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Cooperation and the Organisation of Production and Markets: A Critical Survey

Abstract

This critical survey examines the role of cooperation in production and exchange, the relationship between the organisation of production and markets, and, more generally, the nature and functioning of productive systems. It traces ideas about the relationship between markets, industrial organisation and power, from Adam Smith and Karl Marx to the early neo-classical economists, before turning to the evolution of liberal economic thinking that accompanied the emergence and growth of large organisations with market power. This is then confronted with Alfred Marshall's methodological and theoretical contributions to both economics and industrial organisation and development, and his attempt to reconcile the neo-classical economic dilemma of increasing returns in production and competition in markets. During the inter-war years, and especially after his death in 1924, Marshall's ideas were strongly challenged – and ultimately abandoned – by neo-classical economists. However, this debate re-emerged nearly a half century later, when the Fordist mass production model faced growing competition from more cooperative forms of industrial organisation. Based on solid empirical research into contemporary industrial districts and localised productive systems, there was a re-discovery of the importance of cooperation in production, and an acknowledgement of the significance of Marshall's earlier contributions. Inspired by these developments, Frank Wilkinson's "productive systems" approach brings together the threads running through Smith's, Marx's and Marshall's analysis of the dynamics of cooperation in production and exchange, to explore the implications of the mutual and conflicting interests inherent to production, industrial organisation and economic development.

Key Words: Marshallian economics, the representative firm, the division of labour and extent of the market, industrial districts, productive systems

JEL Codes: B00, D2, L1, L2

1. Introduction

Liberal economics[1] has traditionally put strong emphasis on individualism and specialisation; and it has struggled with the notion of cooperation, suspecting individuals and firms that work closely together of colluding against the public interest. It is even more sceptical about institutional means of cooperation and collective security, stressing the risk that these will impede competition and reduce economic welfare.

Alfred Marshall was an exception, who undertook detailed empirical and theoretical research into the evolution of British industrial organisation, especially industrial districts. These were localised clusters of small enterprises and their suppliers, which during the 19th Century were embedded within communities and became centres for economic, social and political development. Marshall discovered that an important determinant of the competitive success of industrial districts was effective cooperation within and between firms, supported by dense networks of institutions and

[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.

markets regulated by agreed rules, norms and standards. He argued that industrial districts generate economies of scale and scope, external to individual firms but internal to their clusters, which enabled them and their member firms to successfully evolve, by more effectively cooperating and competing with both each other and firms external to the district. During the 1920s, however, Marshallian economics came to be questioned by the emergent neo-classical conventional wisdom that optimising economic welfare requires unrestricted price competition amongst a plenitude of small firms.

Paradoxically, perhaps, the 1920s also witnessed growing concentration in British industry, and the increasing competitive success of large scale American and German enterprises. This revived the question of whether (or not) increasing returns in production could be reconciled with competition in markets. From the perspective of static neo-classical economic theory, firms securing scale efficiencies in production relative to the size of their market are a threat to competition. This potential dilemma sparked a vigorous debate about increasing returns and competitive equilibrium, raising questions about Marshall's conceptualisation of internal and external economies – and their implications for industrial organisation and its effective operation. The outcome of the ensuing debate in Cambridge was the discarding of Marshall's empirically grounded evolutionary economics, and its replacement by *a priori* reasoning based on the static categorisation of individualistic firms as either *perfectly* or *imperfectly* competitive. In this context, it was presumed that the degree of market imperfection is a measure of the extent of welfare loss.

Nearly a half century later, however, the discovery of competitively successful clusters of small firms in the "third Italy"[2] – at a time when large firms and the Fordist model of mass production were generally in decline – reawakened interest in Marshall's theory. The success of this form of industrial organisation again sparked debate about the implications of cooperation in production for market competition; and it challenged the dichotomisation of firms and markets in liberal economic theory.

This critical survey re-considers the role of cooperation in production and exchange, the relationship between the organisation of production and markets, and, more generally, the nature and functioning of productive systems. Section two traces ideas about cooperation, the organisation of production and markets, from Adam Smith to the early neo-classical economists before turning, in Section three, to the evolution of liberal economic thinking about the relationship between markets, industrial organisation and power. Section four traces Marshall's methodological and theoretical contributions to economics and to industrial organisation and development, which attempted to reconcile the neo-classical economic dilemma of increasing returns in production and competition in markets. However, especially after Marshall's death in 1924, this was strongly challenged by neo-classical economists, when the growing dominance of very large, vertically integrated firms produced a vigorous debate; this is the topic of Section five. Section six traces the re-emergence of this debate nearly a half century later, when the Fordist mass production model faced growing competition from more cooperative forms of industrial organisation. Section seven explores more recent research on the evolutionary paths of localised productive systems. The threads running from Smith's and Marshall's ideas about cooperation and the organisation of production, markets and exchange through to the present are brought together in Section eight, which lays out Frank Wilkinson's "productive systems" approach to industrial organisation and development. Section nine concludes.

[2] 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.

2. Cooperation, the organisation of production and markets

Adam Smith's theory of the division of labour assigns a central role to specialisation and working together, for the realisation of productivity gains in production and for the prosperity of societies in which this progresses the furthest. But he argued that what gives rise to the division of labour is a form of market mechanism operating in the exchange of productive efforts by self-interested individuals (Smith 1999 [1776], pp. 115-126):

> "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" (p. 118).

From this perspective, unrestricted markets are both the drivers of productivity-enhancing divisions of labour, and the co-ordinators of the increasingly specialised parts of production systems, in which the propensities in human nature to "truck, barter and exchange one thing for another" (p. 120) drives specialisation, the division of labour and the growing inter-dependence of individual trades, artisans and entrepreneurial managers.

Thus, self-interest provides the incentives for specialisation; the possibility of exchange provides the opportunities; and markets co-ordinate individual production and consumption decisions, in effect, securing societal cooperation and rewarding individuals for their relative contributions as measured by the demand for them. Classical political economists went on to develop an understanding that realisation of the increasing returns inherent in the division of labour depends upon expanding markets (Rima 2004, p. 172).

