336). In Marshall's view, the district's vitality stemmed from its ability to innovate and to respond flexibly to changes in its environment. However, Marshall also recognized that industrial districts could decline just as easily as they could prosper. Yet he expressed confidence in the resilience of this form of industrial organisation and the dynamism it engendered. In *Industry and Trade*, published 5 years before his death in 1924, aged 81, Marshall wrote:

> 'Thus, although even a little obstinacy or inertia may ruin an old home of industry whose conditions are changing; and although the opening out of new sources of supply or new markets for sale may quickly overbear the strength which old districts have inherited from past conditions: yet history shows that a strong centre of specialized industry often attracts much new shrewd energy to supplement that of native origin, and it thus able to expand and maintain its lead'. (Marshall 1920 [1919], p. 190-91)

Nevertheless, during the 1920s Britain suffered major de-industrialisation and the decline of the British industrial districts. Whilst Marshall's students of the 'Old Cambridge School'[13] studied this phenomenon, Marshall's thinking was shifting towards viewing large size as the next stage in industrial evolution, with the disappearance of small firms being 'inevitable' (Marshall 1920 [1919], pp. 369-72). Increasing industrial concentration in Germany and the USA led Marshall to place less emphasis on the limits to firm size and on the importance of external economies.

> '[W]ith the growth of capital, the development of machinery and the improvement of the means of communication, the importance of internal economies has increased steadily and fast, while some of the old external economies have declined in importance; and many of those which have risen in their place are national or even cosmopolitan, rather than local' (Marshall, 1920 [1919], p. 115).

The development of capital markets, better communications and the improvement by firms of their marketing networks allowed them to grow larger than in Marshall's earlier models of industrial organization. A precondition for this was continuous refinement of management, requiring increased specialization and more effective coordination (Marshall 1920 [1919], Book 2,

Ch X). The driving force remained the entrepreneurial owner – the '*captains of industry'*. Moreover, whilst Marshall recognized the potential of the joint stock company for expanding the productive capacity of firms, he warned against putting shares of stock on the market. In his view, the separation of (shareholder) ownership from (managerial) control weakened managerial power and incentives to innovate, and to reorganize the firm.

What economists and policy-makers ultimately took from Marshall's theorizing on industrial organisation, in general, and the English industrial districts, in particular, informed economic theories of firms and markets. These provided a crucial under-pinning for explanations of – and justification for – large-scale capitalism, which was actively pursued from the inter-war period onward. As theorizing increasingly focused on the benefits of large-scale productive enterprises, the role of smaller firms became somewhat marginal; and the idea of geographic location and external economies generated only a 'thin trickle' of contributions in relation to forms of firm agglomeration in local and regional productive systems (De Propris, 2009, p. 361).

6. Co-operation and the 'New Competition': Re-discovery of the Industrial District Model

During the 1970s and 1980s, more co-operative forms of industrial organization emerged as competitors to the dominant vertically integrated corporations. This 'new competition' (Best, 1990) originated with Italian, Japanese and German producers who had evolved more co-operative relationships both with their work forces and their suppliers than was usual in the large-firm dominated Anglo-American system. Greater motivation to co-operate on the part of managers, workers and suppliers resulted in high levels of operational and dynamic efficiency based on improved labour productivity, the more effective use of equipment and materials, better quality control and the mobilisation of the skills and knowledge of workers and suppliers in the improvement, design and innovation of products, processes and the organisation of production (Howes, 1991).

6.1 'Marshallian' Industrial Districts[14]

In Italy, the 'new competition' took the form of the re-activation of the 'Marshallian' industrial district model of production.[15] The study of these modern industrial districts in Italy was pioneered by Giacomo Becattini and Sebastiano Brusco, both of whom were academics interested in industrial organization and actively engaged in policy formation and implementation.

Giacomo Becattini became Professor of Political Economy at the University of Firenze after publishing in 1962, in Italian, a book entitled *The Concept of Industry and the Theory of Value*, [16] based on a study of Alfred Marshall's writings[17] and those of other economists, including Piero Sraffa, Lionel Robbins, Gerald Shove, Joan Robinson and Robert Triffin. In it, the local production system is conceptualised as a 'unit of investigation' of industrial economics

> 'for understanding the economic change that the integration between a "community of people" and a "population of firms", supported by a given "system of values", engenders through an industrial organization which fosters the accumulation, free circulation, sharing and increase of knowledge among entrepreneurs and workers (the Marshallian "external economies")' (Sforzi 2015, p. 13).

This conceptualization – which defined an industry on the basis of the human agents of production's sense of belonging to the place where production occurs – was a challenge to the conventional idea of an industry being defined by the production technology employed.

During the 1960s, when Becattini began to study the economic development of Tuscany, the perception was that following the Second World War, the North of Italy had developed whilst the South remained a backward agriculture region. It was also supposed that only large firms could generate economic development. At this time, large parts of Tuscany were still being cultivated by sharecropping; and Becattini observed that migrants from the countryside were gravitating in search of jobs towards expanding agglomerations of small firms around Pisa, Lucca, Siena, Empoli and Prato. In these regions, the number of highly specialized small firms was multiplying, whilst the few large enterprises in Tuscany were in decline. Since this was the opposite of what might have been expected, a new analytical framework for explaining it was required.