Edward Gibbon Wakefield, an early critic of Smith's emphasis on the fine division of labour in production and the coordination of isolated stages of production by market forces, questioned the idea that arms-length market transaction is the coordinating mechanism for productivity-advancing cooperation between individuals. Wakefield emphasised the closely collaborative nature of production, arguing that Smith confused labour (workers) with the productive effort they individually put into their collective employment. He further stressed that as labour is naturally divided between separate pairs of hands, the division of employment between many pairs of hands requires workers to work cooperatively together:

> "The 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).

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).

What Wakefield was alluding to was, firstly, that at each stage of production, labourers necessarily work in concert, together with the equipment and material inputs they use; and, secondly, that none can operate without the others, so the failure of any factor of production to adequately perform its

productive functions lowers the joint product of the whole. The essence of production is therefore mutual dependency rooted in technical complementarities inherent to the methods used, the effective operation of which requires the full cooperation of all involved in production.[3] Wakefield also emphasised the importance of securing cooperation in organisational and institutional systems.

Thomas Hodgskin was also early in recognising the central importance of cooperation and joint labour in production. Taking a more evolutionary approach than Wakefield's, he contended that:

> "[a]lmost 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).

He added, however, that because the labour process is necessarily collaborative, a question arises about how the jointly created income is to be distributed: "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.).

Marx, when developing his theories of the labour process and surplus value, followed Wakefield and Hodgskin in explicitly identifying the inherently cooperative nature of capitalist production; and he specifically addressed the principles and rules for dividing the produce of joint labour among the different individuals involved in its production (Marx, 2015 [1867], Chapters. XII to XV), Marx maintained that direct cooperation in production originates when employers bring workers together in workshops under their command. Then, without any change in technology, workers increase their collective output by being worked harder and in closer cooperation, with the value additional to the cost of labour's reproduction being expropriated as profits by their capitalist employers.

Marx further maintained that assembling workers together also provides opportunities for a finer division of labour, the mechanisation of production and, eventually, the development of modern industry. In this process, cooperation is transformed from its simple variety, into a "more specialised form based on the division of labour" and, ultimately, into "a technical necessity dictated by the very nature of the instruments of labour" (ibid., p. 268). In this transformation, capitalism plays a pivotal innovative role by creating the technical, social and authority relationships required for organising production, securing workers' compliance, and extracting and reinvesting their surplus value.

In Marx's scheme, capitalist managers organize production within the workplace, prior to the co-ordination of supply and demand in the market for their products. In this context, income distribution becomes a two-stage process in which both managerial control and the market have a part to play: Money wages are determined by free exchange in the market, after which – in the workplace and under the command of their employers – value additional to their wage costs (surplus value) is extracted from workers, and constitutes capitalist profits.

According to the German economist Eugen von Bohm-Bawerk (1884), for Germany in 1844, Marx's wage theory constituted "the focal point about which attack and defence rally in the war in which the issue is the system under which human society shall be organised" (p. 241);[4] and he became a pioneer in what came to be classified as marginalist – which was later termed "neo-classical" – economics. For neo-classical economists, utility derived by consumers from commodities replaces workers' labour power as the measuring rod of value; and, rather than worker exploitation, the

[3] And, in effect, with the tools they use and the machinery they operate.
[4] Quoted in Campus 1987, p. 320.

reward for waiting accounts for the rate of return on capital. [5] From this perspective, market demand for products is determined by the degree of utility consumers expect to derive from the goods on offer, relative to the prices they are asked to pay for them; and for workers, the utility they expect to derive from consuming the goods and services they buy with their wages (ie. wage goods) determines the pay levels required to motivate them to work, by compensating them for the dis-utility of their labouring.

Early neo-classical economics argues that in production, the different *factors* of production are potential substitutes for each other, although an increasing amount of any one factor in production is required to compensate for a reduction in the use of others. Producers are assumed to maximise profits by choosing, on the basis of market determined relative prices of the alternative inputs, the lowest cost production techniques from an array composed of varying combinations of labour and the other factors of production. From this perspective, free markets are fundamental for determining productive efficiency by guaranteeing unimpeded exchange of the means of production and final products, at prices fixed by market supply and demand, which itself is fuelled by individual preferences determined by anticipated costs and benefits. Any impediments to market freedoms are seen to cause suboptimal outcomes by misallocating resources, with consequential individual and systemic welfare losses.

It is from this starting point that Alfred Marshall would go on to develop his empirically research-based theoretical and analytical understanding of the interactions between individuals, markets, technical and organisational forms of production, and their evolution.

3. Markets, industrial organisation and power in the evolution of early liberal economics

In liberal economics, the theoretical position on power in markets ranges from the static neo-classical view, that 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 and the visible hand of managerial authority.

3.1. 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

[5] This is on the grounds that consumers are assumed to value current consumption more than future consumption, implying that they are inherently myopic.

given in neutralising individual power, thereby ensuring full cooperation among self-interested individuals.

But liberal economists argue that this beneficial effect is limited if individuals and groups can marshal any power they have in restraint of trade. Since trade unions, employers' organisations and other collective monopolies are suspected of restricting supply and raising prices, they require close regulation. On the other hand, liberal economists have 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 (Wilkinson 2002).

3.2. The "visible hand" of management

Until relatively recently, 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 organization?'" (Coase 1937, p. 388). He answered this question by asserting that organisation provides an efficient means 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 from 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 organisation – serve as coordinating and contract-enforcing mechanisms distinct from market forces.

Williamson (1985) incorporated Coase's ideas into his "transactions cost" theory of industrial organisation, in which organisation compensates for market failure. From this perspective, "transactions costs" are the key determinant of the boundary between the market and the firm, with organisational 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.