The first step in this direction came in 1969 in a paper Becattini wrote for the Institute for Regional Economic Planning of Tuscany (IRPET).[18] In it, he demonstrated that in the expanding agglomerations of small firms in Tuscany, benefits accrued which were external to the enterprises, but internal to their local cluster, a phenomenon that came to be described as 'external economies'. In 1975, he published a book with IRPET, analyzing the role of small firms in the transformation of the Tuscany industrial landscape (Becattini, 1975a); and a paper in which he conceptualized the industrial district a 'model of production' (Becattini 1975b). But it was not until 1978 that he used the term 'industrial districts' when analyzing these developments (Becattini, 1978). Becattini's seminal article appeared in 1979, in *Rivista di Economia e Politica Industriale*, entitled 'Dal "settore" industriale al 'distretto' industriale'; the English translation, entitled 'Sectors and/or Districts: Some Remarks on the Conceptual Foundations of Industrial Economics', was published in Goodman and Bamford (1989). In this article, Becattini argued that when studying industrial activity, economists are faced with the problem of defining what an industry or sector is, in order to clearly determine the boundaries between industries – and, hence, what is internal, and what is external to them; and he proposed adopting Marshall's concepts of external and internal economies of scale. According to Sforzi (2015), an important theoretical step forward was the embedding of the concept of the industrial district as a 'model of production' *and* as a 'unit of investigation' into one another.

Addressing criticism of Marshall's reasoning, especially by Sraffa, who had dismissed the idea of external economies, Becattini argued that Sraffa's interpretation of Marshall focused too much on the single industry. In Becattini's reading of Marshall, external economies of scale develop in such a way that, instead of being exclusive to any single industry, they apply to groups of related industries. Thus, in manufacturing sectors where it is possible to divide the process of production into discrete stages, each of which can be efficiently performed by a small establishment, advantages of large scale production could as readily be attained by a large number geographically concentrated small firms as by fewer large firms (Becattini, 1990b).

Around the same time as Becattini was theorizing the industrial development of Tuscany, Sebastiano Brusco, at the University of Modena, was studying the efficiency of local clusters of small and medium sized firms in Emelia Romagna. From this, he was making similar observations to those of Becattini, but from a different theoretical perspective – that of Piero Sraffa. Brusco refused to accept that the advantages of a localized division of labor derived from external economies of scale, arguing instead that small firms with modern technology could be as efficient as large firms. Following the work of Adam Smith and Allyn Young,[19] Brusco based his analysis on the understanding that if

stages in a production process could be operated separately without loss of efficiency, they could be operated separately by different firms.

In his empirical analysis of the metalworking industry in Bergamo, Brusco found that enterprises differed greatly in size and technology, as a consequence of their differing degrees of vertical integration, methods of coordination and relationships with other firms. He found that small firms were operating profitably by successfully reaching the minimum efficient scale of production for the particular stage of the production process in which they specialized (Brusco, 1975). From this, he proposed a taxonomy of different types of small firms, based on characteristics of their relationships with other firms: these included (1) independent enterprises, (2) members of networks of inter-dependent subcontractors, and (3) firms embedded in industrial districts (Brusco & Sabel 1981). These findings paved the way to identifying the development and training policies most appropriate for different types of firms, and for the various types of local production systems he identified.

Brusco's observation of policy-making in Emilia-Romagna led him to consider the design and working of a range of fundamental institutions around which policies supporting the emerging clusters of firms could be developed. These initiatives were developed in concert with the organizations involved, in an open and creative dialogue designed to identify their needs and those of other segments of society in which they were embedded. Brusco identified the direct provision of 'real services' to groups of cooperative firms as being more effective than providing cash grants to enable them to acquire these services individually. In Brusco's view, this would improve the market performance of the collective, as opposed to improving the competitiveness of any individual firm (Brusco, 1992). During the 1990s, Brusco's ideas about industrial strategy formed the basis for a general re-thinking of development policies that extended beyond the Emilian industrial districts, to include the more backward areas of Southern Italy.

Although Becattini and Brusco had different theoretical perspectives, they faced the same challenge: that of accounting for the unexpected direction of industrial development in Tuscany and Emilia-Romagna; and they both wanted to give credence to the possibility of rapid economic development generated from the grass roots level upwards. Although they were remarkably successful in this respect, it was not until the failings of the 'Fordist' mass production model became increasingly obvious, during the 1980s and 1990s, that economists more generally acknowledged their achievements. This can be at least partly explained by the fact the early research findings on the Italian industrial districts were mainly published in Italian, so that their dissemination outside of Italy was limited. Therefore, for many years Becattini's and Brusco's work did not feature

in the wider international scientific and political debate about industrial organisation and policy (Landstrom 2002).