Other economists working within the liberal tradition have given the visible hand a more proactive role. In Marshall's later work, for example, he accepted the logic of economies of large size, laying stress on the important role of *organisation*, which he considered to be a fourth factor of production (along with land, labour and capital). For Marshall, organisation 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[6] as a central motivating and integrating force, he 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).

6 "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" (Marshall 1920 [1890], p. 11).

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 because, 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, liberal economists recognise the downside to market dominance. The abuse of power in labour and product markets may have significant distributional effects; and companies may take actions that 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 to prosper. 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 restraining, it would restrain progress if their market opportunism was unduly restricted.

3.3. Markets and power

In summary, underlying theories of markets in liberal economics is the concept of *economic* man – which can be extended to include *economic* organisation – inherently driven by self-interest. From this perspective, self-interest provides the driving force for economic activity, in which respect it is creative; but, given the opportunity, the pursuit of self-interest 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, serves as a vehicle for economic progress. In this process, markets are selectors of the uses of power that enhance economic well-being.

4. "Marshallian" economics

John Maynard Keynes (1924) identified Marshall as: "the first great economist *pur sang"*[7] (p. 222); and he listed Marshall's major contributions to economics as "[t]he explicit introduction of element of time as a factor in economic analysis … [t]he conception of the 'long' and 'short' period … and … [the] distinctions … between 'external' and 'internal' economies and between 'prime' and 'supplementary' costs" (pp. 206-7).

He went on to explain that:

> "[b]y means of the distinction between the long and the short period, the meaning of 'normal' value was made more precise, and with the aid of two further characteristically Marshallian

[7] "Pur sang" means "beyond any doubt".

> conceptions – quasi rent[8] and the representative firm – the doctrine of normal profits was evolved. All these are path-breaking ideas which no one who wants to think clearly can do without" (p. 207).

As a central tool for the analysis of industrial development, Marshall introduced the concept of a "representative firm", which plays a pivotal role in his analysis:

> "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).

This idea came naturally to Marshall. Because of his detailed knowledge of industrial life and the details of particular industries, he was able to identify a firm that represented an industry's progress. O'Brien (1990) explained:

> "Marshall defined supply price as the average cost of a 'representative firm' where the costs incurred depended not only on the output of the firm but also on that of the industry and on the accumulated technical progress of the industry. At market clearing equilibrium the representative firm itself would be in equilibrium but the industry as a whole would not, with some firms growing and others declining" (p.67).

The rise and fall of firms within industries was envisioned by Marshall in his famous analogy of the trees of a forest. Here the representative firm was defined as one with a typical share of internal and external economies, neither a dominant producer nor a struggling marginal one (1920 [1890], pp. 315-18). So we have a picture of an industry made up of firms with different longevity and levels of efficiency; and the trajectory of industrial responses to changes in demand and supply conditions are to be tracked by the experience of a representative firm (ibid., pp. 342-3).

4.1. The dynamics of industrial organisation and development

In theorising the dynamics of industrial organisation, Marshall combined Adam Smith's notion of the division of labour, as the primary vehicle of economic progress, with Darwin's theory of evolution (Marshall 1920 [1890], Book IV, Ch VIII). He argued that in economic life the struggle to survive selects the fittest; and fitness depends upon increasing differentiation, which itself requires ever more refined means of coordinating productive activity. This necessitates the development of more efficient uses of resources, requiring suitably specialized skills, knowledge, machinery, management and products. The emphasis on organisational coordination as a factor of production sets Marshall's analysis far apart from the usual neo-classical version of how the economy works, where arms-length market relations serve as coordinating mechanisms.

Central to Marshall's understanding of the evolutionary trajectory of capitalism is the interaction between organisation and knowledge. He explained:

[8] When a firm invests in capital equipment (or a worker invests in acquiring particular skills), the returns accrue over a period of time; they therefore commit a hostage to fortune in that the value of their services, and hence forth their price, depends exclusively on the demand for them (a characteristic they share with land). Marshall deemed the returns on such assets to be "quasi rents".

> "Capital consists in a great part of knowledge and organisation … Knowledge is our most powerful engine of production; it enables us to subdue Nature and force her to satisfy our wants. Organisation 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).

By acknowledging the importance of cooperation in production, Marshall was required to focus on the role of organisation in coordinating increasingly specialized, yet mutually dependent activities. For Marshall, the central role of organisation was then the reintegration of the increasing subdivisions of production, with the progressive division of labour, and the development of specialised skills, knowledge, and mechanisms required for achieving this purpose (ibid., p. 139). Here, Marshall drew a clear distinction between relationships within firms and those between firms. Inside firms, cooperative relationships within production, coordinated by manager-entrepreneurs, are seen to generate increased output per worker. External to the firm, markets are viewed as offering both potential substitutes and alternative opportunities for insiders, putting pressure on them to cooperate whist at the same time incentivising managers to meet the going rate for their cooperation.

4.2. Industrial districts

In theorizing industrial districts, Marshall identified economies of scale and scope,[9] both internal and external to member firms, which he saw as being generated by the concentration of production in particular localities (Marshall 1920 [1890], p. 152). Benefits of proximity, Marshall argued, include increasing degrees and specialisation of skills and their diffusion throughout the community creating an abundant supply of appropriately qualified labour, the growth of "subsidiary" trades and services and an expansion in the use of specialized machinery made possible by the combined demand of many customers. Close geographical proximity therefore allows firms to collectively enjoy the benefits of technical and organisational innovation and large-scale industrial production which are far beyond the scope of isolated firms.

From a Marshallian perspective, the importance of the localisation of production within industrial districts is that it creates an environment favourable to the success of individual member firms. The close proximity of firms within particular industries provides opportunities for enterprises to specialize; it also enables the district as a whole to secure economies of scale and scope (both static and dynamic), that are denied to individual firms by internal constraints on their size and diversification. Consequently, within industrial districts firms are able to concentrate their initiative and inventiveness on what they do best, and thereby establish an environment which improves the overall performance of localities.[10] In early versions of his analysis, Marshall made clear that growing problems of internal coordination, the aging of the founder and the failure to find a successor limited the longer-term prospects of individual firms. But he saw these as individual failures, with the forward impetus of districts being maintained by vigorous individuals and new firms replacing the old and fading ones.

Marshall thus recognized that industrial districts occupy both geographical and social spaces, with their own economic and social histories, structures and prospects. In his view, district effects are

[9] Economies of scope exist when the average total cost of production decreases as a result of increasing the number of different goods produced.

[10] 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.

long-term, cumulative and dependent upon cooperation in knowledge creation and innovation; and he highlighted the importance of what he described as the "industrial atmosphere":

> "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 organisation 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" (ibid., p. 156).

He added:

> "The 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).

Nevertheless, Marshall's main emphasis remained on individual initiative and free enterprise as the drivers of economic progress. He argued that while collective action fosters individual success, it also risks blunting individual initiative and inhibiting competitiveness. Thus, for example, whilst trade associations had a role to play in coordinating production, standardizing products and providing scientific and other specialized services, in the absence of a profit motive they were of second order importance to the individualistic enterprising entrepreneurs who were energised by the promise of gain to mobilise the system's productive forces.

4.3. The nature of competition

In explaining the nature of competition, Marshall followed Adam Smith in regarding it as "an activity, a process with evolutionary dimensions" (Kerstenetzky 2010, p.576) by recognizing that interactions between supply and demand are essentially dynamic. He chose this approach because of his awareness of the unsuitability of static analysis for his central purpose; and he maintained that "[f]ragmentary statical hypotheses are useful as temporary auxiliaries to dynamical – or rather biological – conceptions: but the central idea in a volume on the foundations of economics, as in any other, must be that of living force and movement" (1890, II, p. 50). What Marshall meant was that whilst static analysis provides a way of indicating differences, a more dynamic analysis is required to show how these differences develop, the purposes they come to serve and what longer term effects they might have; and, to appropriately serve this purpose, he believed that theory needed to be rooted in reality.

Nevertheless, after Marshall's passing in the 1920s, theoretical developments in economics in Cambridge were steered away from the notion of competition as an active force driving the system. It was viewed instead as a static device for classifying firms as to whether they competed perfectly or imperfectly with each other. Following on from this, the nature of competition was seen to determine what the welfare costs of market imperfections might be, and what, in policy terms, should be done about them. In effect, this alternative methodology, built on supposition derived from abstract reasoning, was used to evaluate actual reality.

5. Increasing returns in production and competition in markets

During the 1920s, with the growing dominance of very large, vertically integrated firms, economists vigorously debated the true nature of increasing returns.[11] Marshall had tried to circumvent the problem with his theory of external economies, using the device of the representative firm. Viewing the internal economies that the representative firm can gain from increasing size as self-limiting, he identified external economies as the reason that markets would continue to be dominated by competition (Marshall 1920 [1890], p. 316). But Marshall's death in 1924, aged 81, would mean that he would not live long enough to enter into this debate.

Perhaps the most influential attack on Marshall's theory came from Piero Sraffa, who 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: "Everyday experience shows that a very large number of undertakings … work under conditions of individual diminishing costs" (Sraffa, 1926, p. 543). 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 ultimately 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.

Sraffa's position was strongly challenged by Allyn Young, among others, who radically developed Marshall's methodology. He considered Adam Smith's theory of the division of labour to be "one of the most illuminating and fruitful generalisations which can be found anywhere in the whole literature of economics" (Young, 1928, p. 529); and, following Marshall, he extended it to include the specialisation that occurs between firms and industries with the expansion of their markets.

Writing around a century and a half after Smith – and observing in the USA the second industrial revolution, the emergence and growth of large vertically integrated firms, and the mass popular consumption of a widening range of manufactured goods and services – Young addressed the question of the outcome of increasing returns by building on the Marshallian concepts of internal and external economies (Young 1928, p. 527). However, whilst considering Marshall's distinction to be "fruitful", Young emphasised that it was "necessarily a partial view" (ibid., p. 528). Although he envisaged increasing returns as leading to market dominance by large firms, Young did not consider such industrial concentration as incompatible with competition. Focusing on the rapidly evolving US economy, he identified the "market" as "buying power" where "the capacity to buy depends upon the capacity to produce … [and] as the outlet for goods in general, the size of the market is determined and defined by the volume of production" (ibid., p. 532).

From Young's perspective, the division of labour operates complementarily on both sides of the market by expanding and diversifying both production and consumption. Consequently, he recognized that a firm's ability to respond to and exploit ever evolving marketing opportunities provides the route to their continuing competitiveness. By these developments, Young extended Marshall's analysis to include the specialisation that occurs among firms and industries as

[11] 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 & Shove 1930.

technologies evolve and as markets are transformed, with dramatic implications for Marshall's 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" (ibid., p. 538).

Young, therefore, strongly emphasised that the significance of increasing returns on the supply side can only be fully accounted for when it is realised by accommodatingly evolving increasing and changing patterns of demand. Noting that "the most important single factor in determining the effectiveness of its industry appears to be the size of the market" (ibid., p. 532), he reaffirmed Smith's linkage between the division of labour and the extent of the market. But Young went much further by insisting that "the division of labour depends upon the scale of the market, but also that the scale of the market also depends upon the division of labour. In these circumstances lies the possibility of economic progress" (ibid., p. 539). He thus demonstrated how Marshall's empirical work on English industrial organisation of the 19th and early 20th centuries averted the neo-classical theoretical dilemma without abandoning increasing returns or market competition.

But Young's premature death in 1929, aged 52, silenced one of the most influential voices in support of both Marshall's methodology and identification of what could be described as the representative evolutionary tendency in capitalistic development which served as the means of identifying firms leading this progression. Thus, during the 1920s Marshallian economics was progressively replaced by a methodology rooted in "fragmentary statistical hypotheses" (Clark and Juma, 2013, p. 49). With this, the focus of attention in the study of industrial organisation shifted away from industry and towards a static, equilibrium analysis of individual firms competing in different market structures – where it would largely remain for the next half century.