The international diffusion of the analysis of the re-emergence of Marshallian industrial districts in Italy began with publication of the 1981 Conference papers of the International Working Party on Labour Market Segmentation (Wilkinson, 1981), which included a paper by Brusco and Sabel (1981), entitled 'Artisan Production and Economic Growth' and with Brusco's (1982) paper in the *Cambridge Journal of Economics.*[20] Soon after, the classification "Emilian Model" entered into discussions of regional policy-makers and international researchers, where it has figured prominently in the debate about alternative modes of production. In 1990, the International Institute for Labour Studies in Geneva made a major contribution to the understanding and dissemination of the theory and practice of industrial districts, with publication of *Industrial Districts and Inter-firm Co-operation in Italy* (Pyke, Becattini & Sengeberger, 1990), which contained influential papers by both Becattini and Brusco.

6.2 Industrial Districts, 'Post-Fordism' and Flexible Specialization

During the 1980s, as the crisis of Fordism was deepening, the 'district' model of industrial development represented an empirical alternative to the vertically-integrated mass production model. Becattini's conceptualisation of the industrial district as a 'model of production' thus served as a turning-point for applied research on localised production systems. The centrality of industrial districts for local and regional development was influentially argued by, among others, Charles Sabel and Michael Piore (Sabel 1989; Piore & Sabel 1983, 1984) and Allen Scott and Michael Storper (Scott 1988; Storper & Scott 1989), who located their analysis in the broader macro-economic and social transformations of the 1970s and 1980s.

Piore and Sabel's (1984) *The Second Industrial Divide* provides one of the earliest accounts of this phenomenon, assigning a key role to the Italian industrial districts in the transition from the 'Fordist' mass production model to a new technological paradigm, based on flexible technologies, skilled workers and new forms of industrial community. In this context, artisanal modes of production and 'flexible specialisation' in the district model of industrial organisation constituted a 'second industrial divide' – as a response to the breaking-up of mass markets and increasing demand for variation in many consumer markets by growing numbers of better-off households (Piore and Sabel 1984; Sabel and Zeitlin 1997). From this perspective, in the resulting increasingly volatile and uncertain environment, flexibility is required, which itself depends upon specialisation based on a new articulation of the inter- and intra-firm division of labour. The argument goes on to suggest spacial implications:

> ‘The more volatile markets became, the more firms experimented with flexible forms of organisation which permitted rapid shifts in output. As they did, they encouraged the reconsolidation of the region as an integrated unit of production’ (Sabel 1989, p. 18).

Building on this conceptual scheme, Scott and Storper argue that the ‘historical rupture’ of the 1980s was a crisis of Fordism as a model of capital accumulation and regulation, leading to a new regime of flexible accumulation, featuring flexible production methods, ‘ensembles’ of flexible production sectors and a ‘new geography’ of flexible accumulation. From this perspective, during the 1970s,

> ‘emerging structures of flexible production helped to intensify the crisis of Fordism by exerting strong competitive pressures on mass industries [whilst at the same time] … the advent of flexible production organisation was potentiated by the problems of Fordist industry’ (Storper & Scott 1989, p. 26).

Intensifying flexibility caused the vertical dis-integration of organisational structures, which in turn led to locational convergence and spacial agglomeration as a consequence of ‘the tendency for internal economies to give way before a progressive externalisation of the structure of production under conditions of rising flexibility [which] … leads at once to a revival of proclivities to locational convergence and reagglomeration’ (Scott 1988, p. 175).

Despite the profound influence of this ‘new orthodoxy’ regarding the phenomenon of the industrial district and flexibly specialised local and regional economies on both research and policy communities,[21] Amin and Robins (1990) challenge it on the grounds that it collapses ‘very diverse processes and areas into one category, and then [treats] this as a symbol of the new area of accumulation’ (Amin & Robins 1990, p. 186). ‘Such a theory tends to be either so vague and diluted that it can apply to any example of a local production complex or one which ignores continuities with the past’ (ibid., p. 204). ‘A more adequate account … acknowledges the complex and contradictory nature of the restructuring process – and particularly of its spatial dimensions’ (ibid., p. 185). The new orthodoxy has also been criticised for being overly descriptive; for its ‘simplistic binary opposition’ of *rigid* mass production against *flexible* specialisation; and for its blend of determinstim – in the technological and economic structural logic behind the transformation from Fordism to post-Fordism – and voluntaristim – in the behavioural rationale for the growth of flexible specialism and emergence of industrial districts (ibid., p. 191).

6.3 Social, Collectivist and Institutional Coordination

When industrial districts were re-discovered in Western countries during the 1970s, they attracted considerable attention as part of a more general tendency in the economic and sociological literature on industrial organization, away from a strict dichotomy between the 'market' and the 'firm', and towards what Richardson (1972) described as 'the dense network of co-operation and affiliation by which firms are inter-related' (p. 883), emphasising the social, collectivist and institutional bases for the success of localised productive systems. Building on Marshall's analysis – and that of the Italian literature, developing it further – some of the more recent work on industrial districts has taken a 'social embeddedness' perspective that points to the centrality of social cohesion and privileges the social and cultural over the economic determinants of district performance. Such studies suggest that the 'embeddedness of firms in a distinctive local social fabric is a key feature of the industrial district model' (Staber 1996, p. 148). Here, emphasis is placed on the influence of community – defined as family and other social relationships, rules of behaviour embedded in those relationships, and more formal institutions such as churches and political parties – in guaranteeing standards of behaviour which engender trust and co-operation and thereby strengthen inter-firm networks.