6. Cooperation and the "new competition" – Rediscovering the "Marshallian" industrial district

During the 1970s and 1980s, the Fordist mass production model faced growing competition from more cooperative forms of industrial organisation. This "new competition" (Best, 1990) originated with Italian, Japanese and German producers who had evolved more cooperative relationships with both their work forces and suppliers. This generated relatively high levels of operational and dynamic efficiency based on improved labour productivity, the more effective use of materials and equipment, better quality control and mobilisation of the skills and knowledge of both workers and suppliers in the improvement, design and innovation of products, processes and the organisation of production (Howes, 1991).

6.1. Italian industrial districts

In Italy, the new competition took the form of re-activation of the Marshallian industrial district model of production.[12] 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

[12] For a further discussion, see Konzelmann & Wilkinson 2017.

> 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).

This methodological criteria involves: conceptualizing a local production system as both a model of production and a unit of investigation; defining an industry on the basis of the human agents of production's sense of belonging to the place where production occurs (rather than by the production technology employed); and adopting Marshall's concepts of internal and external economies to identify the boundaries between industries. From this perspective, external economies 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 can be as readily attained by a large number of geographically concentrated small firms as by fewer large firms (Becattini 1990a).

The study of these modern industrial districts in Italy was pioneered from the 1960s onward by Giacomo Becattini's work on the economic development of Tuscany and Sebastiano Brusco's study of the efficiency of local clusters of small and medium sized firms in Emilia Romagna.[13] Both Becattini and Brusco were academics interested in industrial organisation and actively engaged in policy formation and implementation. Although they had different theoretical perspectives – Becattini's drawing upon the work of Marshall and Brusco's upon the work of Sraffa – 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.

Becattini and Brusco were remarkably successful in this respect. But 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 that the early research findings on the Italian industrial districts were mainly published in Italian; so their dissemination outside of Italy was limited. As a result, 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).

6.2. "Flexible specialisation"

During the 1980s, as the crisis of Fordism was deepening – and knowledge of the Italian experience was spreading – the district model of industrial development represented an empirical alternative to the vertically-integrated mass production model. 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 "flexible specialisation" technological paradigm, based on flexible technologies, skilled workers and new forms of industrial community (Piore & Sabel 1984; Sabel & Zeitlin 1997). The increasingly volatile and uncertain environment of the time was seen to place a premium on flexibility, which itself was dependent upon specialisation based on a new articulation of the inter- and intra-firm division of labour. The argument goes on to suggest spatial 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).

[13] See, for example, Becattini 1978, 1990a and 1990b; and Brusco 1982, 1990 and 1992.

Building upon this conceptual perspective, Scott and Storper (1989) argue that the "historical rupture" of the 1980s represented a crisis of Fordism as a model of capital accumulation and regulation, which gave way to a new regime of flexible accumulation, featuring flexible production methods, "ensembles" of flexible production sectors and a "new geography" of flexible accumulation. In this context, increasing flexibility was viewed as a catalyst for the vertical dis-integration of existing organisational structures. This, in turn, led to locational convergence and spatial agglomeration resulting from "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,[14] it was strongly challenged by Amin and Robins (1990) 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 … 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 … A more adequate account … acknowledges the complex and contradictory nature of the restructuring process – and particularly of its spatial dimensions" (ibid., pp. 185-204).

6.3. Socio-economic and institutional dynamics of regional competitiveness

Subsequent work on industrial districts took a "social embeddedness" perspective that pointed to the centrality of social cohesion and privileged 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, the emphasis is 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 cooperation and thereby strengthen inter-firm networks. 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" (ibid., p. 157).

As the 1980s and 1990s 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. It also 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",

[14] See, for example, Hirst & Zeitlin 1988, 1989; Kern & Schumann 1987; Sengenberger & Loveman 1988.

"network regions", "learning regions", "local production systems" and "competitive clusters".[15] Among these, one of the most influential analytical constructs and policy tools is Michael Porter's notion of the industrial or business "cluster" (Martin & Sunley 2003).

6.4. Porter's cluster theory

Porter's cluster concept was 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); 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).

Although enormously successful as a conceptual and policy tool, Porter's clusters have been strongly criticised on a number of bases. Sforzi (2015), for example, 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" (p. 20) 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" (ibid., p. 21). Sforzi 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.

Martin and Sunley (2003) criticize the absence of a clear delineation of boundaries, both industrial and geographic, in Porter's cluster concept, which makes it impossible to determine what is internal and what is external to the cluster. A further problem is that cluster theory 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" (ibid., 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.

[15] 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.

7. Evolutionary paths of localised productive systems

With the intensification of globalisation processes since the 1980s, and increasing pressure on firms and regions to become better integrated into the global economy, scholars have studied the evolution and of localised productive systems. Building on Marshall's evolutionary perspective – and his recognition of the vulnerability of the industrial district model to degradation – these contributions aim to explain how vibrant local or regional economic systems might emerge, and the manner in which their original dynamism may eventually be eroded. More recently, and especially since the 2008 financial crisis, this literature has explored the question of "resilience", or the ability of such systems to recognise and respond positively to shocks by adapting and reconfiguring their industrial, technological and institutional structures and creating new development pathways (Martin & Sunley 2015; Faggian et al. 2018; Benczur et al. 2020). In this, an important focus is the changing institutional environment as well as the socio-economic context (local, national and international) which frames the system's evolution.

7.1. Cluster life cycles

Conceptualisations of cluster evolution have long revolved around the idea of a life cycle, involving four basic stages of development, from emergence, through growth and maturation, to decline (Menzel & Fornahl, 2010). In the cluster life cycle literature, the logic driving the life cycle is typically traced to an underlying industrial or technological life cycle or to processes associated with clustering itself, although some theorists have attempted to combine elements of both (Brenner 2001). In the first approach, as a technology or industry matures, cluster advantages are seen to gradually become disadvantages due to collective lock-ins, or high and rising congestion and transactions costs (Swann 1998); in the second, the cycle is driven by the balance between agglomeration advantages and disadvantages and/or localisation externalities (Maskell & Malmberg 2007; Menzell & Fornahl 2010).