The basis for the success of these forms of industrial organisation is seen to be the ability to build relationships closer to what Fox (1974) identified as *high-trust.*[22] In this context, trust is related to flexibility in a social sense – being willing to give and take, to help in an emergency and to forgive occasional faults – and in a sense more directly related to economic relationships, including sharing information, honouring informal understandings and being ready to renegotiate a contract. It would seem then that in an imperfect, uncertain world, the role of honouring formal and informal promises in generating, fostering and maintaining trust, is tempered and supported by a degree of flexibility in the social environment in which economic relations are embedded and flexibility within economic relations going beyond formal commitments (Burchell & Wilkinson, 1997).

Institutions are also important. Within industry, trade associations are seen as playing a central role in providing technical, financial, marketing, training and other services. They also represent employers in their dealings with local and central government and with organised labour. In turn, governments establish – by social, company and other legislation – a framework of standards that underpins the equitable and co-operative relationships between firms (Sengenberger, Loveman & Piore, 1990). Thus, an important feature of modern industrial districts is what Amin and Thrift (1994, p. 102) describe as 'institutional thickness'.[23] However, the social embeddedness perspective is 'silent on the content of social relations [and] on the *mechanisms* by which social structures constrain and facilitate economic action' (Staber 1996, p. 157).

More recent theoretical and empirical work on production and industrial organisation, in particular that on industrial districts in Italy, offers insight into this apparent 'gap' in the literature on social embeddedness.

6.4 Industrial Districts and 'Competitive' Clusters

As the 1980s progressed, continuing high levels of unemployment, sluggish productivity growth, de-industrialisation – and growing concerns about competitiveness – drew further attention to the emergence of successful clusters of firms and industries in many regions around the world. Attempts to explain the socio-economic, institutional and territorial conditions for regional competitiveness – and the economic, social and institutional processes involved – generated a growing body of research within and across the boundaries of a wide range of academic disciplines, including economic geography, industrial economics, economic sociology, business economics and political economy; and it attracted the interest of politicians as regional economic development rose up the policy agenda. The result was a proliferation of terms aimed at capturing and representing the form and nature of regional productive systems, including 'industrial districts', 'new industrial spaces', 'territorial production complexes', 'neo-Marshallian nodes', 'regional innovation milieu', 'network regions', 'learning regions', 'local production systems' and 'competitive clusters'.[24] Among these, one of the most influential analytical constructs and policy tools is Michael Porter's notion of *industrial* or *business cluster* (Martin and Sunley 2003).

Porter's cluster concept has been grounded in and promoted on the basis of its promise of 'competitiveness' (of firms, industries, locations, and nations). In 1990, he proposed that 'the basic unit of analysis for understanding *national* advantage is the *industry*' (Porter 1990, p. 73, emphasis added); and he described the cluster as being composed of 'industries connected through vertical (buyer/supplier) and horizontal (common customers, technology, distribution channels, etc) relationships' (ibid., p. 149). However, by 1998, Porter had added a territorial dimension to his definition:

> 'Clusters are *geographic* concentrations of inter-connected companies, specialised suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standards agencies, and trade associations) in particular fields that compete but also cooperate' (Porter 1998, pp. 197-8, emphasis added).

They are ‘a form of network that occurs within a geographic location, in which the proximity of firms and institutions ensures certain forms of commonality and increases the frequency and impact of interactions (ibid., p.226).

In relation to industrial districts, Porter suggests that among studies focused ‘on geographic concentration of companies … which can be seen as special cases of clusters … [there are] Italian-style industrial districts of small and medium-sized firms dominating a local economy … in some types of industries’ (ibid., p. 206). Thus, the cluster is a localised system of production of which the Italian industrial district is a special case.

Although enormously successful as a conceptual and policy tool, Porter’s clusters have been strongly criticised on a number of bases. Sforzi (2015, p. 20) argues that their relationship with the industrial district concept has been distorted by identifying the unit of analysis as ‘a mere geographic concentration of industries’ and focusing on the economic determinants of performance. Following Becattini, the industrial district as a unit of analysis is a place defined by the relationship between the people who live there and the economic activities in which they are engaged. The evolution – success or decline – of such a place is a consequence of more than competitive pressures from other local economies in domestic or international markets, affecting the ‘population of firms’; it is also a result of changes affecting the ‘community of people’.