Pouder and St. John's (1996) approach offers one of the most well developed explanations of the cluster life cycle. Drawing upon a range of theoretical ideas – from institutional evolution, organisational ecology, management cognition and agglomeration economies – their evolutionary model of the formation, growth and decline of localised productive systems is set against the development of the wider industry as a whole. Agglomeration economies that originally drew firms together, making clustered firms initially highly innovative relative to non-clustered firms, were seen to eventually erode. This is because clustered firms were assumed to define their field of competition as the localised productive system to which they belong, instead of the wider industry external to the it. This could be expected to give rise to competitive "blind spots" that constrain both innovative capabilities and the ability to anticipate and respond to sudden system-wide changes. By contrast, non-clustered firms were seen to be less constrained and potentially more adaptable to industry-wide shocks. However, this 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 & Sunley 2003, pp. 17-18).

More recent applications of the life cycle approach have focused on the population of firms that make up a cluster, and the potential for heterogeneity of firm dynamics, contingency, agency and collective action to contribute to deviation from a stylized life cycle development path.[16] Yet such refinements typically view these factors as complicating influences, retaining the life cycle as the

[16] See, for example, Popp & Wilson 2007; Tomlinson & Branston 2014; Miorner & Trippl 2017; Sydow et al. 2010; Smith et al. 2017; Martin & Martin 2017.

basic conception of how clusters evolve over time. More recently, the processes of adaptation, renewal and transformation have been added, providing clusters with more possibilities in their evolutionary trajectories.

7.2. Clusters as adaptive complex systems

Despite its popularity, the cluster life cycle model has been repeatedly challenged on the grounds that many technological or industrial development paths do not follow a recognizable life cycle (Bonaccorsi & Giuri 2000; Robertson & Patel 2007; Penrose 1952; Grantham 1997). Martin and Sunley (2011) argue that "an alternative way of thinking about clusters is that they are complex adaptive systems" (p. 1301), thus opening up a range of possible evolutionary trajectories without excluding a life cycle path.

The adaptive cycle model was initially developed to describe the evolutionary dynamics of ecological systems; but it has since been applied more widely in ecological economics and socio-ecological studies (Holling 1986, 1996; Peterson 2000; Holling & Gunderson 2002). It is also a key element of "panarchy" theory (Gunderson & Holling 2002), which attempts to account for the seemingly contradictory characteristics of all complex systems: stability and change.

The adaptive cycle model has tended to focus on local or regional ecosystems and how these evolve by adapting to external changes or shocks, with particular attention to the system's "resilience" or adaptability (Gunderson & Pritchard 2002). The model identifies a trade-off or conflict between the internal connectedness arising from stability and the adaptability required in response to change: the more internally connected a system is, the more structurally and functionally rigid – and less adaptive – it is seen to be. A four-phase process of continual adjustment is posited to resolve this conflict: exploitation, conservation, release and reorganisation. In the "exploitation" phase, an identifiable system emerges and develops. This phase eventually merges into the "conservation" phase, as the system becomes well established and eventually stabilizes around a particular form, structure and mode of self-reproduction. If an external shock should occur, or if rigidity itself sets off internal processes of decline, the system enters a "release" phase and contracts. This is followed by a "reorganisation" phase of reconfiguration, experimentation and restructuring.

Discussions of the adaptive cycle model in ecological settings identify two possible outcomes of the reorganisation phase: renewal or replacement. In the first, the system re-establishes itself, and begins a new cycle of growth and accumulation of resources. In the second, the old system is replaced by a new one, with a different identity and function. The new system may incorporate elements and components left over from the old system; and if those legacies are substantial, the new system may fall in between renewal and replacement.

Martin and Sunley (2011) argue "that the adaptive cycle model as applied to clusters should be modified in order to emphasize a number of different possible sequential trajectories" (p. 1312). Their modified model identifies six possible alternative evolutionary trajectories. The "classic ecological cycle" – of emergence, stabilisation, decline and reorganisation – is retained because it fits some observed cases of cluster evolution. But there are other identifiable trajectories of evolution and change: One such sequence is "constant mutation", in which cluster firms continually develop new products through ongoing innovation, and the cluster progressively evolves, in an adaptive path-dependent manner. Another is "cluster stabilisation", where the cluster eventually decreases in size but does not rigidify and disappear. A third is "cluster re-orientation", in which a mature cluster moves from a stable period to a new phase of emergence and renewal. Finally, there are two trajectories – "non-regenerative decline and cluster disappearance" and "emergent cluster failure" –

when clusters are vulnerable to terminal decline. In the first, cluster disappearance is the result of growing rigidity, high internal connectivity and eventual "lock-in". But clusters can also fail to become established during the emergent phase when selection pressures are strong.

Martin and Sunley's modified and extended model thus retains some of the useful stylized regularities highlighted by the basic adaptive cycle model whilst at the same time allowing greater scope for agency and firm-level responses to pressures. They conclude that "future research needs to examine carefully how the complex co-evolution of firms and their cluster contexts may give rise to a variety of evolutionary paths that are perhaps not best captured by the standard life cycle model" (p. 1315).

7.3. Evolutionary and institutional economic geography and new path development

In recent years, both the cluster evolution and broader evolutionary and institutional economic geography literatures have faced calls for more actor-centric approaches and a better understanding of the role of institutions in cluster evolution (Hassink et al., 2014; MacKinnon et al. 2009; Trippl et al., 2015). Interest in a more actor-centric approach to understanding cluster evolution can be traced to limitations associated with the path dependence literature's focus on lock-in.