Sforzi (2015, p. 21) goes on to suggest that ‘hybridisation’ of the industrial district and cluster concepts has the potential to enrich both, if it leads to a better understanding of – from the cluster perspective – the role of *people* and their system of values; and – from the district perspective – the role of associated institutions (such as universities) and their support for deepening the knowledge base. However, as currently conceptualised, since the local community of people is missing from cluster theory, the industrial district is reduced ‘to merely a form of agglomeration of small and medium-sized firms operating in a specific range of light manufacturing industries’ (Sforzi 2015, p. 21).

Martin and Sunley (2003) identify a number of problems with Porter’s cluster concept, starting with his definitions, which lack a clear delineation of boundaries, both industrial and geographic. This criticism resonates with Becattini’s insistence on the importance for researchers studying industrial activity to clearly identify an industry’s boundaries, in order to determine what is internal and external to it. For Martin and Sunley (2003),

> '[b]ecause Porter's definitions are so vague, in terms of geographical scale and internal socio-economic dynamics, this has allowed different analysts to use the idea in different ways, to suit their own purposes … The result is conceptual and empirical confusion' […]'The concept has acquired such a variety of uses, connotations and meanings that it has become a 'chaotic concept', in the sense of conflating and equating quite different types, processes and spatial scales of economic localisation under a single, all-embracing universalistic notion' (pp. 9-10)

Porter suggests that clusters can be found at almost *any* level of spatial aggregation: 'They are present in large and small economies, in rural and urban areas, and at several geographic levels (for example nations, states, metropolitan regions, and cities' (Porter 1998, p.204); their geographical scope can even encompass 'a network of neighbouring countries' (ibid, p.199).

Such territorial licence has given researchers unlimited latitude in defining and applying the cluster concept. At one extreme, the term has been used to describe a cluster of similar firms in related industries within a narrow geographical area. At the other extreme, it refers to national groups of industries and firms, connected by trading interdependencies, but geographically dispersed. In between, Porter refers to 'regional clusters'.

A further serious problem with 'cluster theory' is that it separates clusters from the broader socio-economic environment of which they form a part, such that 'they often appear as isolated and self-contained entities … [W]hat is needed is a cluster theory that situates cluster development within the dynamics and evolution of industry and innovation more generally' (Martin and Sunley 2003, p. 18). As currently articulated, cluster analysis fails to consider the dynamics of the inter-regional *system* as a whole, or the interdependencies and evolutionary trajectories of firms inside clusters relative to those outside of them.

6.5 District Life Cycles and Evolutionary Paths

Building on Marshall's evolutionary perspective – and his recognition of the vulnerability of the industrial district model to degradation – contemporary scholars have studied the evolution and 'life-cycle' of localised productive systems.[25] These contributions aim to explain how vibrant local economic systems might emerge and the manner in which their original dynamism may eventually be eroded. In this, an important focus is the changing institutional environment as well as the socio-economic context (local, national and international) which frames evolution.

Drawing on a range of theoretical ideas – from institutional evolution, organisational ecology, management cognition and agglomeration economies –

Pouder and St John (1996) construct an evolutionary model of firm development, set against the development of the wider industry as a whole. Sketching out a theory of cluster formation, growth and decline, they argue that the agglomeration economies that originally draw firms together eventually erode. Whereas the competitive strategies of clustered firms are initially highly innovative relative to non-clustered firms, they tend to become less so over time because cluster firms tend to define their field of competition as the cluster to which they belong, instead of the wider industry external to the cluster. This gives rise to competitive 'blind spots' that constrain innovative capabilities as well as the ability of cluster firms to anticipate and respond to sudden system-wide changes. By contrast, non-clustered firms are hypothesised to be less constrained and potentially more adaptable to industry-wide shocks. However, Pouder and St John's theory has been criticised for failing to consider the dynamics of cluster formation and development within a more holistic theory of uneven regional development (Martin and Sunley 2003, pp. 17-18).

The literature on 'cluster life cycle' (Boschma & Fornhal 2011), based on studies of the spin-off dynamics in the USA, contends that instead of regional culture, local institutions and external economies, the process of agglomeration is largely driven by spin-offs. This literature goes further to argue that the success of localised productive systems can be explained by the success of the spin-offs created within them.[26] This is at variance with research, drawing on Marshall and based on the emergence and successful evolution of the Sassuolo tile district. Assessing the degree to which the Marshallian explanation stands-up to these more recent theoretical arguments, Cusamo et al (2005) conclude that 'although leading firms can impact on the local system dynamics through spin-offs, the entrepreneurial process is largely influenced by context specific factors or Marshallian externalities, such as knowledge spillover and the supply of "collective goods" at the territorial level' (p. 63). These findings thus lend support to Marshall's original conceptualization of the dynamics of the industrial district, the importance of local institutions and the centrality of repeated interactions between small firms within the district both generating and benefitting from external economies.

Currently, industrial districts are evolving in response to challenges associated with globalisation and the dramatic acceleration in the pace and volatility of change in products, technologies and markets. But despite these challenges, Zeitlin (2008) sees evidence of the continuing resilience of the district form of industrial organization. He identifies three broad trends: increased differentiation in the size distribution of district firms whether through the emergence of large 'leader firms' or through the creation of formal and informal groups of firms; increased sourcing from outside the district, often through direct investment in production facilities in other regions and countries; and increased investment by

foreign multinational firms that have acquired key local firms within the district. In Zeitlin's view:

> '[f]lourishing industrial districts require a complex and variable ensemble of regulatory institutions for the provision of common services and the resolution of internal conflicts, together with strong local interest organizations capable of internalizing the costs and benefits of such collective goods.' (ibid., p. 112)

He goes on to argue that, from a strategy and policy perspective, their prospects will depend upon a bottom-up approach, involving:

> 'social and political leadership in which establishing a dialogue and building consensus among local interests becomes inseparable from analysing the weakness of the regional economy and constructing effective institutional solutions … A final indispensable requirement … concerns local government autonomy. Only local authorities are in a position to acquire the detailed knowledge of the local economy and broker the social consensus among local actors needed for the effective provision of collective services and the creation of an 'industrial public sphere' (ibid., p. 112).

7. Industrial Districts and 'Productive Systems'

The productive systems approach – first presented in Wilkinson's (1983) article in the *Cambridge Journal of Economics'* Memorial Issue to Joan Robinson – is rooted in Marxian and Marshallian understandings of the nature of production. It evolved as a framework for analysing the implications of mutual and conflicting interests inherent to production and industrial organization. Initially inspired by analysis of the phenomenon of 'Marshallian industrial districts' during the 1970s and early 1980s, Productive Systems theory has been continually refined on the basis of detailed empirical analysis during the decades since.[27]

7.1 The 'Productive Systems' Approach to Industrial Organisation and Development

The focus of productive systems theory is the effective use of resources and the role of industrial organization in securing this objective. Its starting point is recognition that the essence of production is mutual dependence, rooted in technical complementarities inherent to production. The exploitation of these dependencies requires full co-operation among those involved in production, which includes a sharing of information necessary for the improvement of production, products and processes. Co-operation also fuels the learning processes by which information and knowledge are created, incorporated and

diffused, and from which develop new products, processes and organisational forms. The resulting operational and dynamic efficiencies are crucial determinants of the ability of productive systems to compete effectively, to respond flexibly to changing circumstances and to create new opportunities. These efficiencies are also important because they generate the value added by productive systems, which forms the basis for the income and economic security of their stakeholders.

For an understanding of how industrial districts operate. it is useful to distinguish between the technical and social relations of production. *Technical relations* are the functional inter-linkages between labour, equipment and materials in production; and the exchange of technical and other information pertaining to production and the development of products and processes. Technical relations are objective and impersonal associations determined by the technicalities of products and the methods by which they are produced. By contrast, the *social relations of production* are subjective and personal associations among the human agents of production that form the social structure within which the technical relations of production are formed and the production tasks of labour and the means of production are jointly undertaken. The social relations of production therefore play a central role in determining the effectiveness of technical co-operation.

The social relations have two functions in production: co-ordination and control. Production *co-ordination* requires formal direction as well as less formal inter-personal relationships among participants in the productive process. Together, these constitute the social framework within which the agents of production are bought together into co-operative activity. The *control function* involves the exercise of authority and the imposition of sanctions necessary to secure effective technical co-operation. These, too, operate at both the formal and informal, inter-group, and intra-groups levels of organisation.

The social relations of production serve a third purpose of securing agreement about the distribution of jointly-produced value among the parties involved. However, whereas production is necessarily co-operative, distribution is essentially competitive: what one of the partners to production receives, the other(s) cannot have. And, as Adam Smith insisted, for self-seeking individuals, it is material gain rather than any sense of the common good that encourages them into co-operation in production. In these circumstances, the social relations have the dual and potentially conflicting functions of securing co-operation in production and agreement over distribution.

The concept of productive systems outlined above has general application in providing a basis for analysis at any level – production units, firms and industries; industrial districts, regions and countries; trading blocks and the global economy. At each level, there are internal and external networks of

mutually dependent relationships. The terms and conditions for these are settled by the interplay of the strength each party derives from their position within the relationship, and the strength each brings to the relationship by dint of their wealth, social, political and legal standing, and other means by which relative power is determined.

Essentially, each productive system, its internal relations, those it forms with other productive systems, and the terms and conditions for their formation and continuance, are the unique outcome of its own history. Change in productive systems is a dialectical process in which social, economic and institutional elements dynamically interact in historical time. It is generated by developments in products and processes, and by changes in productive and power relationships both within and between productive systems. These interact with the broader economic, social and political framework; and both are modified in the process. Such forces can lead to the destruction or radical modification of productive systems. What is implied, therefore, is an evolutionary process determined by the way productive systems, and their relations with other productive systems, create their own environment and mutate in response to innovation in techniques and organizational forms as well as shifting power relationships.

A relatively successful productive system is one with comparative advantage in its overall economic, technical, political and social organization. It is likely to be at the forefront of technical and organisational progress. The growth of productivity, and the possibility of securing favourable terms from other productive systems with which it deals, will serve to increase its wealth and help to reduce internal conflicts that could impede co-operation. These benign conditions have the potential to create a virtuous cycle of increasing productivity, competitive success, growth in demand and rising prosperity.