Martin (2010) argues that path dependence refers "to the reproduction of what exists, to yet more of the same, but not to evolution" (p. 22), suggesting that actors may play a greater role in the creation of new paths than had previously been acknowledged. This prompted economic geographers to explore the ways that actors utilise pre-existing conditions to create new industrial pathways and to later make changes in them as required.[17] Building on this work, the focus shifted to developing an understanding of the broader types of path development that can occur. This literature has produced multiple approaches to explain cluster emergence, growth or maturation through processes of path upgrading and cluster adaptation, renewal or transformation.

Institutional approaches to cluster evolution have typically focused on how clusters are conditioned and constrained by formal institutional frameworks, consisting of the rules, laws and regulations at various territorial levels, from the local, through the regional and national, to the supra-national. (Maskell & Malmberg, 2007). From this perspective, cluster evolution is usually viewed through the lock-in lens of path dependence, by which a cluster's emergence is seen to be a consequence of an enabling institutional framework within which survival depends upon its continued suitability; should external factors deem it no longer suitable, the cluster can be expected to decline regardless of the agency of actors within it.

Drawing on institutional thought, the new path development literature has attempted to create a better balance between structure and agency in order to understand how actors create and drive cluster evolutionary trajectories (Grillitsch & Sotarauta, 2020). For example, the concept of institutional entrepreneurship has been developed to explore how actors might break free from an existing institutional framework to create a new development path (MacKinnon et al. 2019). However, Harris (2021) argues that whilst institutional entrepreneurship may help to explain "individual moments of new path development and the role of actors within them, a better approach is required for understanding the long-term path development of a cluster evolutionary trajectory" (p. 444). He then proposes such an approach, bringing together insights from the cluster life cycle and new path development literatures, and building upon Bathelt and Gluckler's (2014) relational perspective on institutions, to develop the concept of "cluster institutional configurations".

[17] See, for example, Simmie 2012; Dawley 2014; Steen 2016; Hassinck et al. 2019, MacKinnon et al. 2019.

Defining cluster institutional configurations as "shared goals, behaviours, and relations among cluster actors", Harris (2021, p. 444) contends that tracing the evolution of these configurations helps provide an understanding of how actors shape their cluster's long-term evolutionary trajectory. In this process, actors are seen to navigate and utilise the preconditions available to them at any point in time to initiate new path developments that both precipitate cluster emergence and shape its development over time, creating new institutional configurations along the way. Cluster institutional configurations then serve as preconditions for future rounds of path development that condition the ability of actors to prevent negative lock-ins and ensure ongoing cluster evolution.

8. The "Productive Systems" approach to industrial organisation and development[18]

"Productive systems" theory builds upon the ideas developed above – about cooperation in production and exchange, and the dynamic inter-relationship between the organisation of production and markets and the evolution of productive systems. It is rooted in Marxian and Marshallian understandings of the nature of production and was initially inspired by analysis of the phenomenon of Marshallian industrial districts in Italy during the 1970s and early 1980s. The Productive Systems framework was first presented in Frank Wilkinson's (1983) article in the *Cambridge Journal of Economics'* Memorial Issue to Joan Robinson. Since then, on the basis of detailed empirical investigation, it has been continually developed and refined as a mechanism for analysing the implications of mutual and conflicting interests inherent to production and industrial organisation.[19] But the underlying logic of productive system development, outlined in 1983, has remained remarkably robust.

The backdrop against which the ideas embodied in "Productive Systems" emerged and were developed was the economics profession's abandonment of Keynesianism and return to the pre-Keynesian neo-classical conventional wisdom – that money determines prices and the market determines everything else. This conclusion rested on the belief that there are laws of the market that exist prior to the laws of man, and that institutions and organisations must conform to them if they are to optimise welfare. The starting point of "Productive Systems" is quite the opposite:

> "The central proposition … is that economic, social and political forces combine in determining how economies develop and that the result is a dynamic non-equilibrium process which can only be revealed by empirical investigation … [T]here are and can be *no* universal, pre-determined, "true" systems to which underlying economic forces are tending (Wilkinson 1983, p. 413, emphasis in the original).

The focus of productive systems theory is the effectiveness of the use of resources and the role of industrial organisation in securing this objective. But rather than viewing the various factors of production as substitutes, its starting point is recognition that the essence of production is mutual dependence, rooted in technical complementarities inherent to production. Cooperation thus emerges as centrally important to productive systems' performance. This is because the exploitation of these dependencies requires full cooperation among those involved in production, which includes a sharing of information necessary for the improvement of production, products and processes. Cooperation fuels the learning processes by which information and knowledge are created, incorporated and diffused, and from which new products, processes and organisational forms are

[18] This section draws heavily upon the author's contribution to Rubery, et.al., 2022, pp. 437-440).

[19] For the development of the productive system analytical framework see: Wilkinson 1983, You & Wilkinson 1994, Birecree, Konzelmann & Wilkinson 1997, Wilkinson 1998, Keeble & Wilkinson 2000, Wilkinson 2002, Wilkinson 2003, Konzelmann & Wilkinson 2016, and Konzelmann & Wilkinson 2017.

developed. 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 economic security of both their stakeholders and the socio-economies within which they are embedded.

Within productive systems, the nature and role of the *technical* relations of production can be distinguished from the *social* relations. 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. These 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; they therefore play a central role in determining the effectiveness of technical cooperation.

In production, the social relations have two functions: coordination and control. Production coordination 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 cooperative activity. The control function involves the exercise of authority and the imposition of sanctions necessary to secure effective technical cooperation. These operate at both the formal and informal, inter-group, and intra-groups levels of organisation. The social relations also serve a third purpose: securing agreement about the distribution of jointly-produced value among those involved in production. However, whereas production is necessarily cooperative, distribution is essentially competitive because what is received by one of the partners to production is no longer available for distribution to the other(s). The social relations therefore have the dual and potentially conflicting functions of securing cooperation in production and agreement over the distribution of its rewards.