A relatively unsuccessful productive system is one where the pace of technical advance is slow, productive forces are ineffectively utilized, and systems of management, control and industrial structure serve to reinforce competitive failure. The slow rate of wealth creation is likely to intensify distributional struggles hindering co-operation in production and the ability of the socio-political system to find an effective solution through organizational and institutional reform. In this hostile environment, the productive system will be under severe pressure but the resulting social, political and economic crisis is unlikely to resolve the underlying causes of degeneration. On the contrary, the struggle over distribution and control will tend to increase the system’s inflexibility and hasten its decline.

The productive systems approach implies a non-equilibrium process which cannot be said to be tending towards an optimum or anywhere else. Rather, the

most that can be said is that a productive system is relatively successful or relatively unsuccessful at any point in time. 'What constitutes economic progress and an 'efficient' distribution of income is essentially a political question because the objectives are political and social in character and not purely economic in the usual narrow sense of the term' (Wilkinson 1983, pp. 427-8).

8. Conclusions

We conclude by returning to Alfred Marshall, who was keenly aware of the evolutionary nature of productive systems and of the environments within which they are embedded. He viewed competition as "an activity, a process with evolutionary dimensions" (Kerstenetzky 2010, p.576), rather than a market structure; and he was concerned with "competitiveness" – of firms as well as local, regional and national productive systems. Marshall saw the evolution of industrial organisation and development as encompassing different routes to industrialisation and involving alternative forms of industrial organisation – including both large factories and small firms in industrial districts – that are variously inter-twined as they evolve and co-exist over time.

During the late 19th century, based on his contemporaneous study of the British industrial districts, Marshall developed powerful insights into the forces that lay behind the emergence, development and vitality of local and regional productive systems, in which the balance between co-operation – within and between district firms – and competition as an important determinant of the success of both the district and its constituent small firms. Marshall was interested in understanding the sources of vitality of such systems, in the face of market and technological forces that in other contexts encouraged the growth and vertical integration of large-scale producers. His key insight was that external economies of scale and scope – in marketing, labour, the supply of inputs, etc. – were available to be realised by groups of small firms 'welded almost automatically into an organic whole' (Marshall 1920 [1919], p. 320). Marshall also highlighted the importance of an 'industrial atmosphere' and social aspects of district development; although his main emphasis was on the economic advantages.

During the 1920s, when Britain experienced the rapid decline of its industrial districts, Marshall's thinking shifted to favouring large firms as the next stage in industrial evolution. As this came to be the conventional wisdom, the role of small firms and localised productive systems were marginalised in the research and analysis of industrial organisation. After Marshall's death in 1924, his methodological approach and evolutionary theory of industrial organisation and development were increasingly abandoned as Neo-classical micro-economic theory focused attention on individual firms competing in particular market structures (instead of groupings of firms operating within localised productive

systems and industrial sectors). During the 1920s, as Britain experienced high levels of unemployment and excess capacity, economic theorists attempted to explain the micro-economic (firm/industrial organisation) effects of low levels of demand. However, their focus was on the supply side. Taking a static equilibrium approach based on a priori reasoning and assuming a given market size, theories of perfect, oligopoly and monopolistic competition maintained that capacity utilisation – and hence employment – is determined by the equilibrium level of output, which only in perfectly competitive markets is at full employment. From this perspective, as in any other market, unemployment is considered voluntary; and the solution is a reduction in the price of labour.

During this same period, Keynesian macro-economic theory was evolving in quite a different direction, contending that the problem of unemployment is *involuntary* and the consequence of an insufficient level of effective demand, with the solution being government spending on public works to compensate for weak private sector spending. Nevertheless, with the increasing size of highly successful vertically integrated producers in Germany and America, the conventional wisdom evolved to contend that the historical tendency in capitalist industrial development is towards large firm dominance; and although Keynesian ideas were emerging to inform macro-economic policy during the 1930s and 1940s, Neo-classical micro-economic theories informed industrial policy – and many of the English industrial districts disappeared as a consequence of policy choices – informed by economic theory – that served the interests of large multi-divisional and multi-national corporations whilst undermining some of the key sources of the industrial districts' competitive advantages and external economies. The re-discovery of the Marshallian industrial district during the 1960s and 1970s in the Third Italy – and the competitiveness of this form of industrial organisaton in the wake of the crisis of Fordist mass production since the 1970s and 1980s attests to the remarkable resilience of Marshall's methodology and theory are in explaining both contemporary industrial districts and the dynamic, non-equilibrium processes involved in their development, evolution and performance over time.

Notes

1 ‘Liberal economics’ is a term for the classical and neo-classical economic theories that emphasize individualism in free markets and laissez-faire policies in which the government’s role is limited to the provision of support services.

2 As the British industrial revolution progressed, and with the development of the factory system and market expansion, Mill (1848) argued that in response to increases in the size of the market, firms would have incentives to increase their scale of production, which would undermine competition (Book 1, Chapter 7).

3 Prior to the emergence and discovery of the thriving industrial districts in Italy’s Central and Northeast regions (the ‘Third Italy’), the country had been divided into the ‘First Italy’ in the Northwest, composed of large-scale producers and capital-intensive industries, and the ‘Second Italy’, the poor Southern regions.

4 Adam Smith wrote: ‘People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices’ (Smith 1999 [1776], p232).

5 See also: Cairncross (1997); Dore (2001); O’Brien (1992); and Reich (2001).

6 For a more detailed discussion of this see Wilkinson (1983) and Tarling & Wilkinson (1987).

7 According to Campus (1982), Bohm-Bawerk (1884) insisted that Marx’s wage theory constituted for the Germany of 1844 ‘the focal point about which attack and defense rally in the war in which the issue is the system under which human society shall be organised’, and he became a pioneer of what became known as *neo-classical theory*, in which *utility* replaced labour as the measuring rod of value.

8 The debate revolved around the questions of: whether increasing returns exist at all; whether they arise out of internal economies of scale or Marshallian external economies; and whether they are compatible with competitive equilibrium. See, for example, Robertson, Sraffa and Shove (1930).

9 This description, as Kaldor (1972, pp. 1244-45) was to subsequently remark, shows that “the basic consideration underlying Young’s analysis is surprisingly the same as that underlying Say’s Law.” As we shall try to show later on, this circumstance is in truth far less “surprising” than it may at first appear.

10 A ‘Second Wrangler’ is the person ranking second from the top of the results list for the final examination for the University of Cambridge’s Mathematics Tripos.

11 ‘Enterprise’ was a term Marshall preferred to ‘competition’ because of the need for a term ‘that does not imply any moral qualities, whether good or evil, but which indicates the undisputed fact that modern business and industry are characterized by more self-reliant habits, more forethought, more deliberate and free choice.’ (1920 [1890], p. 11).

12 Contemporary analyses of industrial districts put greater stress than did Marshall on the collectivist and institutional basis for successful co-ordination. See, for example, Brusco & Sabel (1981); Brusco (1982); Sengenberger, Loveman & Piore (1990); Amin & Thrift (1994).

13 Becattini (1990a) distinguishes two Cambridge Schools of Economics. The first is the one surrounding JM Keynes and his followers, including, among others, Richard Kahn, Joan Robinson, Gerald Shove, Nicholas Kaldor, Austin Robinson and Piero Sraffa. The second – ‘the ‘Old Cambridge School’ – surrounds Alfred Marshall and his students who studied and developed research fields within industrial economics. These included, among others, SC Pigou, DH Robertson, Arthur Bowley, Sydney Chapman, DH MacGregor, Charles Sanger, CR Fay and Philip Sargent Florence.

14 This section draws heavily on invaluable input from Gabi Dei Ottati on Giacomo Becattini and Margherita Russo and Anna Natali on Sebastiano Brusco.

15 However, ‘[t]he industrial districts that the district interpretation of Italian development identified in economic reality were not simply replicas of the nineteenth century English industrial districts on which Marshall had worked: the reference to districts being “Marshallian” related to a particular analytical tool, not to an empirical identification. An industrial district can be said to be a “Marshallian industrial district” if it is so identified by empirical research using methodological criteria derived from the Marshallian analytical tool’ (Sforzi 2015, p. 16).

16 See Becattini 1962 for Italian title and full reference.

17 In particular, *Economics of Industry* (1879, with Mary Palley Marshall), *Principles of Economics* (1890) and *Industry and Trade* (1919).

18 See IRPET 1969. Becattini had set-up IRPET in 1968.

19 See, especially, Young (1928).

20 Brusco (1982) was translated from the Italian into English by Jonathan Zeitlin.

21 See, for example, Hirst & Zeitlin (1988, 1989); Kern & Schumann (1987); Sengenberger & Loveman (1988).

22 In the sense that it is used here, *trust* simply means the reliance on and confidence in the truth, worth, reliability of a person or thing (Collins Concise Dictionary, 1995).

23 A term that no doubt Marshall would have appreciated, although he would probably have preferred 'organisational thickness'.

24 See, for example: Amin & Thrift (1992); Asheim (2000); Harrison (1992); Harrison, Kelly & Grant (1996); Keeble & Wilkinson (2000); Markusen (1998); Morgan (1997); Porter (1998); Scott (1988, 1998, 2001); Pinch & Henry (1999); May et al, (2001).

25 For studies of the evolutionary path of localized productive systems, see, for example, Scott 1998 and Enright 1998. For studies of district 'life-cycles', see, for example, Swann 1998.

26 See, for example, Klepper (2007; 2009; and 2010); Klepper and Sleeper (2005); Boschma and Wenting (2004); and Buenstorf and Klepper (2010).

27 For the development of the productive system analytical framework see: Wilkinson (1983); Birecree, Konzelmann & Wilkinson (1997); Wilkinson (1998); and Wilkinson (2003).

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