The concept of productive systems has general application in providing a basis for analysis at any level: from the household; to 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 of which are determined by relative power. In this context, relative power involves an interplay of the strength each party derives from their position within the relationship; what they bring to the relationship as a consequence of their wealth, social, political and legal standing; and any other means by which relative power is shaped. From this perspective, 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 and non-equilibrium process in which social, economic and institutional elements dynamically interact in historical time. “The interesting questions, therefore, are … about the conditions leading to the emergence of different productive systems and the terms on which systems co-exist” (Wilkinson 1983, p. 421). The drivers of change are developments in products and processes, and changes in productive and power relationships both within and between productive systems. Together, these interact with the broader economic, social and political framework; and they are modified in the process, potentially resulting in the creation, radical modification or destruction 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 organisational forms as well as shifting power relationships.

Because the productive systems approach implies a non-equilibrium process which cannot be said to be tending towards an optimum (or anywhere else), the most that can be said about a productive system's performance is that it is relatively successful or relatively unsuccessful at any point in time. A relatively successful productive system is one which is likely to have a comparative advantage in its overall economic, technical, political and social organisation, and to be at the forefront of technological and organisational progress. In this context, productivity growth 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 cooperation. The outcome is a potentially virtuous cycle of increasing productivity, competitive success, growth in demand and rising prosperity. By contrast, a relatively unsuccessful productive system is likely to be one where the pace of technical advance is slow, productive forces are ineffectively utilized, and ineffectual systems of management, control and industrial structure can be expected to reinforce competitive failure. In such productive systems, the consequential slow rate of wealth creation has the potential to intensify distributional struggles hindering cooperation in production and the ability of the socio-political system to find effective solutions through organisational and institutional reform. In this hostile environment, the productive system will find itself under severe pressure; but any 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.

More generally, given the nature of productive systems and the central role they play in economic development, "[w]hat 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

In economics, the central question of securing cooperation in production is subsumed in theories of market exchange and/or managerial authority. Both the invisible hand of the market and visible hand of management serve to coordinate and control, although assessments of the function and relative importance of these mechanisms vary among the different schools of thought. In orthodox neo-classical economics, the market coordinates and managerial organisation is a reaction to the failure of markets to do so costlessly. By contrast, for the Marshallian and Marxist schools, markets and hierarchy are complementary forms of regulation; and capitalist management takes the lead in developing, directing and coordinating organisation. There is greater unanimity, however, amongst non-Marxist economists, about the central role of the market in determining income distribution. Marshall, for example, dismissed Marx's argument about the exploitative nature of capital by reference to the preventative effect of competition between employers for labour.[20]

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 this, the balance between cooperation (within and between district firms) and competition is an important determinant of the success of both the district

[20] In answering Marx's claim that capitalist employers reap the benefits of cooperation between workers as surplus value Marshall argued that "so long as there is active competition among employers, each will be forced to pay as wages the equivalent of the net value that the hundred men, working cooperatively, add to the product" (Marshall (1920 [1919]), p. 544, Note 35).

and its member 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. – are 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, although he believed that successful industrial districts and their constituent small firms would continue to co-exist and compete with them, Marshall's view 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 was marginalised in the research and analysis of industrial organisation.

During the 1980s and 1990s, however, the discovery of successful clusters of small firms – at a time when the Fordist mass production model was generally in decline – generated significant empirical research into the sources of their competitiveness. In this context, what attracted attention to the industrial districts and other forms of dis-integrated production was their impressive economic performance, measured by new firm formation, employment and exports; their capacity for endogenous development; and their ability to sustain high relative wages and labour standards in the face of international competition. They were flexible in adapting to changing markets and demand patterns; had a high capacity for generating and diffusing innovation in products and processes; and combined competition and cooperation among local actors.

Whilst Marshall's analysis has played a significant role in theorising about the success of local clusters of small firms in the north of Italy and elsewhere – so much so that they have been labelled *Marshallian* industrial districts – contemporary analyses of industrial districts put much greater stress than did Marshall on the social, collectivist and institutional basis for successful coordination. Whereas Marshall's vision of industrial districts assigned a limited role to employers' and workers' organisation and the state, in more recent literature, a more central role is assigned to the collective. This takes the form of direct inter-firm relationships, formal and informal institutions and public policy in establishing and guaranteeing business and labour standards, fostering innovation and technological diffusion and organising education and training. Important features of modern industrial districts include strong trade and labour associations; active industrial, labour market and social policy, usually involving labour, capital and the state; high wages and standards of employment and training; and close and direct relationships between firms, based on trust and cooperation.

More recent theorising about the localisation of production is also based on the idea that there has been a structural transformation in markets – producing a transition from vertically-integrated mass production to vertical dis-integration and flexible specialisation – labour-intensive batch- and craft-production have co-existed along-side capital-intensive vertically-integrated mass production since the industrial revolution, even though one or the other may have been prioritised at various points in time (Colli 2009; Sabel & Zeitlin 1985). Just as the debates about increasing returns during the 1920s tended to over-simplify and over-state the importance of large-scale vertically integrated production, more recent debates do the same with respect to dis-integrated production. Despite stylised descriptions of analytical types, actual dis-integrated production is dramatically heterogeneous, both institutionally and strategically.

Nevertheless, despite their differences, the various approaches to understanding industrial districts and models of local development share a common analytical thread represented by the reference to concepts and cases of external economies recovered from the Marshallian tradition. A limitation of

these approaches, which also applies to static equilibrium models of individual firms operating within different market structures, is the isolation of firms and markets – as well as the dynamics of local and regional industrial and economic development – from their national and global contexts.

An important exception is Frank Wilkinson's productive systems approach, which moves beyond the narrow boundaries of conventional economics to develop a more integrated and dynamic analysis of the mutual interaction between economic, social and political forces within production, markets and exchange. A hallmark of this broader and empirically-grounded approach – which has considerable relevance for understanding the evolutionary tendency of industrial capitalism today – is its attention to both historical context and the rest of the economic landscape of which productive systems form a part.

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